

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CIRRUS DESIGN CORPORATION.

Petitioner,

v.

HOYT AUGUSTUS FLEMING

Patent Owner.

Case IPR2019-01566

Patent RE47,474

PATENT OWNER'S NOTICE OF APPEAL

Please take notice that under 35 U.S.C. §§ 141(c), 142, and 319 and 37 C.F.R. §§ 90.2–3, Patent Owner Hoyt Augustus Fleming, appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision of the Patent Trial and Appeal Board (“Board”) entered on January 6, 2021 (Paper 60) in IPR2019-01566 (the “Final Written Decision”) regarding U.S. Patent No. RE47,474 (“the ’474 Patent”) and from all underlying orders, decisions, rulings, and opinions related thereto. A copy of the Final Written Decision is attached as Exhibit 1. This notice is timely filed within 63 days of the Final Written Decision. 37 C.F.R. § 90.3(a)(1).

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Patent Owner’s issues on appeal include at least: (i) the Board’s determination of unpatentability of claims 137-139 of the ’474 patent; (ii) the Board’s denial of Patent Owner’s Motion to Amend; (iii) the Board’s determination of unpatentability of substitute claims 140-148; (iv) all determinations supporting or related to these issues, including claim constructions; (v) the constitutionality of the *Inter Partes* Review process and whether Patent Owner was afforded his constitutional rights in IPR2019-01566 under the Due Process and Just Compensation clauses of the Fifth Amendment; (vi) the Board’s lack of authority as improperly appointed principal officers under the Appointments Clause (*United States v. Arthrex, Inc.*, No. 19-1434, -1452, -1458 (U.S.)) and the Administrative Procedure Act to conduct “formal

adjudications” under 5 U.S.C. § 556(b); (vii) the Board’s consideration in the Final Written Decision of untimely evidence and argument from Petitioner’s Sur-Reply; (viii) the Board’s consideration in the Final Written Decision of issues and arguments not presented by in the Petition or by Petitioner; and (ix) all other issues decided adversely to Patent Owner in any order, decision, ruling, or opinion.

In accordance with 35 U.S.C. § 142 and 37 C.F.R. § 90.2(a), Patent Owner is filing copies of this Notice of Appeal with the Director of the United States Patent and Trademark Office and with the Clerk of the United States Court of Appeals for the Federal Circuit along with the required docketing fees as set forth in the accompanying Certificate of Filing.

January 18, 2021

Respectfully submitted,

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CERTIFICATION OF FILING

The undersigned hereby certifies that, in addition to being electronically filed through PTAB E2E, a true and correct copy of the above-captioned PATENT OWNER’S NOTICE OF APPEAL is being filed by Priority Mail Express under 37 U.S.C. § 1.10 with the Director on January 18, 2021 at the following address:

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

The undersigned also hereby certifies that a true and correct copy of the above-captioned PATENT OWNER’S NOTICE OF APPEAL and the filing fee is being filed via CM/ECF with the Clerk’s Office of the United States Court of Appeals for the Federal Circuit on January 18, 2021.

January 18, 2021

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CERTIFICATE OF SERVICE

The undersigned certifies service on the Petitioner, pursuant to 37 C.F.R. §42.6(e), by electronic (e-mail) delivery of a true copy of the foregoing PATENT OWNER'S NOTICE OF APPEAL to lead and back-up counsel of record for Petitioner as follows:

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Dated: January 18, 2021

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EXHIBIT 1

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CIRRUS DESIGN CORPORATION,
Petitioner,

v.

HOYT AUGUSTUS FLEMING,
Patent Owner.

IPR2019-01566
Patent RE47,474 E

Before JOSIAH C. COCKS, SCOTT C. MOORE, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

COCKS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Claims Unpatentable
Denying Patent Owner's Motion to Amend
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background

Cirrus Design Corporation (“Petitioner” or “Cirrus”) filed a corrected Petition (Paper 3, “Pet.”) to institute an *inter partes* review of claims 2, 3, 8, 10, 15, 132, and 135–139 (“the challenged claims”) of U.S. Patent No. RE47,474 E (Ex. 1001, “the ’474 patent”).¹ See 35 U.S.C. § 311. We instituted trial to determine whether the challenged claims were unpatentable as follows:

Claims Challenged	35 U.S.C. §	References/Basis
2, 3, 8, 10, 15, 132, and 135–139	103 ²	POH, ³ James ⁴

Paper 18 (“Dec. on Inst.”).

Hoyt Augustus Fleming (“Patent Owner” or “Fleming”) timely filed a Patent Owner’s Response (Paper 35, “PO Resp.”) and a Contingent Motion to Amend (Paper 34, “MTA”) seeking contingent entry of substitute claims 140–148. Petitioner filed a Reply to Patent Owner’s Response (Paper 41, “Pet. Reply”)⁵ and an Opposition to Patent Owner’s MTA (Paper 42).

¹ The ’474 patent is a reissue of U.S. Patent No. 8,100,365 B2.

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the application from which the ’474 patent issued was filed before this date, the pre-AIA version of § 103 applies.

³ Cirrus Design, Pilot’s Operation Handbook, SR22, Revision A7 dated Oct. 10, 2003 (Ex. 1007, “POH”).

⁴ U.S. Patent No. US 6,460,810 B2 issued Oct. 8, 2002 (Ex. 1005, “James”).

⁵ In its Patent Owner’s Response, Patent Owner states that “[o]n October 9, 2019, Fleming filed a Disclaimer with the Patent Office that disclaims claims 135 and 136. Ex. 2001. Thus, the remaining challenged claims are

We issued Preliminary Guidance on Patent Owner’s MTA, determining that Patent Owner had not shown a reasonable likelihood that it had satisfied the statutory and regulatory requirements associated with filing a motion to amend. Paper 44. Subsequently, Patent Owner filed a Sur-Reply (Paper 45, “PO Sur-Reply”) and a Revised Motion to Amend (Paper 47, “Revised Motion to Amend” or “RMTA”). In the RMTA, Patent Owner requests the following: “Fleming provides substitute claims 140–145 which replace claims 2, 3, 8, 10, 15, and 132. Fleming provides substitute claims 146–148 contingent upon a finding of invalidity of claims 137–139 respectively.” RMTA 1.⁶

Petitioner filed an Opposition to the RMTA (Paper 49, “Pet. Opp. to RMTA”) to which Patent Owner replied (Paper 53, “PO Reply to Opp. to RMTA”). Lastly, Petitioner filed a Sur-Reply to Patent Owner’s RMTA. Paper 56 (“Pet. Sur-Reply to RMTA”).

claims 2, 3, 8, 10, 15, 132, and 137–139[.]” PO Resp. 4. We discern that Exhibit 2001 is a “Disclaimer in Patent Under 37 CFR 1.321(a)” and indicates that claims 135 and 136 have been disclaimed. Accordingly, those claims are no longer regarded as part of the ’474 patent and are no longer involved in this proceeding.

⁶ Patent Owner also expresses in its Revised Motion to Amend that it seeks to “amend claims 2, 3, 8, 10, 15, and 132.” RMTA 1; *see also* PO Sur-Reply 1 (“Fleming has decided to amend all claims except Claims 137–139.”). During oral argument, Patent Owner further expressed that “claim 2 . . . is no longer at issue in this matter” and that “[t]he only remaining claims are claims 137 through 139[.]” Tr. 32. The Revised Motion to Amend, thus, is not contingent with respect to claims 2, 3, 8, 10, 15, and 132, and we regard Patent Owner’s position with respect to those claims as a request for their cancellation such that they are no longer part of the ’474 patent and no longer part of this proceeding. As we set forth below, we grant that request.

Oral argument was conducted on November 5, 2020. A transcript of the oral argument appears in the record. Paper 59 (“Tr.”).

B. Related Proceeding

The parties identify *Cirrus Design Corporation v. Fleming*, No. 0:19-cv-01286 (D. Minn.) as a related matter under 37 C.F.R. § 42.8(b)(2). Pet. 1; Paper 5, 2.

C. The '474 Patent

The '474 patent is titled “Intelligent Ballistic Parachute System that Performs Pre-Activation and/or Post-Activation Actions.” Ex. 1001, code (54). The '474 patent characterizes its disclosure as relating generally “to whole aircraft parachute systems.” *Id.* at 1:22. The Abstract of the '474 patent is reproduced below:

An aircraft, the aircraft including a whole-aircraft ballistic parachute that is coupled to the aircraft. The aircraft determines if a pre-activation action needs to be performed before activation of the whole-aircraft ballistic parachute. The aircraft also receives a whole-aircraft ballistic parachute activation request. The aircraft then issues a command to perform the pre-activation action and then activates the deployment of the whole-aircraft ballistic parachute. The aircraft then issues a command to perform a post-activation action.

Id. at code (57).

Figure 14 of the '474 patent is reproduced below:

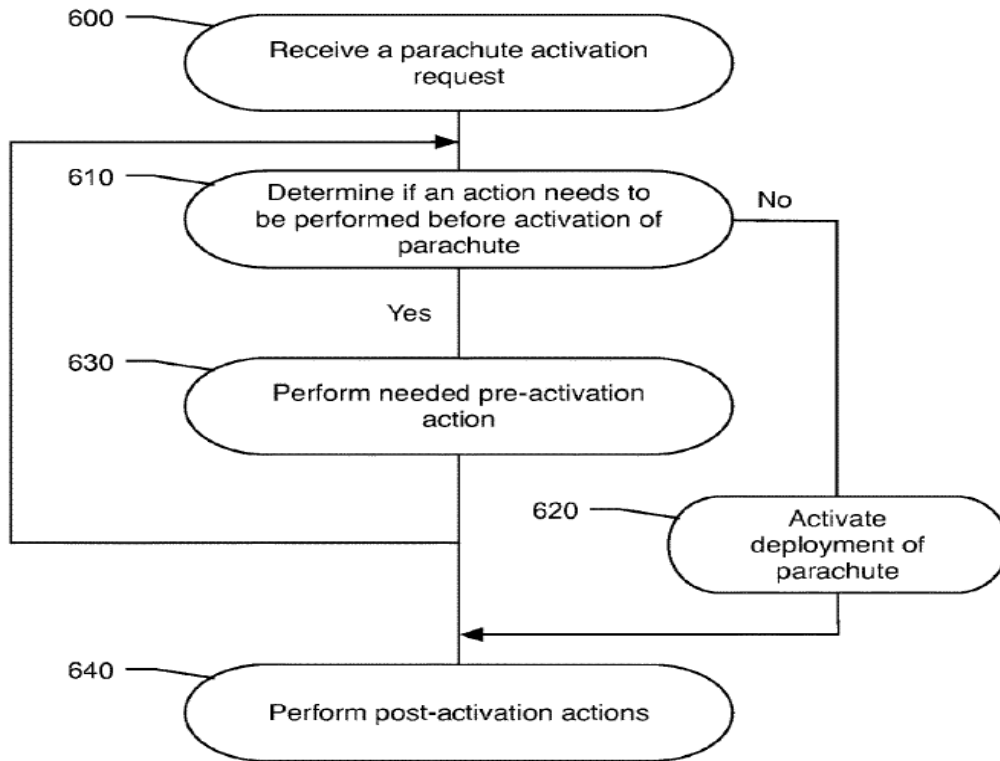


Figure 14

Figure 14 above is characterized as a flowchart of a method performed by “a system for increasing the safety of aircraft occupants.” *Id.* at 2:14–15.

D. Illustrative Claim

Of the challenged claims that are still pending before us in this proceeding, claims 137–139 are each independent. Claim 137 is illustrative and is reproduced below.

- 137. An aircraft, the aircraft including:
 - a fuselage,
 - a whole-aircraft ballistic parachute, which includes a rocket, that is coupled to the fuselage of the aircraft,
 - an activation interface,

a pitch sensor,
an autopilot,
one or more memories having machine-readable instructions stored thereon, and
one or more processors, each of the one or more processors configured to read and execute a portion of the machine-readable instructions;

wherein at least one of the one or more processors is coupled to the activation interface, at least one of the one or more processors is coupled to the pitch sensor, at least one of the one or more processors is coupled to the autopilot, at least one of the one or more processors is coupled to the rocket, at least one of the one or more processors is coupled to the one or more memories;

the aircraft configured to perform a method comprising:
receiving, by the activation interface, a whole-aircraft ballistic parachute deployment request from an occupant of the aircraft; then based upon the receipt of the whole-aircraft ballistic parachute deployment request by the activation interface, both performing an action and also deploying the whole-aircraft ballistic parachute;

wherein the machine readable-instructions include the action comprising:

based at least upon the receipt of the whole-aircraft ballistic parachute deployment request, command the autopilot to increase aircraft pitch.

Id. at 54:20–51 (here and elsewhere in this Decision, language of the claims is reproduced without italics).

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, a claim “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b).” 37 C.F.R. § 42.100(b) (2019). Under

this standard, claim terms are given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the 11 time of the invention and in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). If the specification “reveal[s] a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess[,] . . . the inventor’s lexicography governs.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc) (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)).

Petitioner proposes construction of three claim phrases:

(1) “performing an action” (Pet. 7–8); (2) “one or more processors is coupled to [aircraft device]” (*id.* at 8–9); and (3) “the attitude of the aircraft” (*id.* at 9). Patent Owner disagrees with the constructions that Petitioner has offered but submits that no claim terms need be construed as “Petitioner does not actually rely upon any of its proposed claim constructions in the instant Petition.” PO Resp. 10–11. Patent Owner also contends that the terms of each of the challenged claims should simply be given their ordinary and customary meaning. *Id.* at 11.

Generally, there is a “heavy presumption” that a claim term be afforded its ordinary meaning as understood by one of ordinary skill in the art. *Johnson Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d 985, 989 (Fed. Cir. 1999). In reviewing the complete record currently before us, we do not discern that such presumption has been overcome. There is no evidence of record that any claim term should take on a special meaning that departs from its ordinary meaning. Thus, we agree that all claims terms should take on their ordinary and customary meaning. Furthermore, none of

the parties' disputes appears to turn on the construction of the above-noted terms, and we determine that no express constructions are necessary for purposes of this Final Written Decision. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

B. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which such subject matter pertains.” 35 U.S.C. § 103(a). The question of obviousness under 35 U.S.C. § 103 is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

C. Level of Ordinary Skill in the Art

Petitioner offers the following in assessing the level of ordinary skill in the art: “[a] person of ordinary skill in the art (“POSA”) would have had (1) a degree in Aerospace Engineering or equivalent technical background and (2) familiarity with parachute systems, related sensing systems, and

automated flight control.” Pet. 6 (citing Ex. 1003 ¶¶ 29–32).⁷ As a part of its Patent Owner Response, Patent Owner does not challenge Petitioner’s assessment of the level of ordinary skill in the art. As we noted in the Decision on Institution, Patent Owner’s own expert, Dr. Joseph Dunagan, offered a similar assessment of the level of ordinary skill in the art. Dec. on Inst. 11 (referencing Ex. 2002 ¶¶ 27–30). We observed at that time that the parties’ respective assessments appeared nearly equivalent of one another, without material differences, and we adopted them both. *Id.* We make the same determination here as a part of this Final Written Decision.⁸ We further find that the cited prior art references reflect the appropriate level of skill at the time of the claimed invention and that the level of appropriate skill reflected in these references is consistent with the definitions of a person of ordinary skill in the art proposed by the parties. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

D. Scope and Content of the Prior Art

1. Overview of POH

POH is titled “Pilot’s Operating Handbook and FAA^[9] Approved Airplane Flight Manual for the Cirrus Design SR22.” Ex. 1007, 1.¹⁰ POH

⁷ Exhibit 1003 is the Declaration testimony of Petitioner’s expert, Mr. Hoffmann.

⁸ At oral argument, both parties expressed that the respective assessments of the level of ordinary skill in the art are essentially “synonymous.” Tr. 13, 34.

⁹ Federal Aviation Administration.

¹⁰ The identified pagination for POH refers to the page numbering added by Petitioner at the bottom right of each page.

describes itself as a handbook “to familiarize operators with the Cirrus Design SR22 airplane.” *Id.* at 7. The following are portions of POH describing operation of the Cirrus Airframe Parachute System (“CAPS”):

Cirrus Airplane Parachute System

The SR22 is equipped with a Cirrus Airplane Parachute System (CAPS) designed to bring the aircraft and its occupants to the ground in the event of a life-threatening emergency. The system is intended to save the lives of the occupants but will most likely destroy the aircraft and may, in adverse circumstances, cause serious injury or death to the occupants. Because of this it is important to carefully read the CAPS descriptions in this section, section 3 Emergency Procedures and Section 10, Safety and consider when and how you would use the system.

Id. at 279.

• WARNING •

In all cases, if the aircraft enters an unusual attitude from which recovery is not expected before ground impact, ***immediate*** deployment of the CAPS is required.

The minimum demonstrated altitude loss for a CAPS deployment from a one-turn spin is 920 feet. Activation at higher altitudes provides enhanced safety margins for parachute recoveries. Do not waste time and altitude trying to recover from a spiral/spin before activating CAPS.

Inadvertent Spin Entry

1. CAPS ACTIVATE

CAPS Deployment

The Cirrus Airframe Parachute System (CAPS) should be activated in the event of a life-threatening emergency where CAPS deployment is determined to be safer than continued flight and landing.

• WARNING •

CAPS deployment is expected to result in loss of the airframe and, depending upon adverse external factors such as high deployment speed, low altitude, rough terrain or high wind conditions, may result in severe injury or death to the occupants. Because of this, CAPS should only be activated when any other means of handling the emergency would not protect the occupants from serious injury.

• Caution •

Expected impact in a fully stabilized deployment is equivalent to a drop from approximately 13 feet.

Id. at 72–73.

The portions above describe considerations that factor into CAPS operation and deployment. POH also sets forth that once an occupant has decided to employ the CAPS system, it is activated by pulling down on “the activation T-handle.” *Id.* POH further states that “the chances of a successful deployment increase with altitude.” *Id.* at 468. POH, thus, expresses a recommendation in connection with CAPS deployment pertaining to the desirability of higher altitudes of the aircraft to provide “enhanced safety margins for parachute recoveries,” and a warning that deployment at “low altitude . . . may result in severe injury or death to the occupants.” *Id.* at 72–73.

2. Overview of James

James is titled “Semiautonomous Flight Director.” Ex. 1005, code (54). James’s Abstract is reproduced below:

A device for programming industry standard autopilots by unskilled pilots. The effect of the invention is such that when the invention is employed in a flying body comprising an industry standard autopilot with a digital flight control system, the invention provides for the safe operation of any aircraft by an unskilled pilot. The device additionally affords skilled pilots a more rapid and simplified means of programming autopilots while in flight thus reducing a skilled pilot's cockpit workload for all aircraft flight and directional steering, way points, and aircraft flight functions reducing the possibility of pilot error so as to effect safer flight operations of an aircraft by affording a skilled pilot to direct aircraft steering and function while under continuous autopilot control.

Id. at code (57).

James presents use of various switches as a part of its device including a “sixth switch (77)” that is described as “being a non return to null, manual, single poll, single throw, secured safety, type switch to provide an ‘emergency shutdown/deploy parachute/activate visual, audible and radio frequency beacons’ command function logic signal (62) and interrupt signal (67).” *Id.* at 10:14–19. James also explains the following with respect to the operation of its disclosed “Semiautonomous Flight Director” (“SFD”):

If for some reason the SFD receives a flight status back from the aircraft's autopilot that the aircraft has encountered a negative flight maneuver or some other in-flight incident or status not conducive to safe operation; either the pilot or optionally a preprogrammed SFD action may automatically initiate an emergency shut down procedure; in the case of a low Reynolds class UAV applications; to accomplish such tasks as shutting off all engines, terminating all flight functions, deploying an emergency recovery parachute and activating any locating beacons such as; visual light beacons, audio sound beacons, and/or a radio frequency locator beacon, to aid ground crews in locating and recovering the aircraft after the mishap.

Id. at 18:28–41.

James further sets forth the following:

It is the object of the invention to improve overall flight safety by providing a means capable of significantly reducing a skilled pilot's work load and/or eliminating or supplanting the piloting skills normally required to fly any manned or unmanned helicopter or aircraft equipped with an autopilot employing a digital flight control system.

Ex. 1005, 6:23–28.

E. Claims 2, 3, 8, 10, 15, 132, 135, and 136

As noted above, Patent Owner has disclaimed claims 135 and 136. PO Resp. 4; Ex. 2001. Those claims, thus, are no longer regarded as involved in this proceeding.

Also as noted above, as a part of its Revised Motion to Amend and as stated in Patent Owner's Sur-Reply, Patent Owner seeks to non-contingently amend claims 2, 3, 8, 10, 15, and 132, and now presents those amended claims as substitute claims 140–145. RMTA 1; PO Sur-Reply 1. As is evident from the above-noted portions of the Revised Motion to Amend and Patent Owner's Sur-Reply, Patent Owner's position with respect to claims 2, 3, 8, 10, 15, and 132 constitutes a request to cancel those claims. We grant that request. Claim 2, 3, 8, 10, 15, and 132, thus, also are no longer regarded as a part of the '474 patent, and need not be further addressed as a part of this proceeding.¹¹

¹¹ In our Decision on Institution, we determined that Petitioner had shown a reasonable likelihood of success in showing that claims 2, 3, 8, 10, 15, and 132 were unpatentable. *See* Dec. on Inst. 21–26 (citing, *e.g.*, Pet. 15–21, Ex. 1005, 18:28–41; Ex. 1003 ¶¶ 115–127; Paper 8, 49–60 (Patent Owner's arguments in its Preliminary Response as to objective evidence of non-obviousness)). Even were we to regard claims 2, 3, 8, 10, 15, and 132 as still pending in this proceeding, we conclude that the present record also

F. Claim 137

Claim 137 is independent and directed to an “aircraft.” The claim generally requires particular features of an aircraft including, for instance, a “fuselage,” “a whole-aircraft ballistic parachute” with a “rocket” that is coupled to the fuselage, “an activation interface,” a “pitch sensor,” “an autopilot,” “one or more memories having machine-readable instructions,” and “one or more processors” that read and execute portions of the machine-readable instructions. Ex. 1001, 54:20–31. Furthermore, many of the above-noted features are expressed as being in certain coupling configurations. For instance, claim 137 sets out the following:

wherein at least one of the one or more processors is coupled to the activation interface, at least one of the one or more processors is coupled to the roll sensor, at least one of the one or more processors is coupled to the rocket, at least one of the one or more processors is coupled to the rocket, at least one of the one or more processors is coupled to the one or more memories[.]

Id. at 54:32–55:9.

The claims also recite that the aircraft is configured to perform a method. The steps of that method are recited as:

receiving, by the activation interface, a whole-aircraft ballistic parachute deployment request from an occupant of the aircraft; then

based upon the receipt of the whole-aircraft ballistic parachute deployment request by the activation interface, both performing an action and also deploying the whole-aircraft ballistic parachute;

wherein the machine readable-instructions include the action comprising:

establishes by a preponderance of evidence that those claims are unpatentable based on the combined teachings of POH and James.

based at least upon the receipt of the whole-aircraft ballistic parachute deployment request, command the autopilot to increase aircraft pitch.

Id. at 54:40–50.

1. Summary of Petitioner’s Contentions

Petitioner contends that claim 137 of the ’474 patent is unpatentable and lays out in detail where it believes all the features of that claim reside in the prior art. Pet. 61–66; *see id.* at 33–57, Appendix.¹² Petitioner also offers an explanation that a person of ordinary skill in the art would have had adequate reasons to combine the teachings of POH and James. *Id.* at 16–21.

For instance, Petitioner cites to both POH and James as accounting for the preamble recitation of an “aircraft.” Pet. 33 (citing Ex. 1003 ¶¶ 179–180; Ex. 1007, 18–19; Ex. 1005, 8:22–30). Petitioner also points to both those reference as disclosing a “fuselage.” *Id.* (citing Ex. 1003 ¶ 81; Ex. 1007, 184; Ex. 1005, 8:22–30).

With respect to the requirement of a “whole-aircraft ballistic parachute” which includes a “rocket” that is coupled to the fuselage, Petitioner argues that the teachings of POH and James taken together account for that requirement. *Id.* at 34. In particular, Petitioner notes that POH discloses its CAPS as comprising a whole-aircraft ballistic parachute with a rocket that is coupled to the fuselage of the aircraft. *Id.* at 34 (citing

¹² Pages 33–57 of the Petition pertain to claim 132 of the ’474 patent. As a part of its assessment of claim 137, Petitioner contends that “[a]ll of the limitations of [c]laim 137 are recited in [c]laim 132” with the exception of certain features specific to claim 137. Pet. 61. Petitioner also makes reference to the claim Appendix of the Petition identifying the common features between claim 132 and claim 137.

Ex. 1007, 39, 73–75, 279–282). Petitioner also points to James as disclosing a switch for deployment of a whole-aircraft ballistic parachute coupled to a fuselage. *Id.* (citing Ex. 1005, 10:14–19, 18:28–41, 18:53–61; Ex. 1003 ¶¶ 183–185). Petitioner reasons that: “[i]t would have been obvious for a POSA to employ the POH’s teachings of rocket based parachute deployment as part of the processor-based ‘deploy parachute’ function of James.” *Id.* (citing Ex. 1003 ¶ 186).

Petitioner further directs attention to disclosure in each of POH and James accounting for an activation interface (e.g., POH’s CAPS Activation T-handle), an autopilot, a pitch sensor, the required one or more processors (James’s autopilot programmer processor (APR) circuit 71), and machine-readable instructions. *Id.* at 35, 37–39, 62 (citing various portions of Exhibits 1005 and 1007; Ex. 1003 ¶¶ 187–188, 195–205, 271–273).

Petitioner additionally assesses what one of ordinary skill in the art would have understood in connection with the coupling of James’s APR as a part of its SFD with either of James’s or POH’s autopilot, an activation interface, a pitch sensor, a rocket for deploying a whole-aircraft parachute, and memories of the autopilot’s computer system. *Id.* at 39–41, 45–46, 48–50, 63–64 (citing, e.g., citing various portions of Exhibits 1005 and 1007; Ex. 1003 ¶¶ 106–112, 122, 201, 202, 206, 207, 209, 218–220, 227–229, 274–276).

Petitioner additionally accounts for the requirement in claim 137 of an aircraft’s configuration to perform a method that includes receiving, by the activation interface, a whole-aircraft parachute deployment request from an occupant and based on receipt of that request performing an action and deploying the parachute. In that regard, Petitioner points to disclosure in

POH pertaining to its CAPS Activation T-Handle and James’s “deploy parachute” switch. Pet. 50–51 (citing Ex. 1007, 279–281; Ex. 1005, 7:25–55, 10:14–19, 12:49–60, 18:27–41; Ex. 1003 ¶¶ 230–233).

Claim 137 further specifies that the action that is taken along with parachute deployment is to “command the autopilot to increase aircraft pitch.” Petitioner is of the view that disclosures in POH and James that convey machine-readable instructions for increasing an aircraft’s altitude and commanding a climb based on a parachute deployment request (*id.* at 65 (referencing pages 24–26 and 53–55 of the Petition) would have been understood by a skilled artisan to teach increasing the aircraft’s pitch (*id.* at 65 (citing Ex. 1003 ¶ 277)). Petitioner additionally expresses that “James further discloses that activation of one of its switches (such as its parachute-deployment switch) results in the SFD transferring autopilot flight programming signals to the autopilot, thus commanding the autopilot to execute the desired functions(s).” *Id.* (citing Ex. 1003 ¶¶ 106–110, 277; Ex. 1005, 10:14–19, 10:47–12:28, 18:28–41; 12:49–60, Fig. 2).

As a part of its position that there is motivation to combine the teachings of POH and James, Petitioner notes James’s statement that its disclosure applies to “any manned or unmanned helicopter or aircraft equipped with an autopilot employing a digital flight control system” and contends that the “SR22 aircraft described in the POH is an aircraft equipped with a digital autopilot.” Pet. 16 (citing Ex. 1005, 6:23–28; Ex. 1007, 263–273). Petitioner explains that “[t]he SR22 aircraft discussed in the POH is therefore within the intended application for the SFD taught by James, and the combination of the POH and James represents only a routine

implementation of James within its intended application.” *Id.* (citing Ex. 1003 ¶ 115).

Petitioner also reasons that “a [person of ordinary skill in the art] would have been motivated to make this combination to ensure that the desired pre-deployment and post-deployment actions would be automatically performed, even if the operator was unskilled or otherwise unable to perform them.” *Id.* at 20 (citing Ex. 1003 ¶¶ 124–125); *see also id.* at 67 (“a [person of ordinary skill in the art] would have further been motivated to incorporate James’ process-based parachute deployment switch into the POH’s CAPS system, to ensure that this action would be automatically performed even if the operator was unskilled, preoccupied, or otherwise unable to perform it.”)

Petitioner further contends that the teachings of POH and James taken together constitutes a “combination of familiar elements using known methods [that] would yield predictable results,” and that a skilled artisan “would have a reasonable expectation of success in making such a combination.” *Id.* at 20–21 (citing Ex. 1003 ¶¶ 124–127).

2. Summary of Patent Owner’s Contentions

Patent Owner disputes Petitioner’s position of the unpatentability of claim 137 based on POH and James. Patent Owner, however, does not dispute that many features of claim 137, such as a fuselage, an autopilot, a pitch sensor, an activation interface, and processors, were known in the art. Rather, Patent Owner focuses its challenge on the requirement that an autopilot perform flight maneuvers and deploy an aircraft’s parachute based upon an aircraft’s receipt of a parachute deployment request. Patent Owner first contends that neither POH nor James individually discloses the above-

noted claim feature. PO Resp. 26–27 (citing Ex. 2019 ¶¶ 46, 55)¹³; PO Sur-Reply 8–13. Patent Owner further characterizes Petitioner’s proposed ground as one predicated on use of a “gap-filler” to supply a missing limitation, and asserts that Petitioner has resorted to the impermissible use of “common sense” and “hindsight” to arrive at the subject matter of the challenged claims, including claim 137. *See, e.g.*, PO Resp. 29–49; PO Sur-Reply 15–18. In Patent Owner’s view, the missing limitation is that of “performing a flight maneuver and deploying a parachute based upon the aircraft’s receipt of a parachute deployment request.” *Id.* at 31–32. More specifically, Patent Owner finds fault with Petitioner’s proposal that based on the teachings of POH and James, a person of ordinary skill in the art would have reprogrammed an autopilot in a manner to arrive at the above-noted limitation as, according to Patent Owner, such reprogramming requires “significant expertise,” can be “particularly challenging,” and is of “utmost complexity.” PO Resp. 32–33 (citing Ex. 2019 ¶¶ 56–58).

Moreover, Patent Owner takes the position that Petitioner’s ground requires “customizing” aspects of James’s parachute deployment switch in a manner that does not, itself, emerge from the prior art, and would not have been recognized by one of ordinary skill in the art. PO Resp. 34–35; *see generally* PO Resp. 29–49; PO Sur-Reply 15–18. Patent Owner also dismisses Petitioner’s assessment that its proposed combination of POH and James is one predicated on presenting a “safe and logical” approach to parachute deployment. *See, e.g.*, PO Resp. 46–47. Rather, Patent Owner contends that the modifications Petitioner proposes to the prior art parachute

¹³ Exhibit 2019 is the Declaration testimony of Patent Owner’s expert, Dr. Chris Gregory Bartone.

deployment mechanisms are not safe and logical because it allegedly “prohibits an aircraft occupant from following POH’s parachute deployment instructions regarding (1) airspeed, (2) altitude, and (3) attitude.” *See id.*

Patent Owner additionally asserts that the prior art as a whole, and specifically POH, teaches away from the concept of “using an autopilot based upon the receipt of a parachute deployment request.” PO Sur-Reply 13–15. Patent Owner generally premises that teaching away assertion on the theory that POH provides “clear warnings that autopilot ‘must not’ be used in most of the circumstances in which a whole aircraft parachute is likely to be needed.” *Id.* at 14.

Lastly, Patent Owner contends that secondary considerations of non-obviousness demonstrate that the challenged claims are not unpatentable. To that end, Patent Owner argues it was only after he disclosed content of patent application No. 12/368, 911 (“the ’911 application”) and its resulting U.S. Patent No. 8,100,365 (“the ’365 patent”) (which reissued as the ’474 patent) to Petitioner that it then sought to implement content of the ’474 patent into Petitioner’s own aircraft designs and to pursue its own patent application on the subject matter. PO Resp. 50–59; PO Sur-Reply 22–24. Thus, in Patent Owner’s view, Petitioner copied the content of Patent Owner’s ’474 patent, and that such copying demonstrates non-obviousness of that patent.

3. Discussion—Claim 137

Claim 137, like all of the challenged claims, generally describes the use of an autopilot as a part of an aircraft to take certain actions, likely in an emergency situation, upon the request of an occupant to deploy a whole-aircraft parachute. Upon the receipt of such a request, the autopilot directs

certain flight maneuvering operations, such as commanding an increase in the aircraft's pitch, and also deploys the parachute. There is no dispute on the record that it was well known in the art that an autopilot may function to perform flight maneuvers and also to deploy a parachute. On those matters, James is explicit in its teachings. For instance, James clearly provides the following:

If for some reason the SFD receives a flight status back from the aircraft's autopilot that the aircraft has encountered a negative flight maneuver or some other in-flight incident or status not conducive to safe operation; either the pilot or optionally a preprogrammed SFD action may automatically initiate an emergency shut down procedure; in the case of a low Reynolds class UAV applications; to accomplish such tasks as shutting off all engines, terminating all flight functions, deploying an emergency recovery parachute and activating any locating beacons such as; visual light beacons, audio sound beacons, and/or a radio frequency locator beacon, to aid ground crews in locating and recovering the aircraft after the mishap.

Ex. 1005, 18:28–41.

James also discloses that its sixth switch 77 constitutes a switch that is operable “to provide an ‘emergency shutdown/deploy parachute/activate visual, audible and radio frequency beacons’ command function logic signal (62) and interrupt signal (67).” *Id.* at 10:14–19. Thus, James provides that either in response to an action by a pilot, e.g., a request to deploy the parachute, or via a preprogrammed action, an aircraft may automatically initiate shut down procedures, including deploying an emergency recovery parachute. Furthermore, James also clearly expresses that an autopilot may perform particular flight maneuvers on an aircraft, including to “slow the aircraft to landing speed and maintain a slow steady landing descent.” *Id.* at 17:24–25. We also take note of, and credit, the testimony of Mr. Hoffmann

as to those teachings of James. For instance, Mr. Hoffmann testifies the following: “James discloses that the autopilot, which when the SFD is in operation directly controls the aircraft’s flight operations at all times, may perform fully automated takeoff and landing procedures, and may enter into preprogrammed flight missions in which the aircraft will assume preprogrammed headings and altitudes.” Ex. 1003 ¶ 273 (citing Ex. 1005, 7:25–55, 8:21–35, 13:6–12, 14:51–64, 15:27–40, 17:16–52). We additionally are cognizant of James’s unambiguous disclosure that the purpose of an autopilot is to reduce a skilled pilot’s work load by eliminating or supplanting the piloting skills normally required to fly an aircraft. Ex. 1005, 6:23–28. Indeed, the very nature of an “autopilot” is that it is a component that automatically performs piloting actions in lieu of the performance of those actions by a human pilot.

We further observe that there is no dispute that autopilot systems that are programmable are known in the art. Patent Owner’s own expert, Dr. Bartone, acknowledges that POH describes a programmable autopilot as a part of an SR22 aircraft. *See, e.g.*, Ex. 2019 ¶ 46 (“POH describes the SR22 as having a programmable autopilot (Ex. 1007 at 266–269)”). As to the requirement that an autopilot may be programmed to control an aircraft’s pitch, we observe that Mr. Hoffmann testifies the following as to disclosure in POH in that respect:

The POH further discloses that the autopilot includes, *inter alia*, a pitch computer. [Ex. 1007] at 266 (“A separate pitch computer provides the ALT hold function. The S-Tec System Thirty Autopilot features: ... • Altitude Hold.”); *id.* at 380 (“The pitch computer receives altitude data from the altitude encoder pressure transducer plumbed into the static system, an accelerometer, and glideslope information from the HSI and #1 NAV radio. Pitch axis command for altitude hold, vertical speed

hold, and glideslope tracking is accomplished by pitch computer commands to the autopilot pitch servo.”); *id.* at 383 (“The altitude selector also provides a vertical speed signal to the autopilot pitch computer that is proportional to the amplitude and direction of the selected or computed vertical speed.... When VS is engaged, the autopilot compares the selected vertical speed signal with the existing vertical speed derived from the autopilot’s altitude transducer and maneuvers the airplane to attain the selected vertical speed.”). A [person of ordinary skill in the art] would have understood that the pitch computer would include a pitch sensor to determine current pitch in order to perform flight operations based on that reading, including Altitude Hold.

Ex. 1003 ¶ 272.

We credit Mr. Hoffmann’s testimony that a skilled artisan would have well understood that a programmable autopilot, such as that of POH, may include a pitch computer and be configured to control an aircraft’s pitch. We do not discern that there is any dispute in connection with that testimony.

A well-recognized tenet of the obviousness inquiry is that it is not necessary to find precise teachings in the prior art directed to the specific subject matter claimed because inferences and creative steps that a person of ordinary skill in the art would employ can be taken into account. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Indeed, as observed by the Court of Appeals for the Federal Circuit (“Federal Circuit”), “*KSR* expanded the sources of information for a properly flexible obviousness inquiry to include market forces; design incentives; the ‘interrelated teachings of multiple patents’; ‘any need or problem known in the field of endeavor at the time of invention and addressed by the patent’; and the background knowledge, creativity, and common sense of the person of ordinary skill.”

Perfect Web Techs., Inc. v. InfoUSA, Inc., 587 F.3d 1324, 1329 (Fed. Cir. 2009) (emphasis omitted).

Here, we discern that Patent Owner’s argument that neither POH nor James individually discloses the use of an autopilot to perform flight maneuvers based upon an aircraft’s receipt of a parachute deployment request, even if true, does not end the obviousness evaluation. That limited consideration of what references individually disclose does not adhere to the expansive consideration of obviousness contemplated by the law or properly consider what the combined teachings of the references would have suggested to those of ordinary skill in the art. *See In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991).

We are mindful of Patent Owner’s arguments challenging Petitioner’s proposed combination of POH and James, e.g., that the combination is unsafe, that the references teach away from the proposed combination, and that the combination is a product of hindsight. Those arguments are largely grounded in the premise that a person of ordinary skill in the art would have viewed the combination of POH and James proposed by Petitioner as presenting an aircraft that lacks adequate safety features, and thus would be undesirable. One such safety feature that Patent Owner characterizes is described in an embodiment of the ’474 patent is an “override interface,” that Patent Owner asserts could be “a second pull” of a parachute pull handle or electronic push button. *See, e.g.*, PO Resp. 9 (citing Ex 1001, 8:36–39, 8:59–62). As we observed in our Decision on Institution, however, an “override interface” is not recited in the challenged claims, nor do we discern that any such feature is intrinsically required by the claims. *See Dec. on Inst.* 21–22. Moreover, as we also noted, “in assessing obviousness, there

is no requirement that a particular combination of prior art teachings must produce something that is ‘preferred, or the most desirable[.]’” *Id.* at 22 (quoting *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004)). Instead, the inquiry is what the combined teachings would have suggested to a skilled artisan, even if that suggestion has some recognized undesirable characteristics.

We also are cognizant of Patent Owner’s contentions that programming an autopilot to perform the actions set forth in the claim requires “significant expertise,” can be “particularly challenging,” and is of “utmost complexity.” PO Resp. 32–33 (citing Dr. Bartone’s Declaration, Ex. 2019 ¶¶ 56–58.) Patent Owner also contends that use of an autopilot in emergency situations or scenarios would require a programmer “with intimate knowledge of the POH’s SR22 aircraft response to autopilot commands in such scenarios.” *Id.* (citing Ex. 2019 ¶ 58). Even if those contentions are true, notably absent from the record, including Dr. Bartone’s testimony, is any credible assertion that such programming is beyond the skill of a person of ordinary skill in the art, or that a skilled artisan would not have had intimate knowledge of POH’s SR22 autopilot commands. We also do not discern that the ’474 patent itself provides discussion of any particular complexities associated with programming an autopilot that would suggest challenges in that respect beyond the skill of one of ordinary skill in the art. Indeed, at oral argument when questioned by the panel as to where the ’474 patent describes the complex programming of the autopilot to achieve the claimed invention, Patent Owner’s counsel expressed such sentiments as “there’s not a lot of programming in the patent I’ll grant you that.” Tr. 47:10–11; *see id.* at 48–50. That the ’474 patent omits substantive

description of autopilot programming as unnecessary does not favor the implication that the programming is of such distinct complexity to be outside the skill of an ordinary skilled artisan.

Here, Petitioner points to POH's teachings of an aircraft equipped with a digital programmable autopilot, deploying a parachute at the request of an aircraft occupant, and the desirability of, for purposes of safety, initiating various flight maneuvers including, for instance, increasing the altitude and changing the attitude of the aircraft. *See, e.g.*, Pet. 16–21. Petitioner contends that a person of ordinary skill in the art would have understood that those maneuvers also include increasing the aircraft's pitch. *Id.* at 65 (citing Ex. 1003 ¶ 277). We find that contention persuasive based on record evidence, including the noted testimony of Mr. Hoffmann to that effect.

Petitioner additionally relies on James's teachings that emergency procedures may be commenced by either a pilot or an autopilot and includes “deploying an emergency recovery parachute” along with other actions such as “shutting off all engines, terminating all flight functions,” and activating visual and audio beacons. *Id.*; Ex. 1005, 18:28–41. With further recourse to the testimony of Mr. Hoffmann (*see, e.g.*, Ex. 1003 ¶¶ 115–127), Petitioner contends that “when implemented on an SR22, James' parachute deployment switch would be tailored to be executed in accordance with the SR22's flight laws and instructions for parachute deployment, including commands to pitch up, increase altitude, reduce engine power, and level wings.” Pet. 19 (citing Ex. 1003 ¶¶ 117–122). Petitioner also submits that “[i]t would have been obvious to a [person of ordinary skill in the art] to combine the POH's aircraft components, and instructions regarding manual

actions to be taken based on a decision to deploy a whole-aircraft ballistic parachute, with James' processor-based system for deploying a whole-aircraft parachute and automatically performing such actions.” *Id.* at 19–20 (citing Ex. 1003 ¶ 123). We find persuasive Petitioner's assessment of what a person of ordinary skill in the art would have taken from the combined teachings of POH and James.

Thus, for the reasons discussed above, we find persuasive, and adequately supported, Petitioner's assessment of what one of ordinary skill in the art would have taken from the combined teachings of the prior art in conjunction with an action or request to deploy an aircraft's parachute. Specifically, we conclude that a skilled artisan would have recognized that it is desirable to also maneuver the aircraft to, for instance, adjust altitude, attitude and pitch. Further, it follows readily from the evidence of record that a skilled artisan would have appreciated that a programmable autopilot may be configured to perform actions that are known to be performed by an autopilot, such as increasing an aircraft's pitch and deploying a parachute upon a request for such parachute deployment. Accordingly, we conclude that the requirements in claim 137 that an autopilot may facilitate or engage the actions of flight maneuvering and parachute deployment “based at least upon the receipt of the whole-aircraft ballistic parachute deployment request” would have been appreciated by a skilled artisan.

4. Objective Evidence of Non-Obviousness

Objective indicia of non-obviousness is a factor to be considered in evaluating obviousness. *See Graham*, 383 U.S. at 17–18. As noted above, Patent Owner argues that Petitioner copied the content of Patent Owner's '474 patent. Patent Owner bases that argument on the theories that after

Patent Owner showed its original '911 application and '365 patent to Petitioner, Petitioner proceeded to (1) incorporate disclosed material into its own aircraft designs, and (2) filed its own patent application that Patent Owner believes is the same invention as the '474 patent. PO Resp. 50–59; PO Sur-Reply 22–24. In support of its assertion of copying, Patent Owner relies on the Declaration testimony of Mr. Fleming (Ex. 2020). Specifically, Mr. Fleming testifies that on several occasions beginning in 2009 he sent letters, and also provided or presented copies of the '911 application and the '365 patent, to certain executives of Petitioner. *See, e.g.*, Ex. 2020 ¶¶ 2–9 (citing Exs. 2021–2023). Mr. Fleming further testifies that, in his view, Petitioner's aircraft product "Cirrus Vision Jet" (or SF50) infringes at least claims 137–139 of the '474 patent. *Id.* ¶ 12.

Petitioner contends that Patent Owner "provides no direct evidence of copying" and expresses that "Fleming's own subjective belief in his infringement allegations is not evidence." Pet. Reply 23. Petitioner also disputes that the parachute system of its SF50 jet is based on the '474 patent. Pet. Reply 24–25. In that regard, Petitioner contends that the SF50 parachute system includes a "hardware-based 'control box' to govern its parachute deployment process" that was "independently developed without reference to the '474 patent." *Id.* Petitioner also disputes that it pursued a patent on the "same invention" of the '474 patent. *Id.* at 25. To that end, Petitioner contends that its patent application No. 15/431,689 ("the '689

application”) was filed with claims all including a “control box component” and are distinguished from claims of the ’474 patent. *Id.*¹⁴

As determined by the Federal Circuit, “copying by a competitor may be a relevant consideration in the secondary factor analysis.” *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004). But, the Court also observed:

Not every competing product that arguably falls within the scope of a patent is evidence of copying. Otherwise every infringement suit would automatically confirm the nonobviousness of the patent. Rather, copying requires the replication of a specific product. This may be demonstrated either through internal documents, direct evidence such as disassembling a patented prototype, photographing its features, and using the photograph as a blueprint to build a virtually identical replica, or access to, and substantial similarity to, the patented product (as opposed to the patent).

Id. (internal citations omitted).

Here, Patent Owner does not offer credible, direct evidence that copying occurred. Instead, the bulk of the evidence offered by Patent Owner simply constitutes the testimony of the inventor of the ’474 patent, Mr. Fleming, that he showed his patent application to Petitioner and that, in his view, Petitioner then incorporated content of the ’474 patent into a commercial aircraft product and the ’689 patent application. As we did in the Decision on Institution (Dec. on Inst. 24–25), we again note that Petitioner contends in its “Answer to Counterclaim for Patent Infringement” (Ex. 1029) that it “lacks knowledge with regard to the truth or falsity of”

¹⁴ We discern that the ’689 application issued as U.S. Patent No. 10,118,707 B2 with twenty-five claims, all of which require the “control box component.” *See* Ex. 3002, 27:32–30:46.

whether it received either the '911 application of the '365 patent from Patent Owner. Ex. 1029, 4–7.

Patent Owner's position as to copying activity by Petitioner is little more than speculation that copying occurred. For instance, Patent Owner, in part, asks that we infer that Patent Owner presented the '911 application to an executive of Petitioner and that the executive stated he would present the application to Petitioner's engineering department. Based on that inference, Patent Owner contends that it is therefore "more likely than not" that the content of the '911 application was copied by that engineering department. *See* PO Sur-Reply 23. The record, however, provides little concrete basis on which to readily make such an inference. Rather, Patent Owner simply argues that such copying should be inferred because the record does not contain a declaration from the executive that he did not show the '911 application to the engineering department. We conclude that such inference is not adequately supported by the evidentiary record before us.

We also decline to take, on face value, Patent Owner's position, based largely on Mr. Fleming's own self-interested testimony, that a product corresponding to claims of Petitioner's '689 application infringes claims of the '474 patent. *See* PO Resp. 55–59. We do not discern that the record includes any meaningful infringement analysis in connection with a product of Petitioner. Additionally, although Patent Owner is of the view that claims of the '689 application are "the same" as those of the '474 patent, Patent Owner advances that view based on little more than Mr. Fleming's testimony that he believes they are the same. That is insufficient. Further, as Petitioner notes, difficulties with Patent Owner's position emerge in connection with the "control box component" feature that is a fixture of

claims of the '689 application but seemingly absent from claims of the '474 patent.

Accordingly, we conclude that the record before us does not present an adequately evidenced position of copying by Petitioner.

5. Conclusion—Claim 137

We have carefully considered the record before us, including the briefings from the parties, and the evidence underlying those briefings. On balance, having considered Petitioner's strong evidence of unpatentability and Patent Owner's limited evidence of copying, we conclude that Petitioner has shown by a preponderance of the evidence that claim 137 is unpatentable over the prior art.

G. Claims 138 and 139

Like claim 137, claims 138 and 139 are each drawn to an "aircraft" that includes most of the same features as claim 137. Where claims 138 and 139 differ lies in the type of sensor or sensors required and the action that the machine-readable instructions command the autopilot to accomplish in response to the request for parachute deployment. In claim 138, instead of a pitch sensor the recited sensor is a "roll sensor" and the commanded action is a reduction in aircraft roll. Ex. 1001, 54:52–55:16. Claim 139 requires each of a "pitch sensor" and a "roll sensor" and the commanded action is a change in the attitude of the aircraft. *Id.* at 55:17–56:25.

Petitioner accounts in the Petition for all the features of claims 138 and 139 in a similar manner as it did for claim 137. Pet. 66–68; *see also id.* at 16–21 ("Motivation to Combine the POH and James"). In particular, Petitioner contends that the prior art also accounts for a roll sensor and for

commanded action of an autopilot to reduce aircraft roll and change aircraft attitude based on a whole-aircraft ballistic parachute deployment request. Patent Owner does not offer any arguments to be applied to claims 138 and 139 apart from those discussed above with respect to claim 137.

For essentially the same reasons discussed above in connection with claim 137, we conclude that Petitioner has shown by a preponderance of evidence that claims 138 and 139 are not patentable over the prior art.

H. Motion to Amend

Patent Owner submits a proposed RMTA that seeks to non-contingently substitute claims 140–145 for claims 2, 3, 8, 10, 15, and 132, and to contingently substitute claims 146–148 for claims 137–139 upon a finding of the unpatentability of claims 137–139.¹⁵ As discussed above, we conclude that claims 137–139 are not patentable over the prior art of record. Accordingly, the contingency has manifested with respect to those claims. We, therefore, evaluate Patent Owner’s RMTA and its request for entry of substitute proposed claims 140–148 into the ’474 patent.

1. Applicable Law

In an *inter partes* review, amended claims are not added to a patent as of right, but rather must be proposed as a part of a motion to amend. 35 U.S.C. § 316(d). The Board must assess the patentability of proposed substitute claims “without placing the burden of persuasion on the patent owner.” *Aqua Prods., Inc. v. Matal*, 872 F.3d 1290, 1328 (Fed. Cir. 2017)

¹⁵ A listing of proposed substitute claims appears in Appendix A of the RMTA.

(en banc); see *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-001129, Paper 15 at 3–4 (PTAB Feb. 25, 2019) (precedential). Subsequent to the issuance of *Aqua Products*, the Federal Circuit issued a decision in *Bosch Automotive Service Solutions, LLC v. Matal*, 878 F.3d 1027 (Fed. Cir. 2017) (“*Bosch*”), as well as a follow-up Order amending that decision on rehearing. See *Bosch Auto. Serv. Sols., LLC v. Iancu*, No. 2015-1928 (Fed. Cir. Mar. 15, 2018) (Order on Petition for Panel Rehearing).

In accordance with *Aqua Products*, *Bosch*, and *Lectrosonics*, a patent owner does not bear the burden of persuasion to demonstrate the patentability of the substitute claims presented in the motion to amend. Rather, ordinarily, “the petitioner bears the burden of proving that the proposed amended claims are unpatentable by a preponderance of the evidence.” *Bosch*, 878 F.3d at 1040 (as amended on rehearing); see *Lectrosonics*, Paper 15 at 3–4. In determining whether a petitioner has proven unpatentability of the substitute claims, the Board focuses on “arguments and theories raised by the petitioner in its petition or opposition to the motion to amend.” *Nike, Inc. v. Adidas AG*, 955 F.3d 45, 51 (Fed. Cir. 2020).

Notwithstanding the foregoing, Patent Owner’s proposed substitute claims must meet the statutory requirements of 35 U.S.C. § 316(d) and the procedural requirements of 37 C.F.R. § 42.121. *Lectrosonics*, Paper 15 at 4–8. Accordingly, Patent Owner must demonstrate: (1) the amendment proposes a reasonable number of substitute claims; (2) the proposed claims are supported in the original disclosure (and any earlier filed disclosure for which the benefit of filing date is sought); (3) the amendment responds to a ground of unpatentability involved in the trial; and (4) the amendment does

not seek to enlarge the scope of the claims of the patent or introduce new subject matter. *See* 35 U.S.C. § 316(d); 37 C.F.R. § 42.121.

2. Statutory and Regulatory Requirements

For the reasons discussed below, we conclude that Patent Owner has not satisfied the statutory and regulatory requirements associated with filing a motion to amend. *See Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15, 4 (PTAB Feb. 25, 2019) (precedential); 35 U.S.C. § 316(d); 37 C.F.R. § 42.121.

a) Reasonable Number of Substitute Claims

Patent Owner proposes no more than 1 substitute claim for each challenged claim. *See* RMTA 1. Petitioner does not contend that Patent Owner offers an unreasonable number of substitute claims. We conclude that Patent Owner proposes a reasonable number of substitute claims. *See* 35 U.S.C. § 316(d)(1)(B).

b) Respond to a Ground of Unpatentability

A motion to amend must respond to a ground of unpatentability involved in the trial. 37 C.F.R. § 42.121(a)(2)(i). A revised motion to amend “must provide amendments, arguments, and/or evidence in a manner that is responsive to issues raised in the preliminary guidance (if requested) or the petitioner’s opposition to the” motion to amend and “may not include amendments, arguments, and/or evidence that are unrelated to issues raised in the preliminary guidance or the petitioner’s opposition to the” motion to amend. 84 Fed. Reg. 9497, 9501; Ex. 2037, 5. Patent Owner contends that

its RMTA responds to the ground of unpatentability proposed by Petitioner in its Opposition to the initial MTA because the RMTA adds substantive limitations that are not present in Petitioner's proposed prior art combination. RMTA 7.

Petitioner takes the view that the RMTA does not refer to the Board's Preliminary Guidance or Petitioner's Opposition and, because it proposes new claim limitations that are distinct from those presented in the initial MTA, the RMTA presents arguments that allegedly are unrelated to issues raised in the Preliminary Guidance and the Opposition to the MTA. Pet. Opp. to RMTA 5–6. Petitioner, thus, characterizes the RMTA as having been “improperly filed.” *Id.* at 6

Although Petitioner takes issue with the RMTA, we observe that Petitioner had opportunity to respond to the RMTA through the filing of its Opposition (Paper 49). We further do not conclude that the RMTA properly can be characterized as “unrelated” to issues raised in the Preliminary Guidance or Opposition to the MTA. That is so because, as Patent Owner contends, the RMTA does appear to attempt to distinguish the proposed substitute claims from Petitioner's proposed ground of unpatentability based on POH and James, albeit in a different manner than the MTA, by adding limitations to the original claims that the proposed substitute claims are intended to replace. *See* RMTA 7; PO Reply to Opp. to RMTA 2–4. Accordingly, we conclude that the RMTA responds to a ground of unpatentability.

c) Scope of Amended Claims

A revised motion to amend may not seek to enlarge the scope of the claims. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii). Patent Owner

contends that each of the proposed substitute claims 140–148 does not remove any limitation from the original claim that the substitute claims seek to replace, and instead only add limitations. RMTA 5–7. Petitioner does not argue that the proposed substitute claims enlarge the scope of the original claims. We determine that proposed substitute claims 140–148 do not enlarge the scope of claims 2, 3, 8, 10, 15, 132, and 137–139.

d) New Matter

A revised motion to amend may not seek to add new subject matter. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii). For the reasons set forth below, we conclude that the RMTA seeks to add new subject matter as a part of proposed substitute claims 140–148, and thus does not comply with the provisions of 35 U.S.C. § 316(d)(3) and 37 C.F.R. § 42.121(a)(2)(ii).

Each of the proposed independent substitute claims 140 and 141 is drawn to a “method performed by an aircraft.” RMTA A1–A2.¹⁶ Proposed substitute claims 145–148 are each drawn to an “aircraft.” *Id.* at A3–A11. Each of proposed substitute claims 140–148 introduces limitations that: (1) the activation interface “includes a pull-handle”; (2) the autopilot is “operable to increase aircraft altitude above ground” (claims 140, 141) or the autopilot is “operable to increase aircraft altitude” (claims 145–148); and (3) a “distributed processing system that includes a plurality of processors” (claims 140, 141) or a “distributed processing system that includes a plurality of processors including at least one of the one or more processors” (claims 145–148). *Id.* at A1, A2, A4–A10. Those proposed substitute

¹⁶ Proposed substitute claims 142–144 ultimately depend from proposed substitute claim 140.

claims further add the following “wherein” clause, which we reproduce as it appears in claim 140:¹⁷

wherein the aircraft is configured to select,^[18] using at least a portion of the distributed processing system, a procedure from two procedures, comprising:

(i) a first procedure that uses the autopilot to increase aircraft altitude if aircraft airspeed is greater than a reference airspeed, and

(ii) a second procedure that does not use the autopilot to increase aircraft altitude if aircraft airspeed is greater than the reference airspeed;

wherein the aircraft is configured to activate, using the at least a portion of the distributed processing system and based upon a pull of the pull hand, the selected procedure but not the unselected procedure.

Id. at Appendix A, A1, A2, A5, A7–A11.

Patent Owner contends that the ’911 application and ’365 patent provide written description support for all of the features of proposed substitute claims 140, 141, and 145–148, including the above-noted Procedural Selection Limitations. *Id.* at 8–19; A12–A34. As a part of its Appendix A, Patent Owner provides a table showing where Patent Owner believes the features of the claims of the proposed substitute claims are

¹⁷ Petitioner designates the wherein clause as it appears in each of proposed substitute claims 140–148 as the “Procedural Selection Limitations.” *See* Pet. Opp to RMTA 8. Patent Owner also uses that nomenclature in referring to the limitations of the noted wherein clause. *See* PO Rep. to Opp to RTMA 10. For convenience, we do the same.

¹⁸ Proposed substitute claims 140 and 142–145 use the phrase “configured to select[.]” Proposed substitute claims 141 and 147 use the phrase “capable of selecting.” Proposed substitute claim 146 uses the phrase “configured to selectively activate.” Proposed substitute claim 148 uses the phrase “capable of selectively activating.”

found in the '911 application and the '365 patent. We reproduce portions of that table below in connection with the above-noted Procedural Selection Limitations associated with proposed substitute claim 140:

Claim 140 (Substitute Claim For Claim 2)	Support in the '911 Application (Ex. 2027, Ex. 2028)	Support in the '365 Patent (Ex. 2029)
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<u>wherein the aircraft is configured to select, using at least a portion of the distributed processing system, a procedure from two procedures comprising:</u>	Figure 13 and pg. 12, ln. 15-pg. 13, ln. 2; pg. 14, lns. 13-22; and pg. 22, lns. 3-8.	Figure 13 and 8:15-40; 9:31-44; and 14:31-38.
<u>(i) a first procedure that uses the autopilot to increase aircraft altitude if aircraft airspeed is greater than a reference airspeed, and</u>	Figures 13 and 14 and pg. 12, ln. 15-pg. 13, ln. 2; pg. 14, lns. 13-17; pg. 15, lns. 1-7; pg. 16, lns. 12-25; and pg. 22, lns. 3-8.	Figures 13 and 14 and 8:15-40; 9:31-37; 9:58-67; 10:48-65; and 14:31-38.
<u>(ii) a second procedure that does not use the autopilot to increase aircraft altitude if aircraft airspeed is greater than the reference airspeed;</u>	Figures 13 and 14 and pg. 12, lns. 25-pg. 13, ln. 7; pg. 14, lns. 3-4; pg. 14, lns. 13-17; pg. 15, lns. 8-12; pg. 17, ln. 19-pg. 19, ln. 25; pg. 20, lns. 5-16; pg. 21, lns. 3-11; and pg. 22, lns. 3-8.	Figures 13 and 14 and 8:29-47; 9:17-19; 9:31-37; 10:1-6; 11:31-12:63; 13:11-28; 13:53-65; and 4:31-38.
<u>wherein the aircraft is configured to activate, using the at least a portion of the distributed processing system and based upon a pull of the pull-handle, the selected procedure but not the unselected procedure;</u>	Figures 13 and 14 and pg. 12, ln. 15-pg. 13, ln. 2; and pg. 14, lns. 13-22.	Figures 13 and 14 and 8:15-39; and 9:31-44.

Id. at A12–A13.

The table reproduced above identifies where Patent Owner believes various content of the '911 application and the '365 patent provide support for the pertinent claims features.¹⁹ We focus on the referenced content of the '911 application. *See* 37 C.F.R. § 42.121(b)(1) (explaining that the

¹⁹ The '911 application appears in the record as both Exhibit 2027 (with Figures 1–19) and Exhibit 2028 (without Figures but with line numbering). The '365 patent appears in the record as Exhibit 2029.

motion to amend must set forth the “support in the original disclosure of the patent for each claim that is added or amended”).

Patent Owner points to Figures 13 and 14 and various portions of the specification of the '911 application at pages 12–17 and 19–22 as providing support for the added features pertaining to a configuration of an aircraft to select, using a portion of a distributed processing system, a “procedure” from two procedures, one of which uses the autopilot to increase aircraft altitude and the other of which does not use the autopilot for that purpose. In both cases, the procedure is selected if the aircraft airspeed is greater than a reference airspeed.

Figure 13 is described as “a diagram of a system for increasing the safety of aircraft occupants” and is stated to show processor 405 that “is coupled to a number of aircraft devices 425–475.” Exs. 2027, 2028, 2:23, 26:18–19.²⁰ Figure 14 is described as “a flowchart of a method performed by the system of Figure 13.” *Id.* at 2:24. Neither Figure 13 nor Figure 14 depicts or suggests an aircraft’s configuration for a processor-based selection between two procedures when an aircraft’s airspeed is greater than a reference airspeed, or that such procedure selection is between use of an autopilot, or not, for increasing aircraft altitude. There is also no disclosure of the aircraft being configured to activate, via the distributed processing system, a selected procedure but not the un-selected procedure based on a pull of the pull-handle.

The portions of the '911 application cited by Patent Owner at page 12, line 15 through page 13, line 2 describe components of ballistic parachute

²⁰ We reference the page numbering for Exhibits 2027 and 2028 that appears at the very bottom right of those exhibits.

system 500 including whole-aircraft ballistic parachute 510 and activation interface 530 for the parachute that may be “a conventional pull-handle.” *Id.* at 12:15–21. That section also describes that the activation interface can generate data to send to processor 405 for the process “to determine if any actions need to be performed before and/or after the activation of the deployment of the ballistic parachute 510.” *Id.* at 12:21–25. Further described is “intelligence override interface 540” which is operable for immediate parachute deployment, where that override interface “could be a second pull of the above-discussed pull-handle, a separate pull-handle, or a button placed near the above-discussed pull-handle.” *Id.* at 12:25–13:2. There is no disclosure in the above-noted section of an aircraft’s configuration for selection between two procedures when an aircraft’s airspeed is greater than a reference airspeed, or that such procedure selection is between use of an autopilot, or not, for increasing aircraft altitude. There also is no disclosure of the aircraft being configured, using the distributed processing system, to activate a selected procedure but not the un-selected procedure based on a pull of the pull-handle.

The cited portions of the ’911 application at page 14, lines 13–22 generally describe that processor 405 may be provided with data indicating that a parachute activation request has been received and that the process could activate deployment of parachute 510. That portion also describes that processor 405 may receive a parachute activation request and “determine if an action needs to be performed before the activation of the ballistic parachute 510.” *Id.* at 14:18–22. Here, too, the above-noted cited portion does not describe an aircraft’s configuration for selection between two procedures when an aircraft’s airspeed is greater than a reference airspeed,

or that such procedure selection is between use of an autopilot, or not, for increasing aircraft altitude. That portion also lacks disclosure of an aircraft being configured, using the distributed processing system, to activate a selected procedure but not the un-selected procedure based on a pull of the pull-handle.

The cited portion of the '911 application at page 15, lines 1–7 generally sets forth an example “determination” that may be made by processor 405 as to whether an action needs to be performed before activation of parachute 510. The example determination described is whether the air speed of the aircraft needs to be decreased for safe deployment of the parachute. At page 15, lines 8–12, another example determination is whether the “reefing of the parachute needs to be controlled” based on aircraft speed and altitude. There is no discussion of an aircraft’s configuration for selection between two procedures when an aircraft’s airspeed is greater than a reference airspeed, or that such procedure selection is between use of an autopilot, or not, for increasing aircraft altitude.

The cited portion of the '911 application at page 16, lines 12–25 discloses that processor 405 may determine that a “pre-activation action” is needed prior to parachute deployment. That cited portion sets forth the following example:

[I]f the aircraft altitude needs to be increased, then the processor 405 could attempt to increase the aircraft’s altitude above the ground. Specifically, if the autopilot 445 is not engaged, then the processor 405 could engage the autopilot 445 and instruct the autopilot 445 to initiate a steep climb to rapidly increase the altitude of the aircraft. If the processor 405 has the ability to control the aircraft engine, then the processor 405 could also

instruct the engine to provide full power for a maximum rate climb.

Id. at 16:16–22.

The above-quoted portion describes a scenario in which, if the processor has determined that an aircraft's altitude needs to be increased, it may engage the autopilot and instruct an increase in altitude. Absent from that portion, however, is any disclosure that a processing system selects between two procedures that facilitate the aircraft's increase in altitude in different manners. Also absent is disclosure that one of the processor-based selected procedures accomplishes altitude increase without use of the autopilot.

The cited portions of the '911 application at page 17, line 18 through page 19, line 25 and page 20, lines 5–16 generally describe various exemplary “post activation action[s]” that may be performed by processor 405 including, for instance, extension of reefing control lines 925 by certain amounts, setting of a transponder mode to certain modes, activating an emergency locator transmitter 435, setting a transmit frequency of communication radio 440, and displaying instructions to aircraft occupants on display 420. None of that disclosure of post activation actions, however, describes processor-based selection between procedures to accomplish the increase in an aircraft's altitude when the aircraft's airspeed is greater than a reference airspeed, or that the selected procedure causes altitude increase without use of an autopilot.

The cited portions at page 21, lines 3–11 expound on the type of information that could be displayed to an occupant on display 420. There is no description or disclosure of an aircraft's configuration for selection

between two procedures when an aircraft's airspeed is greater than a reference airspeed, or that such procedure selection is between use of an autopilot or not for increasing aircraft altitude.

Lastly, the cited portion at page 22, lines 3–8 generally describe that the distributed processing system may perform earlier disclosed methods using processor 405 in conjunction with another processor included as a part of whole-aircraft ballistic parachute 500. None of that description pertains to an aircraft's configuration for selection between two procedures when an aircraft's airspeed is greater than a reference airspeed, or that such procedure selection is between use of an autopilot, or not, for increasing aircraft altitude.

We conclude that the above-discussed portions of the '911 application cited by Patent Owner do not provide support for the Procedural Selection Limitations appearing in each of proposed substitute claims 140–148.²¹ Accordingly, we conclude that Patent Owner's RMTA, in seeking to include the Procedural Selection Limitations as a part of the proposed substitute claims, violates the prohibition of adding new subject matter set forth in 35 U.S.C. § 316(d)(3) and 37 C.F.R. § 42.121(a)(2)(ii). That circumstance in and of itself warrants denial of entry of the Patent Owner's RMTA.

3. Patentability

For the reasons discussed below, we conclude that Petitioner, and the record as a whole, show by a preponderance of the evidence that proposed

²¹ We discern also that the corresponding portions of the '365 patent that Patent Owner cites in its RMTA are essentially the same, if not identical, to those of the '911 application.

substitute claims 140–148 are unpatentable. *See Lectrosonics*, Paper 15 at 4 (“[T]he burden of persuasion ordinarily will lie with the petitioner to show that any proposed substitute claims are unpatentable by a preponderance of the evidence.”).

a) Written Description

Arising under 35 U.S.C. § 112 is a requirement that an inventor provide sufficient written description to demonstrate that he has possession of the invention being claimed. “[T]he purpose of the written description requirement is to ‘ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor’s contribution to the field of art as described in the patent specification.’” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1353–54 (Fed. Cir. 2010) (en banc) (quoting *Reiffin v. Microsoft Corp.*, 214 F.3d 1342, 1345 (Fed. Cir. 2000)). As discussed above under section H.2.d. “New Matter,” with respect to the Procedural Selection Limitations of proposed substitute claims 140–148, the portions of the ’911 application cited by Patent Owner are inadequate to satisfy the written description requirement.

b) Indefiniteness

Petitioner argues that proposed substitute claims 140–148 are indefinite as they “do not describe and define the claimed invention or its scope with any specificity.” Pet. Opp. to RMTA 13 (citing *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120 (2014) and *In re Packard*, 751 F.3d 1307 (Fed. Cir. 2014)); *see also id.* at 13–15 (setting forth reasons why Petitioner believes the proposed substitute claims are indefinite); Pet. Sur-Reply to RMTA 8–10 (further assessing why Petitioner believes the

proposed substitute claims are indefinite). Patent Owner disagrees. PO Reply to Opp. to RMTA 8–9. For the reasons below, we conclude that the proposed substitute claims 140–148 are indefinite.

We evaluate indefiniteness in AIA proceedings of proposed substitute claims in a motion to amend using the same indefiniteness standard as used in federal courts and the ITC under *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898 (2014) and its progeny. See *Simpson Strong-Tie Co. v. Columbia Ins. Co.*, PGR2019-00063, Paper 14 at 13–16 (PTAB Mar. 12, 2020) (Institution Decision). Under *Nautilus*, “[a] patent is invalid for indefiniteness if its claims, read in light of the patent’s specification and prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus*, 572 U.S. at 898–99. “The definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable.” *Id.* at 910; see *Minerals Separation v. Hyde*, 242 U.S. 261, 270 (1916) (“[T]he certainty which the law requires in patents is not greater than is reasonable, having regard to their subject matter.”). Nevertheless, *Nautilus* mandates that a “patent must be precise enough to afford clear notice of what is claimed,” so as to avoid a “zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims.” *Nautilus*, 572 U.S. at 909–910. We also observe that in *Packard*, the Federal Circuit characterized the standard for indefiniteness as one that asks whether a “claim is ambiguous, vague, incoherent, opaque, or otherwise unclear in describing and defining the claimed invention.” See *Packard*, 751 F.3d at 1311. With the above-noted principles in mind, we turn to proposed substitute claims 140–148, and in particular, the Procedural Selection Limitations of those claims.

As discussed above, the Procedural Selection Limitations set forth that an aircraft is configured to, or capable of, selecting one procedure from two procedures using a portion of a distributed processing system. One of the procedures, the first one, “uses the autopilot to increase an aircraft’s altitude *if aircraft airspeed is greater than a reference airspeed.*” *See, e.g.,* RMTA A1 (emphasis added). The second procedure available for selection “does not use the autopilot to increase aircraft altitude *if aircraft airspeed is greater than the reference airspeed.*” *See, e.g., id.* (emphasis added). Thus, the “procedure” clauses specify, by their own words, that both procedures occur based on the same determined condition, i.e., the aircraft airspeed is greater than a reference speed. Aircraft airspeed, therefore, is not a basis for the selection of one procedure over the other. One would then expect that there are disclosed criteria to determine how the aircraft determines “to select, using at least a portion of the distributed processing system, a procedure from two procedures. . . .” *See, e.g., id.* But, review of the remaining language of the proposed substitute claims and the ’474 patent’s content is unavailing in establishing any such metric or criteria for determining how one of the procedures is selected over the other. We agree with Petitioner that there simply is no adequate basis in the context of the ’474 patent to ascertain what circumstance or scenario prompts the selection of one of the procedures over the other. *See* Pet. Opp to RMTA 13–15; Pet. Sur-Reply to RMTA 8–9.

Patent Owner states that “the specification teaches that the processor selects between the two recited procedures.” PO Reply to Opp. to RMTA, 5. As support for that statement, Patent Owner argues the following:

The specification teaches that the activation interface may cause the processor to perform an analysis such as evaluating the airspeed of the aircraft to determine if any actions need to be performed before activation of the deployment of the ballistic parachute. Ex. 2027 at 15:1–2, 16:23–25. The specification further teaches that the second pull of the pull-handle may activate the intelligence override feature. *Id.* at 13:1–2. According to the preferred embodiment, the system thereby selects one of the following two procedures based on the number of times the handle is pulled: i) perform an action and then deploy the parachute, or ii) immediately deploy the parachute. *Id.*

Id.

The cited portions of the specification at column 15, lines 1–2 and column 16 lines 23–25, however, simply convey that “[a]nother determination could be to determine if the airspeed of the aircraft needs to be decreased for a safe deployment of the ballistic parachute 510” and “[s]imilarly, if the airspeed of the aircraft exceeds the maximum parachute deployment airspeed, then the processor 405 could instruct the autopilot 445 to initiate a steep climb to rapidly decrease the airspeed of the aircraft.” Ex. 2028, 15:1–2, 16:23–25. As noted above, however, both procedures of the proposed substitute claims occur when airspeed is determined to be greater than a reference airspeed. It is not apparent how processor 405’s determination that airspeed needs to be reduced and a steep climb instituted constitutes a basis for selection of one of the procedures over the other.

Patent Owner also points to disclosure at column 13, lines 1–2 describing that an aircraft occupant may pull the pull-handle a second time as an intelligence override feature to provide immediate parachute deployment. We agree with Petitioner that it is not evident why the manual action of an occupant to pull a pull-handle a second time constitutes

selection, using a part of the distributed processing system, between two procedures to increase aircraft altitude. *See* Pet. Sur-Reply to RMTA 9–10.

In its Reply, Patent Owner contends that its claims are definite because there is no “requirement that a claim specify every possible criterion upon which a selection is made” PO Reply to Opp. to RMTA 8 (citing Ex. 2033 (Bartone Declaration), ¶¶ 84–85). The issue, however, is not disclosure of every possible criterion for making a selection. Instead, the issue is whether any criteria, in the context of the proposed substitute claims, is recognizable for determining which procedure is to be selected.

Dr. Bartone’s cited testimony provides little illumination on that issue as he testifies simply that the proposed substitute claim need not specify a “precise criteria” for a person ordinary skill in the art to understand that selection between the two procedures occurs. *See* Ex. 2033 ¶ 85. Yet, as discussed above, there is no discernable basis on this record for determining what criteria factor in or dictate how or why one procedure would be selected over the other. Patent Owner’s arguments do not undermine Petitioner’s persuasive showing that the proposed substitute claims are indefinite. *See* Pet. Opp. to RMTA 13–15; Pet. Sur-Reply to RMTA 8–10.

Accordingly, we determine that the proposed substitute claims are unclear and vague in describing the claimed invention and that the record does not apprise a skilled artisan with reasonably certainty as to the scope of the claimed invention. We conclude, therefore, that the proposed substitute claims are indefinite.

c) Prior Art Ground of Unpatentability

As discussed above, we conclude that Patent Owner’s RMTA is deficient in meeting the statutory and regulatory requirements associated

with filing a motion to amend because the RMTA introduces new matter, i.e., proposes substitute claims that do not comply with the written description requirement. We also conclude that the proposed substitute claims are indefinite. Those are sufficient reasons to deny entry of the RMTA. Thus, we conclude that it is unnecessary to also evaluate issues pertaining to patentability of the substitute claims over the prior art ground that has been proffered by Petitioner.

III. CONCLUSION²²

As noted above, Patent Owner disclaimed claims 135 and 136, and requests cancellation of claims 2, 3, 8, 10, 15, and 132. Furthermore, for the foregoing reasons, we conclude that Petitioner has met its burden to show by a preponderance of the evidence that claims 137–139 are unpatentable over POH and James. We also conclude that Patent Owner has not satisfied the statutory and regulatory requirements associated with filing a motion to amend. We further conclude that Petitioner has met its burden to show that proposed substitute claims are not patentable such that entry of those claims is not appropriate or warranted.

²² Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

In summary,

Claims Disclaimed:	135, 136
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Claims	35 U.S.C. §	References	Claims Shown Unpatentable	Claims Not Shown Unpatentable
137–139	103	POH, James	137–139	
Overall Outcome			137–139	

Motion to Amend Outcome	Claim(s)
Original Claims Cancelled by Amendment	2, 3, 8, 10, 15, 132
Substitute Claims Proposed in the Amendment	140–148
Substitute Claims: Motion to Amend Granted	
Substitute Claims: Motion to Amend Denied	140–148
Substitute Claims: Not Reached	

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Patent Owner has disclaimed claims 135 and 136;

FURTHER ORDERED that claims 2, 3, 8, 10, 15, and 132 are cancelled;

FURTHER ORDERED that Petitioner has shown by a preponderance of evidence that claims 137–139 of the '474 patent are unpatentable;

FURTHER ORDERED that Patent Owner's Revised Motion to Amend is *denied*; and

FURTHER ORDERED because this is a final written decision, the parties to this proceeding seeking judicial review of our Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2019-01566
Patent RE47,474 E

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