

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CIRRUS DESIGN CORPORATION,
Petitioner,

v.

HOYT AUGUSTUS FLEMING,
Patent Owner.

IPR2020-00762
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 Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background

Cirrus Design Corporation (“Petitioner” or “Cirrus”) filed a Petition (Paper 2, “Pet.”) to institute an *inter partes* review of claims 95–131 (“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
95–131	103 ²	POH, ³ James, ⁴ Hoffmann ⁵

Paper 19 (“Dec. on Inst.”).

Hoyt Augustus Fleming (“Patent Owner”) timely filed a Patent Owner Response (Paper 21, “PO Resp.”).⁶ Petitioner filed a Reply to Patent Owner

¹ The ’474 patent is a reissue of U.S. Patent No. 8,100,365 B2. See Ex. 1001, code (64).

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. 6,460,810 B2 issued Oct. 8, 2002 (Ex. 1005, “James”).

⁵ U.S. Patent No. 7,584,928 B2 issued Sep. 8, 2009 (Ex. 1006, “Hoffmann”).

⁶ In its Patent Owner Response, Patent Owner states that “Patent Owner recently filed a Disclaimer with the Patent Office that disclaims claim 125. Ex. 2005.” PO Resp. 2. We discern that Exhibit 2005 is a “Disclaimer in Patent Under 37 CFR 1.321(a)” and indicates that claim 125 has been disclaimed. Accordingly, that claim is no longer regarded as part of the ’474 patent and is no longer involved in this proceeding. See 35 U.S.C. § 253 (2018) (disclaimer of claims considered effective as if part of original patent); 37 C.F.R. § 42.107(e) (“No inter partes review will be instituted on

Response (Paper 24, “Pet. Reply”). Patent Owner filed a Sur-Reply (Paper 26, “PO Sur-Reply”). Oral argument was conducted on June 29, 2021. A transcript of the oral argument appears in the record. Paper 30.

For the reasons set forth below, we determine that Petitioner has shown, by a preponderance of the evidence, that all of the remaining challenged claims are unpatentable. *See* 35 U.S.C. § 316(e).

B. Related Matter

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. The parties also reference IPR2019-01566 (“the ’1566 IPR”), in which Petitioner challenged claims 2, 3, 8, 10, 15, 132 and 135–139 of the ’474 patent, and U.S. Patent Application Nos. 16/422,357 and 16/422,440, which are said to be continuations of the ’474 patent. Pet. 1; Paper 5, 2.⁷

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:

disclaimed claims.”). Thus, claims 95–124 and 126–131 are the remaining challenged claims.

⁷ In a Final Written Decision in the ’1566 IPR, we determined that Petitioner had shown by a preponderance of the evidence that claims 137–139 of the ’474 patent were unpatentable based on the combined teachings of POH and James. *See* Ex. 1054.

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:

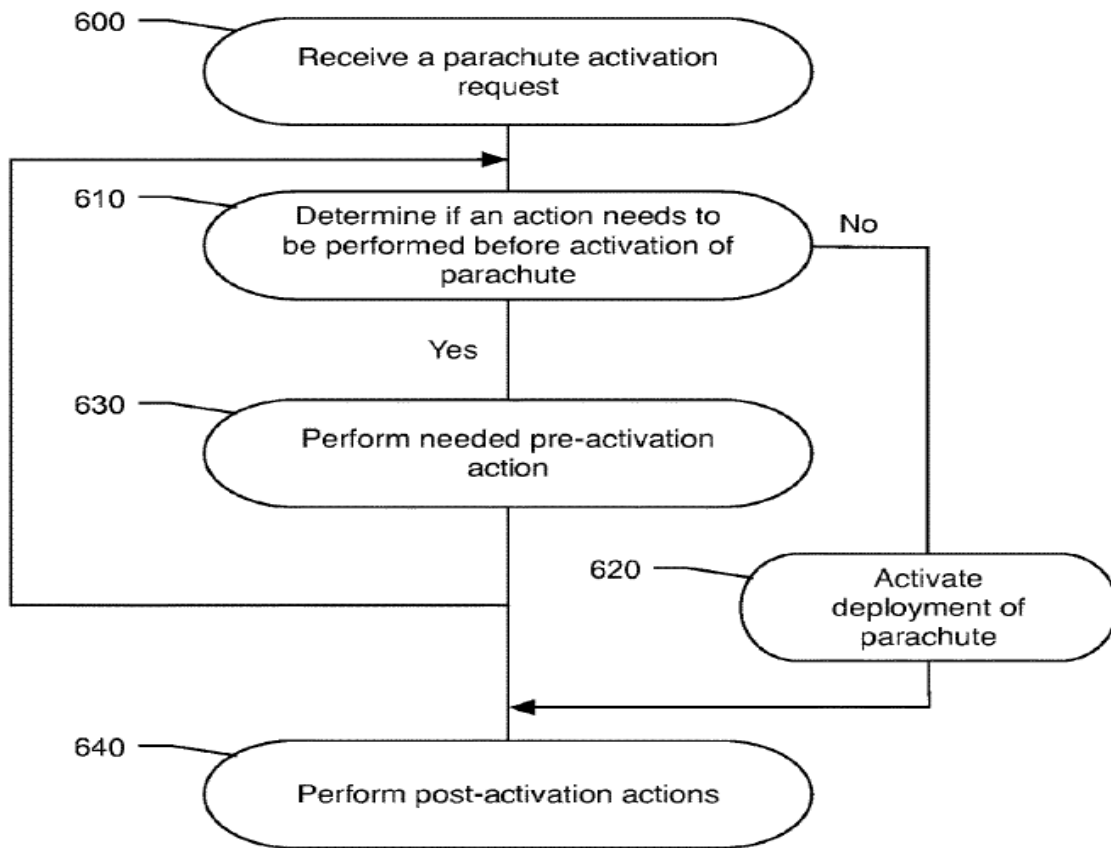


Figure 14

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, claims 95, 101, 107, 113, 119, 125–128, 130, and 131 are independent claims. Claims 96–100, 102–106, 108–112, 114–118, 120–124, and 129 ultimately depend from one of those dependent claims.

Claim 95 is illustrative and is reproduced below.

95. 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,
an airspeed sensor,
an altitude sensor,
a roll sensor,
an autopilot,
an aircraft engine,
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 airspeed sensor, at least one of the one or more processors is coupled to the altitude sensor, 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 autopilot, at least one of the one or more processors is coupled to the aircraft engine, 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 actions comprising:

(a) performing a first evaluation that produces a first output;

(b) based at least upon the first output being in a first state, then commanding deployment of the whole-aircraft ballistic parachute;

(c) based at least upon the first output being in a second state, then:

(i) commanding a reduction in engine power;

(ii) commanding a climb; and

(iii) commanding a decrease in aircraft roll;

(d) after commanding the reduction in engine power, then performing a second evaluation that produces a second output;

(e) based at least upon the second output being in a first state, then, commanding deployment of the whole-aircraft ballistic parachute.

Id. at 41:10–62.

II. ANALYSIS

A. Claim Construction

In an *inter partes* review proceeding for a petition filed on or after November 13, 2018, a patent 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).⁸ Under

⁸ The Petition in this proceeding was filed on March 27, 2020.

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 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)).

According to Petitioner, “[t]he bases for Petitioner’s invalidity ground do not turn on a specific construction of any of the Challenged Claims, as the prior art discloses and renders obvious the Challenged Claims even under the most narrow application of the ordinary and customary meaning.” Pet. 6. Patent Owner “respectfully submits that no claim terms need to be specially construed, as each should be accorded its ordinary and customary meaning, and none of the parties’ disputes turn on a disputed construction of any claim term.” PO Resp. 10.

We agree that no claim terms require express construction and that any differences raised by the parties as to claim scope can be resolved in the context of the analysis of the parties’ arguments as set forth below. *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) 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. 5 (citing the Hoffmann Declaration, Ex. 1003 ¶¶ 29–32). Patent Owner contends the following:

[A] person of ordinary skill would have had a degree in aerospace engineering, or an engineering degree coupled with experience evaluating and/or designing aircraft and/or avionics, on February 10, 2009, which is the date [Patent Owner] filed continuation-in-part Application No. 12/368,911. Ex. 1001 at 6:28–15:9 and bibliographical information. The person of ordinary skill also would be familiar with whole-aircraft ballistic parachute systems.

PO Resp. 9.

The parties are in apparent substantive agreement as to the level of ordinary skill in the art. We do not discern any material differences in the respective assessments of that level by the parties. For purposes of this Decision, we accept and adopt both assessments of the level of ordinary skill in the art and view them as equivalent to one another. 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 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”):

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.

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 excerpted portions of POH reproduced above describe operation of CAPS, including safety considerations for CAPS deployment such as “high deployment speed, low altitude, rough terrain or high wind conditions.” *Id.* POH also states that “the chances of 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. POH also discloses in deploying CAPS, “[r]educing airspeed allows minimum parachute loads and prevents structural overload and possible parachute failure.” *Id.* at 74. POH further discloses that “to minimize the chances of parachute entanglement and reduce aircraft oscillations under the parachute, the CAPS should be activated from a wings-level, upright attitude if at all possible.” *Id.* at 468.

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.

3. Overview of Hoffmann

Hoffmann is titled “Drogue Parachute Drag Force Actuated Programmable Controller to Generate an Event Trigger Signal.” Ex. 1006 code (54). Hoffmann's Abstract is reproduced below:

A parachute control system is actuated primarily by drogue parachute drag force. Drag force is used as a proxy for vehicle airspeed. The control system uses altitude and force sensors combined with a chronograph to determine the state of a deployed drogue parachute. It then compares the sensed condition with a condition defined by a preset altitude force, and time values. Once both altitude and drogue parachuting drag force are below certain maximum values and within predetermined time windows, an event trigger signal is generated.

Id. at code (57).

Hoffmann's Figure 1 is reproduced below:

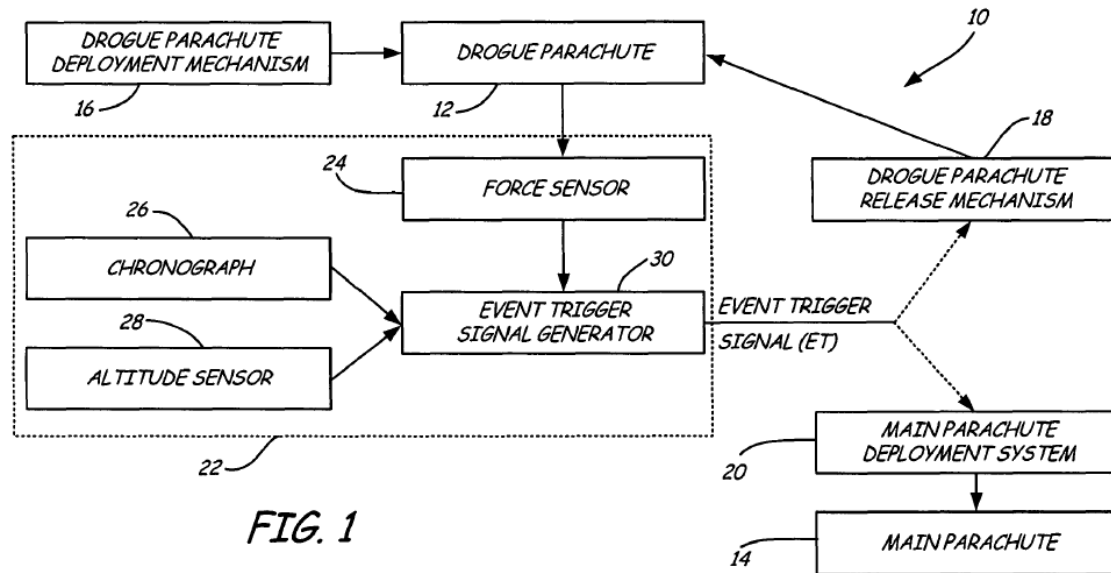


Figure 1 above “is a block diagram showing the components of a parachute system that includes a parachute control system.” *Id.* at 2:19–20. Parachute system 10 includes drogue parachute 12, main parachute 14, drogue parachute deployment mechanism 16, drogue parachute release mechanism 18, main parachute deployment mechanism 20, and control system 22. *Id.* at 2:30–34. Control system 22 includes force sensor 24, chronograph 26, altitude sensor 28, and event trigger signal generator 30. *Id.* at 2:34–36. Hoffmann describes that based on sensed outputs from the disclosed sensors of control system 22, “the event trigger signal generator can generate the event trigger signal at a desired airspeed without actually measuring airspeed.” *Id.* at 4:26–29. Hoffmann also sets forth the following:

Once the drogue parachute deployment mechanism 16 has been activated by an outside event, parachute system 10 is capable of functioning autonomously, requiring no information input or control from the host vehicle. Furthermore, system 10 enables main parachute 14 deployment, drogue parachute 12

release, or both at a specified airspeed without requiring actual measurement of airspeed.

Id. at 2:66–3:5.

E. Summary of Petitioner’s Contentions

Petitioner contends that the challenged claims of the ’474 patent are unpatentable and lays out in detail where it believes all the features of those claims reside in the prior art. Pet. 25–71. For example, in conjunction with claim 95, Petitioner cites to each of POH, James, and Hoffmann as disclosing the preamble recitation of an “aircraft.” Pet. 25. Petitioner also points to where the prior art discloses each of: (1) a “fuselage” (*id.*); (2) “a whole-aircraft parachute” including a “rocket” coupled to the fuselage (*id.*); (3) “an activation interface” (*id.* at 26); (4) various required sensors (*id.* at 26–28); (5) “an autopilot” (*id.* at 28); (6) “an aircraft engine” (*id.* at 29); (7) “one or more memories having machine-readable instructions, and one or more processors” that are configured to read and execute portion of those instructions (*id.* at 29–30); (8) the requirements of the processors being coupled to various claimed components (*id.* at 31–42); (9) requirements that the aircraft be configured to “perform[] an action” and deploy the whole-aircraft ballistic parachute based on a request (*id.* at 43–44); and (10) and performance of the actions required based on the machine-readable instructions (*id.* at 44–55). Petitioner makes similar assessments as those noted above for each of the other challenged claims. *See* Pet. 55–71.

Petitioner also offers an explanation for why a person of ordinary skill in the art would have had adequate reasons to combine the teachings of POH, James, and Hoffmann to arrive at the claimed invention. *Id.* at 20–25. Petitioner makes reference to 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,” that the “SR22 aircraft described in the POH is an aircraft equipped with a digital autopilot,” and that “Hoffmann discloses that its system may be integrated into a parachute system useful for aircraft rescue.” Pet. 20 (citing Ex. 1005, 6:23–28; Ex. 1007, 263–273; Ex. 1006 1:10–16; 5:30–32). Petitioner reasons that “[t]he SR22 aircraft discussed in the POH is therefore within the intended application for the SFD taught by James and the system taught by Hoffmann, and the combination of the POH with both James and Hoffmann represents only a routine implementation of James and Hoffmann within their intended applications.” *Id.* (citing Ex. 1003 (Hoffmann Declaration) ¶ 156).

Petitioner further reasons the following:

It would have been obvious to a POSA 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’ and Hoffmann’s processor-based system for deploying a whole-aircraft parachute and automatically performing such actions. Ex. 1003, ¶165. A POSA would have been motivated to incorporate the teachings of the POH regarding safe whole-aircraft ballistic parachute deployment into the programmable “deploy parachute” function of James, and to use James’ and Hoffmann’s processor-based parachute deployment as part of the aircraft’s autopilot system. *Id.*, ¶¶166-168. A POSA 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.*

Id. at 23.

Petitioner additionally explains that: (1) “combination of familiar elements using known methods would yield predictable results”; (2) “a POSA would have a reasonable expectation of success in making such a combination”; and (3) “a POSA would expect that combining James’ and Hoffmann’s programmable ‘deploy parachute’ functions with the POH’s aircraft, autopilot, and pilot instructions for CAPS deployment would successfully enable the aircraft and methods recited in the Challenged Claims.” *Id.* at 23–24 (citing Ex. 1003 ¶¶ 169–170).

F. Summary of Patent Owner’s Contentions

Patent Owner challenges Petitioner’s position as to the unpatentability of the remaining challenged claims (claims 95–124 and 126–131) based on POH, James, and Hoffmann. PO Resp. 25–64. Patent Owner centers its challenge on the features of independent claim 95 pertaining to machine readable-instructions and the actions of limitations (a)–(e) expressed by those instructions. Ex. 1001, 41:45–62. In that regard, Patent Owner takes the position that Petitioner has not accounted adequately in the prior art for certain aspects of those actions. *Id.* In taking that position, Patent Owner is also of the view that Petitioner’s proposed combination of the prior art is “vague, ambiguous, and indecipherable” (*id.* at 28) so as to lack the necessary particularity in identifying required claim features in the prior art. *Id.* at 28–36. Patent Owner also generally characterizes the proposed ground as unclear in conveying how the prior art is being modified in accounting for that required by the claims, specifically claim 95. *Id.* at 26–28.

Patent Owner’s contentions as to missing claim features in the prior art focus on (1) the features of “element (c),” which Patent Owner submits “requires three commanding actions based upon the output of the same

evaluation” (PO Resp. 36–39), and (2) the requirement of “machine-readable instructions” as a part of “elements (a) – (e)” (*id.* at 40–44). Also, in conjunction with its challenges pertaining to alleged missing claim features, Patent Owner characterizes the Petition as impermissibly relying on “gap-filler” grounded in “common sense” rather than record evidence to account for claim features. *See id.* at 44–64 (citing and discussing the Federal Circuit’s analysis in *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (2016) and *DSS Tech. Management, Inc. v. Apple Inc.*, 885 F.3d 1367, 1374 (Fed. Cir. 2018)).

Patent Owner generally emphasizes, or elaborates on, the above-summarized arguments as a part of its Patent Owner’s Sur-Reply. PO Sur-Reply 2–29. As a part of that elaboration, Patent Owner expresses the view that combining James’s teachings with those of POH changes POH’s principle of operation, and that POH “teaches away” from the Petition’s proposed combination of prior art. *Id.* at 8–13, 22–29.

G. Discussion—Ground of Unpatentability Based on POH, James, and Hoffmann

1. Claim 95

The general thrust of Petitioner’s proposed ground of unpatentability is premised on the theory that one of ordinary skill in the art would have automated the deployment of the parachute of an aircraft, such as that of POH, in view of the teachings of prior art techniques pertaining to automated parachute deployment, such as those of James and Hoffmann. Petitioner contends that a skilled artisan would have appreciated that the teachings of James and Hoffmann convey “processor based approaches for deploying a whole-aircraft parachute and automatically performing” various

actions required by the claims. *Id.* at 22 (citing Ex. 1003 ¶¶ 158–164). Such actions are said to include “decreasing the air speed of the aircraft,” “increasing the altitude of the aircraft above the ground,” “changing the attitude of the aircraft,” “activating an [emergency locator transmitter “ELT”] to transmit a signal,” and “automatically trigger[ing] whole aircraft parachute deployment based on either airspeed or a timeout feature using a programmable electronic microprocessor.” *Id.* at 22–23 (citing various portions of James and Hoffmann).

Patent Owner does not dispute that many of the features required by claim 95, such as a fuselage, parachute, action interface, engine, sensors, memories, and processors, are found in the prior art. Claim 95, however, includes the recitation of “machine readable instructions” that pertain to limitations (a)–(e), which are a focus of Patent Owner’s challenge to Petitioner’s unpatentability ground. Those limitations are reproduced below:

wherein the machine readable-instructions include the actions comprising:

(a) performing a first evaluation that produces a first output;

(b) based at least upon the first output being in a first state, then commanding deployment of the whole-aircraft ballistic parachute;

(c) based at least upon the first output being in a second state, then:

(i) commanding a reduction in engine power;

(ii) commanding a climb; and

(iii) commanding a decrease in aircraft roll;

(d) after commanding the reduction in engine power, then performing a second evaluation that produces a second output;

(e) based at least upon the second output being in a first state, then, commanding deployment of the whole-aircraft ballistic parachute.

Ex. 1001, 41:45–62.

Although claim 95 does not specify a particular “first output” or first and second “state[s],” both parties contend that an example of such output may be an aircraft’s “airspeed,” and the first and second states may be “airspeed below a threshold” and “airspeed above a threshold.” *See, e.g.,* PO Resp. 11; Pet. 44–47.¹¹ With respect to actions (a) and (b), Petitioner submits that “it would have been obvious to a POSA to incorporate the teachings of the POH and Hoffmann of deploying the parachute only if the airspeed, altitude, and/or attitude of an aircraft is in a condition for safe parachute deployment, into the pre-programmed and user-defined ‘deploy parachute’ function of James, to provide for safe and logical parachute deployment.” Pet. 47 (citing Ex. 1003 ¶ 253); *see id.* at 44–47 (citing Ex. 1003 ¶¶ 246–253). Petitioner takes a similar position with respect to steps (c)–(e). *See* Pet. 48–55 (citing Ex. 1003 ¶¶ 254–283). Petitioner also maintains that James’s switches and programmed software routines associated with its automated parachute deployment are “customizable” and that such customization would be implemented in the manner that accounts for the claims of the ’474 patent, specifically the above-noted actions. *See, e.g.,* Pet. 15, 22, 36, 39, 46, 48, 49, 51, 57, and 68.

In effect, and stated generally, Petitioner and Mr. Hoffmann take the position that the teachings of POH, James, and Hoffmann convey that an

¹¹ We discern that none of the challenged claims expressly recites any specific first outputs or first and second states. We also note that, as discussed more thoroughly below, the parties dispute whether the claims, specifically claim 95, require that a “first evaluation” be limited to the output of a singular flight parameter, e.g., only airspeed, or whether the “first evaluation” may result in an output that includes a combination of multiple parameters, e.g., airspeed, altitude, and attitude.

autopilot may act to, among other possible actions, evaluate whether various flight parameters of an aircraft's flight (e.g., air speed, altitude, or attitude) are at threshold levels, and: (1) if so, deploy the parachute; (2) if not, command other actions for the aircraft such as reduce engine power, climb, and decrease aircraft roll; and (3) perform rechecking of the flight parameters after reducing engine power to determine whether parachute deployment is now appropriate.

a) Element “(c)”

Patent Owner presents arguments challenging the proposed ground that centers on element “(c)” of claim 95. PO Resp. 36–39. Element (c) recites:

- (c) based at least upon the first output being in a second state, then:
 - (i) commanding a reduction in engine power;
 - (ii) commanding a climb; and
 - (iii) commanding a decrease in aircraft roll[.]

Ex. 1001, 41:52–56.

By way of context, the noted “first output” is determined as a part of element (a) which requires the performance of a “first evaluation that produces a first output.” Patent Owner asserts that element (c) requires that the three command actions (i), (ii), and (iii) be “based upon the output of the *same* evaluation” whereas, according to Patent Owner, the Petition addresses claim 95 through prior art teachings of performing the three actions “based upon the output of three *different* evaluations.” PO Resp. 36. It is apparent from Patent Owner's briefing that Patent Owner is of the view that the recited “evaluation” in element (a) produces an “output” that must be limited to a single parameter, such as air speed.

Petitioner does not agree with Patent Owner. In response to Patent Owner's above-noted contention, Petitioner contends that "the 'evaluation' of elements (a) and (b) in the POH/James/Hoffmann combination would be of airspeed, altitude, attitude, or a combination of these parameters" and that "an 'evaluation that produces a first output' could include whether airspeed is too high, whether altitude is too low, and/or whether wings are not level." Pet. Reply 20, 22 (citing Petition, 45–47). Petitioner further expresses the following

Cirrus's proposed combination of the POH, James, and Hoffmann also includes element (c) "based at least upon the first output being in a second state, then: (i) commanding a reduction in engine power; (ii) commanding a climb; and (iii) commanding a decrease in aircraft roll." The parameter(s) evaluated to trigger these maneuvers are the same as for elements (a) and (b). The POH teaches conditions required for safe parachute deployment, including: (1) airspeed below 133 KIAS (Ex. 1007, 467, 28, 41, 74; Ex. 1003, ¶¶133, 159, 167, 246, 254); (2) sufficient altitude (Ex. 1007, 72-73; Ex. 1003, ¶¶133, 159, 167, 261); and (3) level wings (Ex. 1007, 468, 281-282; Ex. 1003, ¶¶133, 159, 167, 270). When combined with James's instruction to customize its parachute deployment software so that it can be safely performed, these teachings result in machine-readable instructions to reduce engine power and pitch up with level wings if airspeed is too high, altitude is too low, and/or wings are not level. (Petition 47-52; Ex. 1003, ¶¶39-46, 254-260.)

Pet. Reply 20–21; *see* Pet. 47–52 (assessing the teachings of POH, James, and Hoffmann in accounting for the command action requirements of element (c)).

Thus, Petitioner points to disclosure in POH, and the Declaration testimony of Mr. Hoffmann, as to known conditions for safe parachute deployment including threshold levels for flight parameters such as airspeed, altitude, and wing level or attitude. As expressed in the quote above,

Petitioner and Mr. Hoffmann explain that a skilled artisan would have recognized that those parameters would have been parts of an evaluation to determine that parachute deployment can occur safely. It follows reasonably and logically that the necessary threshold levels for safe parachute deployment would constitute the “output” of any “evaluation” for deployment of a parachute.

Patent Owner argues that the claims should be read to limit a “first evaluation” to producing a “first output” that is only a singular flight parameter, to the exclusion of additional or all such parameters that are considered in connection with safe parachute deployment. We find Patent Owner’s argument unavailing. We do not discern that either the language of the claims themselves or the disclosure of the ’474 patent conveys such a restricted understanding of the recitations in the claims of “evaluation” and “output.”¹² Indeed, as noted by Petitioner (Pet. Reply 21–22), the ’474 patent suggests that pre-deployment assessment “could be combinations” of determinations as to aircraft flight parameters, such as aircraft altitude, airspeed, and heading. *See* Ex. 1001, 10:53–55. Patent Owner does not identify any disclosure in the ’474 patent that supports its view that the scope of claim 95 is limited to performance of the specified command actions based on a single parameter, such as aircraft airspeed.

¹² The written description of the ’474 patent does not use the term “evaluation.” The ’474 patent does include a single use of the term “output” in a different context than that used in claims, which provides little illumination as to the meaning of the term “output” as it appears in the claims. *See* Ex. 1001, 6:56–58 (“the processor 405 could output data, such as a discrete signal, that causes the retractable landing gear to extend or retract.”).

Moreover, like Petitioner, we observe that claim 95 recites that the three command actions are performed “based *at least* upon the first output being in a second state.” *See* Pet. Reply 22–23 (emphasis added). That the command actions expressly are performed based “at least” on the first output undermines Patent Owner’s view that only a single parameter can constitute the “output” that initiates the three command actions of element (c).

After careful consideration of Patent Owner’s contentions, we find that they do not accurately reflect what is encompassed by the scope of claim 95. Additionally, we find persuasive, and supported by record evidence, Petitioner’s reasoning that a person of ordinary skill in the art would have had adequate reason to combine the teachings of POH, James, and Hoffmann to arrive at, among other limitations, element (c). *See* Pet. 20–25. In so doing, we reject Patent Owner’s assertion that POH teaches away from a combination with either James or Hoffmann, or that such combination changes the principle of operation of POH so as to render the combination unviable. *See, e.g.*, PO Sur-Reply 8–13, 22–29.

With respect to Patent Owner’s contention that Petitioner’s proposed combination necessitates a change in the principle of operation of POH, Patent Owner urges the following: “POH’s principal of operation is, regardless of what the autopilot does, POH’s pilot has direct control of the aircraft via a control yoke at all times.” PO Sur-reply 11. According to Patent Owner, any combination of POH with James’s teachings pertaining to its autopilot system necessitates a configuration that “prohibits” the “direct control” of an aircraft. *Id.* at 11–12. In Patent Owner’s view, such is in conflict with POH’s teachings, which Patent Owner contends mandates a pilot “always directly control[s]” a “control yoke” based on disclosure in

POH that an “autopilot can be over-ridden by use of the control yoke.” *Id.* at 9–11 (quoting Ex. 1007, 94).

At the outset, we note that Patent Owner’s view on what a skilled artisan would have understood based on the combined teachings of POH and James is merely a narrative argument of Patent Owner’s counsel. Such attorney argument cannot take the place of evidence lacking in the record (*see, e.g., Estee Lauder Inc. v. L'Oreal, S.A.*, 129 F.3d 588, 595 (Fed. Cir. 1997)), and is contradicted by the Declaration of Mr. Hoffmann, in which he testifies as to what a skilled artisan would have appreciated from the combined teachings of the prior art, including POH and James. *See, e.g.,* Ex. 1003 ¶¶ 172–283.

In any event, each of James and POH provides for activation of parachute deployment for an aircraft as a safety measure in emergency situations. *See, e.g.,* Ex. 1007, 279; Ex. 1005, 10:14–19. POH discloses autopilot control of the aircraft, but provides that there may be a scenario in which the autopilot may be overridden through operation of a control yoke. *See, e.g.,* Ex. 1007, 94. James also describes that its SFD provides for programming of autopilots by both skilled and unskilled pilots that facilitates “more rapid and simplified means of programming autopilots” and “safer flight operations” that permit a pilot “to direct aircraft steering and function while under continuous autopilot control.” Ex. 1005, code (57). As a part of its disclosure, James describes that “either the pilot or optionally a preprogrammed SFD action may automatically initiate an emergency shut down procedure” that includes parachute deployment. *Id.* at 18:31–37.

On this record, we are not persuaded that the combination of POH’s teachings that includes a “control yoke” that can be employed to override an

autopilot in an emergency situation, with James's teachings of a more easily programmed autopilot that permits flight control by a pilot, and which also permits emergency procedures to be initiated either automatically or by a pilot, requires a change in the principle of operation of any of those teachings. We have considered Patent Owner's differing view as to the viability of the combination of POH and James and find it unavailing, in light of the evidence before us.

Patent Owner's "teaching away" arguments also are based on a theory of the incompatibility of the teachings of James and POH. Patent Owner premises that argument on a perceived dichotomy of activating a parachute "at any time" versus activating the parachute "only in limited scenarios." PO Sup-Reply 22. As an initial observation, it is not clear why Patent Owner regards teachings of the prior art, for instance James, as somehow constituting disclosure of parachute deployment "only in limited scenarios." Indeed, James's express disclosure, as is noted above, sets forth that emergency shutdown procedures including parachute deployment may be initiated either automatically or by a pilot. Why such disclosure constitutes deployment "only in limited scenarios" is left unexplained.

Furthermore, a reference does not "teach away" if it merely expresses a general preference for an alternative invention but does not "criticize, discredit, or otherwise discourage" investigation into the applicant's claimed invention. *DePuy Spine Inc. v. Medtronic Sofamor Danek*, 567 F.3d 1314, 1327 (Fed. Cir. 2009) (quoting *In re Fulton*, 391 F.3d 1195, 1201 (Fed Cir. 2004)). Here, Patent Owner does not explain how POH's disclosure, even if it might contemplate overriding an autopilot in some emergency circumstance, constitutes criticism, disparagement, or discouragement of a

disclosure, as in James, in which emergency procedures for an aircraft may be initiated automatically or by a pilot, even if such initiation may occur while an autopilot remains engaged.

Accordingly, having considered the parties' respective positions, we conclude that Petitioner accounts adequately in the combined teachings of POH, James, and Hoffmann for the requirements of element (c) of claim 95. *See* Pet. 47–52.

b) “Machine Readable Instructions”

Claim 95 recites the feature of one or more memories having “machine-readable instructions” stored thereon. Ex. 1001, 41:25–26. As noted above, those machine-readable instructions describe elements (a)–(e) to be performed. Petitioner contends that the combination of POH, James, and Hoffmann accounts for the requirement of machine-readable instructions that perform the noted elements (a)–(e). Pet. 29–30, 44–55. Patent Owner asserts that none of POH, James, or Hoffmann discloses or suggests the machine-readable instructions. PO Resp. 42–44; PO Sur-Reply 13–17. Patent Owner also contends that Petitioner has relied improperly on a “gap-filler” based on “common sense” rather than record evidence to account for the machine-readable instructions requirement. PO Resp. 44–64; PO Sur-Reply 17–29.

We observe that Patent Owner's argument that none of POH, James, or Hoffmann individually discloses the machine-readable instructions required by claim 95, even if true, does not end the obviousness evaluation. “The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art.” *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991). Furthermore, a central 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 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) (citations omitted). Patent Owner’s limited focus on the individual teachings of the above-noted references does not appropriately take into account the nature of the obviousness inquiry that is contemplated by the law.

In this case, Petitioner relies on the combined teachings of POH, James, and Hoffmann to account for all the features of claim 95, including the machine-readable instructions aspects. With support from Mr. Hoffmann’s testimony, Petitioner points to POH’s disclosure that it was well known in the art that prior to deployment of a parachute, each of the noted actions of reducing engine power, increasing altitude, and leveling the aircraft’s wings were standard operations. Pet. 47–55 (citing Ex. 1003 ¶¶ 39–44, 254–260, 270–277, 278–283; Ex. 1007, 72–73, 468). Petitioner also points to James’s disclosure of a “deploy parachute” switch that is stated to be “executed by the SFD and autopilot,” and which is “customizable by the user to take into account safe or unsafe airspeeds and limits, and ensure that the functions performed by the autopilot are safe and

logical.” Pet. 48 (citing Ex. 1003 ¶¶ 163, 258 and referencing prior discussion of James’s disclosure in the Petition (Ex. 1005, 7:25–55, 8:21–54, 13:6–12, 14:51–64, 15:27–40, 17:16–52)).

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. 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.

We also note that Mr. Hoffmann testifies that “James also discloses that the autopilot (54) includes one or more memories (computer memory) that have machine-readable instructions (software and flight control laws) stored thereon, and one or more processors (flight control computer) configured to read and execute a portion of the machine-readable instructions.” Ex. 1003 ¶ 203 (citing Ex. 1005, 7:25–55, 8:36–54, 12:49–13:12, 17:38–18:27, 20:4–5, Figs. 1, 2)). Mr. Hoffmann further testifies the following:

James discloses that the autopilot has Aircraft Directional and Functional Control Software (ADFCS), which contains software programs and the aircraft’s flight control laws. These software programs and flight control laws are contained within memories

of the autopilot's computers, and the autopilot's digital flight control system computer (processor) reads and executes portions of these software programs and flight control laws.

Id. at ¶ 204 (citing Ex. 1005, 8:36–44, 12:49–13:12 17:38–18:27).

We additionally are cognizant of James's unambiguous disclosure that the purpose of an autopilot is to reduce a 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 were known in the art.¹³ Although Patent Owner characterizes the claimed machine-readable instructions limitations of claim 95 as “particularly challenging” (*see, e.g.*, PO Resp., 48) and not “unusually simple” or “particularly straightforward” (*see, e.g., id.* at 48, 49), it is difficult to reconcile Patent Owner's apparent view that any such programming challenges would be beyond the skill of one of ordinary skill in the art. The '474 patent itself provides little, if any, discussion of any particular complexities associated with programming an autopilot that would suggest programming challenges beyond the skill of a skilled artisan. Indeed, at oral argument in connection with the prior '1566 IPR proceeding, when questioned by the panel as to where the '474 patent describes the complex programming of the autopilot to achieve the claimed invention,

¹³ We note that in the prior '1566 IPR proceeding involving the '474 patent, Patent Owner presented the testimony of Dr. Chris Gregory Bartone that POH describes a programmable autopilot as a part of an SR22 aircraft. *See, e.g.*, Ex. 1056 ¶ 46 (“POH describes the SR22 as having a programmable autopilot (Ex. 1007 at 266–269)”).

Patent Owner's counsel expressed such sentiments as "there's not a lot of programming in the patent I'll grant you that." Ex. 1058, 47:10–11; *see id.* at 47–50. That the '474 patent omits substantive description of autopilot programming suggests that the details of such would have been known to one of ordinary skill thereby rebutting Patent Owner's present argument that the recited machine readable instructions are not sufficiently straightforward to be implemented by a skilled artisan. *See* PO Resp. 48–49.

Moreover, like Petitioner (Pet. Reply 15–16), we question the significance of Patent Owner's contentions in connection with purported communications between Petitioner and the FAA in 1996. *See* PO Resp. 48–49. Even if Petitioner generally may have expressed in a certification application to the FAA that certain "deployment dynamics are challenging," and the FAA commented that "there are challenging technical issues" with such deployment, Patent Owner does not explain why such challenges necessarily would have been insurmountable by one of ordinary skill in the art. *See id.* (emphasis omitted). We also do not find particularly meaningful Patent Owner's representation that Petitioner sought to obtain patent protection for software in connection with parachute deployment. *See id.* at 50–51. Patent Owner does not explain adequately why Petitioner's own pursuit of patent protection in some capacity for some aspects of aircraft parachute deployment suggests the non-obviousness of claims of the '474 patent. We also share Petitioner's view that the prior art references cited by Patent Owner pertaining to flight management systems (PO Resp. 51–52) do not provide persuasive support for the premise that any programming considerations or challenges concerning the machine-readable instructions of

claim 95, or any remaining challenged claim, would have been beyond the skill of one of ordinary skill in the art. *See* Pet. Reply 15–16.

Furthermore, we observe that the parties are in substantive agreement as to the skill level of an ordinary skilled artisan, and that such person has (1) “a degree in aerospace engineering, or would have had an engineering degree coupled with experience evaluating and/or designing aircraft and/or avionics,” and (2) familiarity with ballistic parachute systems. *See* PO Resp. 9; Pet. 5. We agree with Petitioner that the record reflects that a person of ordinary skill in the art “would surely be familiar with how to program and use an autopilot to prepare an aircraft for parachute deployment.” Pet. Reply 14 (citing Ex. 1003, ¶¶ 58–64). For instance, we credit Mr. Hoffmann’s testimony that a skilled artisan would have well understood that “in combining the teachings of the POH with James and Hoffmann, it would have been obvious to add such machine-readable instructions to the processors and memories disclosed in the POH, which would have required only routine software programming.” *See* Ex. 1003, ¶ 207.

We are mindful of Patent Owner’s discussion of the requirements of *Arendi* and *DSS Tech. Mgmt.* *See* PO Resp. 44–64. Although that discussion is lengthy, it is generally rooted in the postulation that Petitioner relied on a “gap filler” and “common sense” to account for the “machine readable instructions” required by claim 95 rather than pointing to evidence of record that gives rise to those machine readable instructions. For the reasons discussed above, we are not persuaded that Patent Owner’s postulation is correct and conclude that Petitioner does not improperly rely on common sense, but instead adequately shows how the required “machine

readable instructions” are accounted for by the prior art. *See, e.g.*, Pet. 44–54.

Accordingly, for the foregoing reasons, we conclude that the record before us establishes adequately that Petitioner has accounted for the machine-readable instructions that are included as a part of claim 95.

c) Adequacy and Particularity of the Proposed Obviousness Grounds

Patent Owner generally takes issue with the Petition’s approach to obviousness on theories that (1) Petitioner “fails to allege a *prima facie* case of obviousness” (PO Resp. 26–28; PO Sur-reply 2–4), and (2) the Petition “lacks the particularity required by 35 U.S.C. § 312(a)(3)” (PO Resp. 28–36; PO Sur-reply 4–5). We do not find either theory persuasive.

With respect to theory (1), the basis for that theory is that, although Petitioner identified elements (a) and (b) of claim 95 as arising from the teachings of James, the Petition is deficient in not describing how “*the base reference POH, could be or would be modified* to incorporate the machine-readable instructions of elements (a) and (b).” PO Resp. 27 (emphasis in original).¹⁴ Patent Owner’s argument appears conditioned on reasoning that a ground of unpatentability must identify a “base reference” and demonstrate how other teachings modify that “base reference.” *See, e.g., id.* at 27–28. Patent Owner attempts to support its argument through citation to multiple cases from the Federal Circuit expressing that the Board is not free to adopt or raise arguments or grounds that were not set forth in the Petition. *Id.*

¹⁴ We do not discern that Patent Owner disputes that elements (a) and (b) are present in James. We note that the Petitioner provides persuasive discussion of how those elements (a) and (b) are found in the prior art. *See* Pet. 44–47.

Patent Owner's arguments are misplaced. In considering a proposed ground of obviousness, there is no requirement that a prior art reference must be designated as "base reference." Rather, the "[t]he test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art." *In re Young*, 927 at 591. Furthermore, what a reference teaches or suggests is taken "in the context of the knowledge, skill and reasoning ability of a skilled artisan." *Syntex (U.S.A) LLC v. Apotex, Inc.*, 407 F.3d 1371, 1380 (Fed. Cir. 2005). We have applied these principles in our analysis here and do not rely on arguments or grounds not raised in the Petition

With respect to theory (2), Patent Owner first contends that "Petitioner's argument for claim element (c) lacks the particularity required by 35 U.S.C. § 312(a)(3) because it is premised on vague, ambiguous, and indecipherable allegations." *See, e.g.*, PO Resp. 28. The contention is apparently based on language in the Petition pertaining to James's disclosure of its "sixth switch (77)" and SFD as a part of James's parachute deployment description. *See, e.g.*, PO Resp. 28–36. That is, Patent Owner points to the Petition's use of different terminology such as "deploy parachute switch," "deploy parachute switch command," "deploy parachute function, and "processor-based parachute deployment switch" in assessing and applying the teachings of the James's disclosure. *See* PO Resp. 30–33. Petitioner, on the other hand, contends that "the Petition is clear that these terms refer to James's parachute deployment switch and related software commands to the autopilot." Pet. Reply 5 (citing Pet. 12–15, 48; Ex. 1003 ¶¶ 144–146, 161–169).

In our review of the Petition, and the record as a whole, we are not persuaded that Petitioner's discussion of, and reliance on, James's teachings as to its parachute deployment switch structure and the software associated with the autopilot is ambiguous or unclear so as to demonstrate failure to comply with the particularity requirement governed by § 312(a)(3). In that respect, we are satisfied that Petitioner, supported by the testimony of Mr. Hoffmann, makes its case in a manner that is understandable.

As to theory (2), Patent Owner additionally connects its lack of particularity positions to the postulation that the combined teachings of POH and James "radically change the principle of operation of POH." PO Resp. 33–35. For the reasons discussed above, we are not persuaded that Patent Owner's argument has merit.

Lastly, Patent Owner takes issue with statements in the Petition referring to "airspeed, altitude, **and/or** attitude" of an aircraft. PO Resp. 35–36 (citing Pet. 44–47). According to Patent Owner, the use of the phrase "and/or" gives rise to "14 permutations of alleged teachings" and thus, fails, to present argument of sufficient particularity. *Id.* Based on that style of presentation, Patent Owner expresses that "institution should be denied" because the Petition is "vague and ambiguous." *Id.* (citing *Adaptics Ltd. v. Perfect Co.*, IPR2018-01596, Paper 20 at 21–23 (PTAB Mar. 6, 2019) (informative)).

Initially, we note that the *Adaptics* authority cited by Patent Owner is inapt to the circumstances here. In *Adaptics*, the term "and/or" was used in connection with as many as ten prior art references, as well as in conjunction with additional statements of "or" and "in further view of each other" pertaining to the references. *See Adaptics Ltd.*, Paper 20 at 9. The result

was a voluminous and near indeterminable number of proposed grounds. That is not the situation here. Although the use of “and/or” in connection with more than one listed item does give rise to identifying more than one of those items, there is no strict prohibition on the use of “and/or” as a part of a Petition. Here, we conclude that the Petition’s reference, collectively (“and”) or alternatively (“or”), to three flight characteristics, i.e., airspeed, altitude, and attitude, is not vague and is consistent with how those flight characteristics are referenced and discussed by Petitioner in accounting for the command actions of claim 95’s element (c).

d) Conclusion—Claim 95

We have considered the respective positions of the parties as to the patentability of claim 95 in light of the evidence of record. In doing so, we have assessed the Petition, Petitioner’s subsequent filings, and the underlying evidence supporting that Petition. We have also assessed all of Patent Owner’s filings challenging the Petition, and all the arguments made as a part of that challenge. For the reasons set forth above, we conclude that Petitioner has met its burden to show that claim 95 is unpatentable based on a preponderance of the evidence.

2. Claims 96–124 and 126–131

The Petition provides a detailed assessment of claims 96–124 and 126–131, with references to the Petition’s analysis of claim 95, disclosures in each of POH, James, and Hoffmann, and the declaration testimony of Mr. Hoffmann. Pet. 55–71. Patent Owner does not present any separate arguments that are distinct to claims 96–124 and 126–131. Rather, Patent Owner generally is of the view its alleged deficiencies in the Petition with

respect to claim 95 are also applicable to claims 96–124 and 126–131. *See, e.g.*, PO Resp. 28 (“As Cirrus relies on its claim 95 analysis for all of the challenged claims, Cirrus’ Petition fails to allege a *prima facie* case for any challenged claim.”). As discussed above, we are not persuaded that the Petition is deficient in establishing by a preponderance of the evidence that claim 95 is unpatentable. Having considered the record at hand, we are also not persuaded that the Petition is deficient in that respect in connection with claims 96–124 and 126–131. We conclude that Petitioner has also shown that those claims are also unpatentable based on a preponderance of the evidence.

III. CONCLUSION¹⁵

For the foregoing reasons, we conclude that Petitioner has met its burden to show by a preponderance of the evidence that claims 95–124 and 126–131— i.e., the claims remaining in this proceeding after Patent Owner’s

¹⁵ 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).

statutory disclaimer of claim 125 (Ex. 2005) (*see supra*, fn.6)—are unpatentable based on the teachings of POH, James, and Hoffmann.

In summary,

Claims	35 U.S.C. §	References	Claims Shown Unpatentable	Claims Not Shown Unpatentable
95–124, 126–131	103	POH, James, Hoffmann	95–124, 126– 131	
Overall Outcome			95–124, 126– 131	

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has shown by a preponderance of evidence that claims 95–124 and 126–131 of the '474 patent are unpatentable; 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.

IPR2020-00762
Patent RE47,474 E

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