In the United States Court of Federal Claims

No. 12-85 C
Filed: November 24, 2015

ADVANCED AEROSPACE TECHNOLOGIES, INC., Plaintiff, v. THE UNITED STATES, Defendant, and THE BOEING COMPANY, and INSITU, INC., Third-Party Defendants.	Indefiniteness; Intrinsic Evidence; Jurisdiction Over Patent Claims Against The United States, 28 U.S.C. § 1498(a); The Patent Act of 1952, 35 U.S.C. § 1 *et seq.*, 35 U.S.C. § 100 ("Definitions"), 35 U.S.C. § 112(a)-(b), (f) ("Specification"), 35 U.S.C. § 271 ("Infringement"), 35 U.S.C. § 281 ("Remedy for infringement of patent"), 35 U.S.C. § 371 ("Pending Patent Applications at the USPTO Under the Patent Cooperation Treaty"); Person of Ordinary Skill in the Art; Rules of the United States Court of Federal Claims ("RCFC") RCFC 14 ("Third-Party Practice"), RCFC 24 ("Intervention").

Craig S. King, Arent Fox LLP, Washington, D.C., Counsel for Plaintiff.

Benjamin Speake Richards, United States Department of Justice, Civil Division, Washington, D.C., Counsel for the Government.

Scott Michael McCaleb, Wiley Rein, LLP, Washington, D.C., Counsel for Third-Party Defendants.

MEMORANDUM OPINION AND ORDER RULING ON INDEFINITENESS ASSERTED REGARDING CERTAIN CLAIM TERMS IN UNITED STATES PATENT NO. 6,874,729, UNITED STATES PATENT NO. 7,097,137, UNITED STATES PATENT NO. 8,167,242, UNITED STATES PATENT NO. 8,517,306

BRADEN, *Judge*.

To facilitate review of this Memorandum Opinion And Order Ruling On Indefiniteness Asserted Regarding Claim Terms In United States Patent Nos. 6,874,729, 7,097,137, 8,167,242, 8,517,306, and 8,567,718, the court has provided the following outline:

I. THE PATENTS AT ISSUE.[1]

On July 23, 1999, William R. McDonnell filed a provisional patent application: "Launch and Recovery System for Unmanned Aerial Vehicles." 3rd Am. Compl. ¶ 25. On July 24, 2000, Mr. McDonnell also filed a Patent Cooperation Treaty patent application ("PCT No. US00/20099"), claiming priority to the provisional application filed on July 23, 1999. 3rd Am. Compl. Ex. A.

On January 23, 2002, pursuant to 35 U.S.C. § 371,[2] Mr. McDonnell entered the national stage of the PCT No. US00/20099 application that issued on April 5, 2005 as U.S. Patent No. 6,874,729 ("the '729 patent"). 3rd Am. Compl. ¶ 25; *see also* 3rd Am. Compl. Ex. A ('729 patent). Four additional patents followed from the '729 patent.

On January 9, 2004, Mr. McDonnell filed a divisional application[3] of the '729 patent, "Launch and Recovery System for Unmanned Aerial Vehicles," that issued on August 29, 2006 as U.S. Patent No. 7,097,137 ("the '137 patent"). 3rd Am. Compl. Ex. B ('137 patent). On August 28, 2006, Mr. McDonnell also filed a divisional application of the '137 patent, "Launch and Recovery System for Unmanned Aerial Vehicles," issued on August 27, 2013 as U.S. Patent No. 8,517,306 ("the '306 patent"). 3rd Am. Compl. Ex. D ('306 patent).

On September 29, 2010, Mr. McDonnell filed another divisional application of the '306 patent that issued on May 1, 2012 as U.S. Patent No. 8,167,242 ("the '242 patent"). 3rd Am. Compl. Ex. C ('242 patent). On March 4, 2013, Mr. McDonnell also filed a divisional application of the '306 patent that issued on October 29, 2013, as U.S. Patent No. 8,567,718 ("the '718 patent"). 3rd Am. Compl. Ex. E ('718 patent).

Thereafter, on some unspecified date, Mr. McDonnell assigned all "rights, title, and interest" in the aforementioned patents to Advanced Aerospace Technologies, Inc. ("AATI" or "Plaintiff"), of which Mr. McDonnell is the President and sole owner. 3rd Am. Compl. ¶¶ 2, 5.[4]

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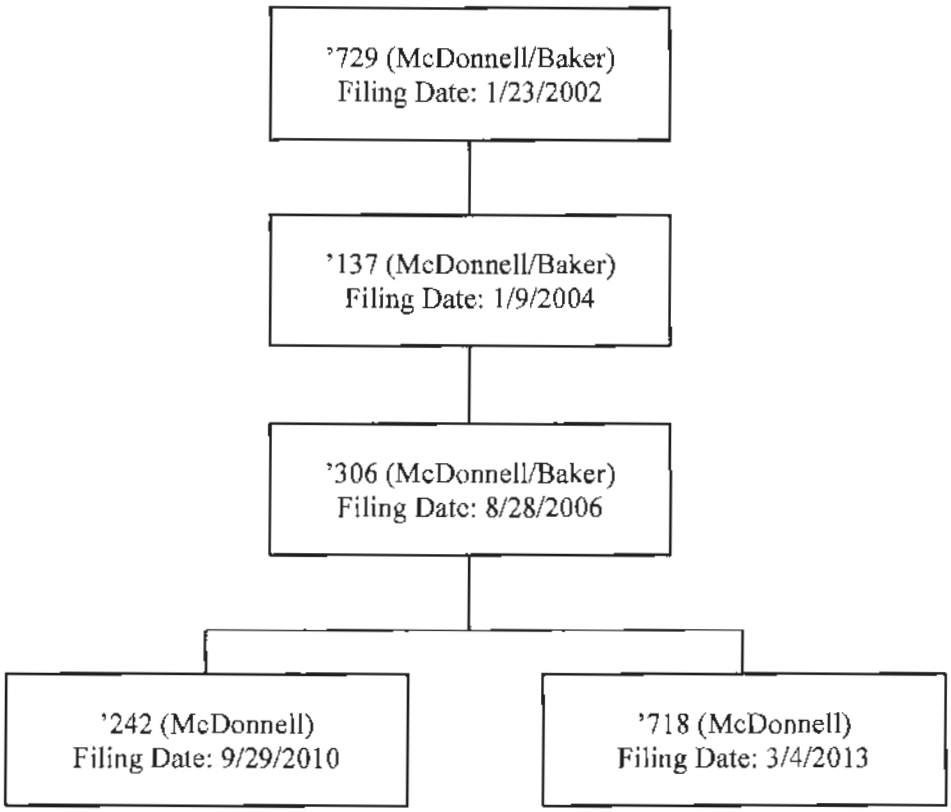
[1] The facts cited and discussed herein were derived from: the patents referenced in AATI's Third Amended Complaint ("3rd Am. Compl."); the Government's and Boeing's Answers to the Third Amended Complaint ("Gov't Ans." and "Boeing Ans."); and AATI's Claim Charts And Proposed Claim Construction Statement ("AATI Claim Charts").

[2] Section § 371 of the Patent Act governs the processing of patent applications at the USPTO under the Patent Cooperation Treaty. *See* 35 U.S.C. § 371.

[3] A divisional application is "[a] later application for an independent or distinct invention, carved out of a pending application and disclosing and claiming only subject matter disclosed in the earlier or parent application[.]" MANUAL OF PATENT EXAMINING PROCEDURE § 201.06 (9th ed. Mar. 2014) ("MPEP"); *see also* MPEP § 211.05 (explaining that the "parent application" is the "earlier-filed nonprovisional application or provisional application for which benefit is claimed").

[4] "[T]he prosecution histories of the '137 and '729 patents contain petitions for correction of inventorship, dated May 15, 2008, and certificates of correction, dated August 24, 2010 and

The following diagram shows the chronology and relationship among these patents:



II. PROCEDURAL HISTORY.

On February 8, 2012, AATI filed a Complaint in the United States Court of Federal Claims, alleging that Insitu, Inc. ("Institu") and The Boeing Company ("Boeing") infringed the '729 and '137 patents with the Government's authorization and consent.[5]

February 16, 2010, that designate Charles H. Baker of Union, Missouri as a co-inventor of the '137 and '729 [p]atents." Boeing Ans. ¶ 5.

[5] On February 9, 2012, AATI also filed a Complaint for willful patent infringement in the United States District Court for the Eastern District of Missouri, pursuant to 35 U.S.C. § 1 *et seq.*, that was assigned to the Honorable Rodney W. Sippel. That Complaint included six counts: Count I alleged direct infringement of U.S. Patent No. 6,874,729 by Insitu and Boeing; Count II alleged inducement of infringement of U.S. Patent No. 6,874,729 by Insitu; Count III alleged contributory infringement of U.S. Patent No. 6,874,729 by Insitu; Count IV alleged direct infringement of U.S. Patent No. 7,097,137 by Insitu and Boeing; Count V alleged inducement of infringement of U.S. Patent No. 7,097,137 by Insitu; and Count VI alleged contributory infringement of U.S. Patent No. 7,097,137 by Insitu. Compl. ¶¶ 41–72, *Advanced Aerospace Techs., Inc. v. Boeing Co.* (No. 4:12–cv–226), Dkt. No. 1. On April 18, 2012, Boeing filed a Motion To Stay. On July 9, 2012, the United States District Court for the Eastern District of Missouri granted that motion.

On March 28, 2014, the parties submitted a Joint Claim Construction Submission ("JBR"). On April 7–8, 2014, the court held a Claim Construction Hearing.

On October 10, 2014, AATI, the Government, and Boeing each filed Post-Hearing Markman Briefs ("AATI PHMB," "Gov't PHMB," and "Boeing PHMB"). Boeing also attached an expert Declaration from Dr. R. John Hansman ("Hansman Decl.").[6] AATI's October 10, 2014 brief addressed claim construction generally, whereas the Government's and Boeing's October 10, 2014 briefs specifically addressed indefiniteness. On October 24, 2014, the court convened a telephone status conference and informed the parties that it would address claim construction prior to adjudicating indefiniteness issues.

On July 29, 2015, the court issued a Memorandum Opinion And Order Construing Certain Claims of United States Patent No. 6,874,729, United States Patent No. 7,097,137, United States Patent No. 8,167,242, United States Patent No. 8,517,306, And United States Patent No. 8,567,718. *See Advanced Aerospace Technologies, Inc. v. United States*, 122 Fed. Cl. 445 (2015).

On August 28, 2015, the Government filed a Notice Of The Terms Challenged As Indefinite. On August 31, 2015, Boeing also filed a Notice Regarding Indefinite Claims, identifying the claim terms or phrases that it considered indefinite. That same day, AATI filed a Notice Regarding Indefinite Claims (AATI 8/31/15 Notice). On September 30, 2015 AATI also filed a Response ("AATI Resp.") to the Government's August 28, 2015 Notice, together with appendices ("AATI Resp. A1-1 – A11-4") and the September 30, 2015, Declaration of Dr. Duncan Cumming ("Cumming Decl.").[7]

On October 29, 2015, the court convened oral argument to address the issue of the indefiniteness of certain claim terms in the relevant patents ("10/29/15 TR 1–69").

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[6] Boeing's expert, Dr. R. John Hansman, is the T. Wilson Professor of Aeronautics & Astronautics at the Massachusetts Institute of Technology ("M.I.T.") and Director of the M.I.T. International Center for Air Transportation. Hansman Decl. ¶ 2. Dr. Hansman "received [his] A.B degree in physics from Cornell University in 1976 . . . [his] S.M. degree in physics from [M.I.T.] in 1980" and "Ph.D. in Physics, Meteorology, Aeronautics & Astronautics, Electrical Engineering in 1982" also from M.I.T. Hansman Decl. ¶¶ 3–4.

[7] AATI's expert, Dr. Duncan C. Cumming, is the Principal in Emmanuel Avionics, Inc. and has three decades of experience "in the design of systems used in unmanned aerial vehicles[.]" Cumming Decl. ¶ 2. Dr. Cumming "earned a PH.D, M.A., and B.A. in electrical engineering from Cambridge University, England in 1979, 1978, and 1974, respectively." Cumming Decl. ¶ 3.

III. DISCUSSION.

A. Jurisdiction.

The United States Court of Federal Claims has jurisdiction to adjudicate claims that allege "an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same . . . [seeking] recovery of . . . reasonable and entire compensation for such use and manufacture." 28 U.S.C. § 1498(a). The December 11, 2013 Third Amended Complaint properly invoked the court's jurisdiction, pursuant to 28 U.S.C. § 1498(a), authorizing the United States Court of Federal Claims to adjudicate claims of patent infringement against the Government and to award monetary damages, where appropriate. *See Advanced Aerospace Technologies, Inc.*, 122 Fed. Cl. at 453.

On October 16, 2015, AATI, however, filed an Opposition To A Ruling On Challenges To Indefiniteness Made Solely By Boeing ("Pl. Jur. Indef."), asserting that the court did not have jurisdiction to adjudicate the eight claim terms that Boeing, alone, argues are indefinite. Pl. Jur. Indef. at 1–2. AATI's October 16, 2015 filing contends that, as an RCFC 24 intervenor, Boeing "cannot independently assert defenses or counterclaims" and any ruling has no binding effect since Boeing will have the opportunity to re-litigate the indefiniteness of those terms in United States District Court. In short, where Boeing attacks indefiniteness without the Government, it "is a dispute between private parties that is outside the Court's jurisdiction." Pl. Jur. Indef. at 1–2.

ATTI relies on *Penda Corp. v. United States*, 44 F.3d 967, 970 (Fed. Cir. 1994), where the United States Court of Appeals for the Federal Circuit held that "[a] third-party defendant noticed under [RCFC] 14(a)(1) may assist the [Government] in the defense of the case, or it may offer additional evidence on its own behalf and advance such legal contentions as it deems appropriate in the protection of its interest." (internal quotations omitted). According to AATI, since Boeing is an intervenor under RCFC 24, the court may adjudicate indefiniteness challenges only if they are made by *both* the Government and Boeing. Boeing and the Government respond that, regardless of whether parties are third-party defendants under RCFC 14, or third-party intervenors under RCFC 24, both rules allow third parties to "offer additional evidence on [their] own behalf and advance such legal contentions as [they deem] appropriate in the protection of [their] interest." *In re Uusi, LLC*, 549 Fed. Appx. 964, 967 (2013) (alteration in original) (quoting *Penda*, 44 F.3d at 970). For this reason, the *Uusi* Court saw no reason to deny "the right to participate in [a] case merely because [a party was] brought in under Rule 14," as opposed to Rule 24. *Id.* In other words, the Government and Boeing are asserting indefiniteness as "parallel affirmative defenses," that do not exceed the court's jurisdiction. Boeing Resp. Indef. at 7.

Although *In re Uusi* is not precedential, the reasoning therein is persuasive and the court has determined that it has jurisdiction to adjudicate certain claim terms or phrases challenged by Boeing, but not joined by the Government. Accordingly, Boeing properly may "offer additional evidence on [its] own behalf and advance such legal contentions as [it deems] appropriate in the protection of [its] interest." *In re Uusi, LLC*, 549 Fed. Appx. at 967 (alteration in original) (quoting *Penda*, 44 F.3d at 970); *see also Commil USA, LLC v. Cisco Sys., Inc.*, 135 S. Ct. 1920, 1929 (2015) ("any accused infringer who believes the patent in suit is invalid may raise the affirmative defense of invalidity.").

B. Controlling Precedent Regarding Claim Indefiniteness.

Section 112(b) of the Patent Act requires that the patentee "particularly point[] out and distinctly claim[] the subject matter which the inventor or a joint inventor regards as the invention." 35 U.S.C. § 112(b). Failure to do so, renders the patent vulnerable to an indefiniteness challenge. *See* 35 U.S.C. § 282 (b)(3)(A) (stating that a "failure to comply with any requirement of section 112, except . . . the failure to disclose the best mode" renders the patent invalid.).

In *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120 (2014), the United States Supreme Court held that the standard for indefiniteness under 35 U.S.C. § 112(b), is no longer whether the claim language is "insolubly ambiguous" or "not amenable to construction." *Id.* at 2130 ("We agree . . . that such terminology can leave courts and the patent bar at sea without a reliable compass."). Therein, the United States Court of Appeals for the Federal Circuit's prior indefiniteness standard was rejected as too lenient, requiring instead an elevated degree of specificity beyond simply a court's ability to "ascribe *some* meaning to a patent's claims." *Id.* Instead, *Nautilus* requires that, "a patent is invalid for indefiniteness *if* its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Id.* at 2124 (emphasis added). Although, the "reasonable certainty" standard "mandates clarity," it also "recogniz[es] that absolute precision is unattainable" and that "some modicum of uncertainty. . . is the 'price of ensuring appropriate incentives for innovation." *Id.* at 2128–29 (quoting *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 732 (2002)).

IV. THE CLAIMS CHALLENGED FOR INDEFINITENESS AND THE COURT'S RULINGS.

A. United States Patent No. 6,874,729

1. Claim 5: "Sensor"

Claim Language: "a ***sensor*** being attached to said recovery system"
The Party Asserting Indefiniteness: Government
The Court's Ruling: Not Indefinite

a. The Parties' Arguments

The Government argues that, if "'sensor' does not invoke [35 U.S.C.] § 112[(f)], then claim 5 is indefinite under § 112[(b)], because it recites functional limitations, without adhering to the limits set out in § 112[(f)]." Gov't PHMB at 23–24. The term "sensor" is a functional claim limitation, because AATI's construction ("a device that responds to a stimulus . . . and transmits a resulting impulse") is "purely functional." Gov't PHMB at 24. Functional limitations, however, create "a generic and unbounded claim scope" that is indefinite under the *Nautilus* "reasonable certainty" test. Gov't PHMB at 24.

AATI counters that the Government's argument is circular, because the court's *Markman* Order mooted "the allegation by the Government and Boeing that the term 'sensor' is indefinite." AATI 8/31/15 Notice at 3. The court rejected the argument that a skilled artisan "would understand

'sensor' to mean 'a device that responds to a stimulus . . . and transmits a resulting impulse.'" AATI Resp. at 22. Therefore, "[t]here is nothing left [for the court] to adjudicate." AATI Resp. at 22.

b. The Court's Ruling

The Government's argument that the court's construction of the term "sensor" establishes functional limitations that result in "a generic and unbounded claim scope" is without merit. Gov't PHMB at 24. The court construed "sensor" to mean "a device that responds to a stimulus (such as heat, light, sound, pressure, signals, magnetism, or a particular motion) and transmits a resulting impulse." *See Advanced Aerospace Technologies, Inc.*, 122 Fed. Cl. at 480. Therefore, a skilled artisan would know, with reasonable certainty, "which sensors are appropriate for the claim." *Id.* (ruling that the required sensors are those used "for guidance in maneuvering said aircraft into engagement with said recovery system" claim limitation). The Government failed to introduce any evidence to the contrary.

For these reasons, the court has determined that the term "sensor" is not indefinite.

2. Claim 5: "Near the Point of Engagement"

Claim Language: "a sensor being attached to said recovery system ***near the point of engagement*** of said aircraft to said recovery system"
The Parties Asserting Indefiniteness: Government & Boeing
The Court's Ruling: Indefinite

a. The Parties' Arguments

The Government argues that the phrase "near the point of engagement" is indefinite, because the surrounding claim language adds ambiguity to what "near" means "by generically referencing 'a point of engagement[.]'" Gov't PHMB at 27. In addition, the specification does not define one exact "point of engagement." Gov't PHMB at 27. Instead, as seen in Figure 21, the "point of engagement" can be "any location along the vertically oriented arrestment line." Gov't PHMB at 27. As such, a "sensor" cannot be "near" all points of engagement, because that would "render the 'near the point of engagement' limitation superfluous." Gov't PHMB at 27. The specification's explanation of placing the "sensor" at the "correct height" does "nothing to resolve the ambiguity in the phrase 'near the point of engagement,'" because no detail is provided as to what the "correct height" is. Gov't PHMB at 28; *see also* '729 patent, col. 8:4–5. The Government adds that AATI's interpretation of the "sensor" placement in Figure 27 (*i.e.*, any placement of the "sensor" on the "boom" is "near the point of engagement," citing JBR at 72) is impermissible, because nothing in Figure 27 nor the intrinsic evidence suggests that a "person of ordinary skill in the art would be reasonably certain of how near a sensor would have to be to the point of engagement to fall within the scope of the claim." Gov't PHMB at 28.

Boeing adds that, "there is no art-recognized definition for the term 'near'" and AATI's "proffered dictionary definition" of "near," *i.e.*, "close to someone or something in distance," does not clarify the scope of the claim. Boeing PHMB at 23. Moreover, the case that AATI relies on in the Joint Claim Construction Submission, *Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d

1343, 1348 (Fed. Cir. 2010), "undermines [their] own argument." Boeing PHMB at 24 (explaining that the patent at issue in *Power-One* "provided specific guidance on what 'near' meant, unlike in the present case[.]").

AATI responds that Figures 6, 27, and 28, although not drawn to scale, provide specific guidance about the sensor's placement. AATI Resp. at 25. This is so, because the sensor's placement in Figures 6, 27, and 28 "depend on the ability to perform the intended task—*i.e.*, guidance in maneuvering said aircraft into engagement with said recovery system." AATI Resp. at 25. Therefore, the sensor must be positioned "close enough to the arrestment line" to perform this task. AATI Resp. at 25. AATI adds that claim 5 also is not indefinite, because "absolute or mathematical precision is not required." AATI Resp. at 27 (citing *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014) *cert. denied*, 136 S. Ct. 59 (2015)). AATI also cites several other cases where "'near' has been construed per its plain and ordinary meaning, as not being indefinite." AATI Resp. at 27–28. In response to the Government's argument that "point of engagement" is too vague, as it is "not a single defined location," AATI responds that the specification and figures provide sufficient guidance for a skilled artisan to understand the possible locations of an engagement point. AATI Resp. at 25, 28. For example, Figure 5 of the '729 patent points to several locations on the "tow line" where a pilot can "intersect" with an aircraft, while using the "forward looking camera" to assist in maneuvering. AATI Resp. at 28–29 (citing '729 patent, col. 11:37–45). AATI also explains that having multiple points of potential engagement does not render claim 5 indefinite, because "a skilled artisan would appreciate the impracticability . . . of striking the arrestment line at the exact same point every time." AATI Resp. at 29. Therefore, the phrase "near the point of engagement" "avoid[s] confusion," by informing a skilled artisan where to place a "sensor," for the purpose of "maneuvering said aircraft into engagement with said recovery system." AATI Resp. at 29. Without this directive, "a skilled artisan could place the sensor anywhere on the recovery system." AATI Resp. at 29.

AATI adds that failing to provide a definition of the term "near" in the intrinsic evidence "does not support indefiniteness," because "[t]he plain meaning of claim language ordinarily controls unless the patentee acts as his own lexicographer." AATI Resp. at 30 (citing *InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 690 F.3d 1318, 1324 (Fed. Cir. 2012) ("The plain meaning of claim language ordinarily controls unless the patentee acts as his own lexicographer and provides a special definition for a particular claim term or the patentee disavows the ordinary scope of a claim term either in the specification or during prosecution.")). Therefore, it does not matter if the specification lacks an explanation of what "is near and what is not near," because the context of the claim language "narrows the allowable sensor placements" and requires that the sensor "be positioned close enough to the point of engagement" to be useful "for guidance in maneuvering said aircraft into engagement with said recovery system." AATI Resp. at 30.

b. The Court's Ruling

As a matter of law, "[c]laim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention." *Interval Licensing*, 766 F.3d at 1370. But, when a word of degree is used, the claim language must provide "some standard for measuring that degree. *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015) (decision on remand from United States Supreme Court) ("remand"). Specific and unequivocal examples may be sufficient to provide a

skilled artisan with clear notice of what is claimed. *See DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1260 (Fed. Cir. 2014) (citing *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1334–35 (Fed. Cir. 2010) (determining that the phrase "not interfering substantially" was definite, as a matter of law, where intrinsic evidence provided multiple examples that would allow a skilled artisan to determine whether a particular chemical bond linkage group would "interfer[e] substantially" with hybridization)).

AATI cites three cases in support of the proposition that "near" has been held to be definite post-*Nautilus*: *Innovative Display Techs. LLC v. Hyundai Motor Co.*, No. 2:14-CV-201-JRG, 2015 WL 2090651 (E.D. Tex. May 4, 2015), *Largan Precision Co. v. Genius Elec. Optical Co.*, No. 13-CV-02502-JD, 2014 WL 5358426 (N.D. Cal. Oct. 20, 2014), and *Exergen Corp. v. Brooklands, Inc.*, No. 12-12243-DPW, 2014 WL 4049879 (D. Mass. Aug. 15, 2014).

In *Innovative Display Techs.*, the district court relied on the specification in determining that the term "near" was definite. *See* 2015 WL 2090651, at *17 (ruling that the claim term "positioned near the light emitting surface" was definite). In that case, the term "near" described the distance between two panels that were adhered together. *See* U.S. Patent No. 7,300,194, col. 6. Therein, the patentee used the term "near" to account for the fact that there would be an air gap between the two surfaces when adhesive was applied along the edges of the panels. *See id.* But, the use of "near" to describe the distance between the panels was found definite, because it was limited by the thickness of the adhesive applied between the panels. *Id.* at *17. In this case, however, the only context provided in the '729 patent specification for sensor placement is a sentence that states: "if the onboard camera fails, gets fowled by oil or water or whatever a camera 201 and/or 205 can be placed on the two line or recovery lines above and to the side of the intended arrestment point as shown in Fig. 6 and looking in the direction of the oncoming aircraft with field of views 203 and 207 to help the pilot steer the aircraft in." '729 patent, col. 7:45–51. This context does not compare with the specificity provided in *Innovative Display Techs.*

In *Largan Precision Co.*, the court was able to rely on "an industry convention" to establish "strong evidence that the specification and claims apprise a person of ordinary skill in the art with reasonable certainty" of the scope of the term. *See* 2014 WL 5358426, at *8. In this case, however, no evidence has been proffered about an industry convention that defines what "near" would mean to a person skilled in the art in attempting to direct the placement of sensors on the support structure of an unmanned aerial vehicle ("UAV") recovery device. The *Largan* Court's construction of "near," to mean "as close as . . . possible," was limited to the closest functioning position. In this case, however, AATI asks for a construction that includes the *entire* functioning range of the sensor being employed. That would, however, read the limitation out of the claim and allow for the sensor to be placed anywhere on the support structure, if the distance is within the functioning range of the employed sensor. In addition, such a construction conflicts with the plain and ordinary meaning of the term "near."

In *Exergen*, the trial court construed the term "in the vicinity of," not "near." *Exergen*, 2014 WL 2090651, at *17. Therefore, AATI's reliance on this case seems misplaced.

In this case, the specification of the '729 patent does not use this term, so there is no reasonably certain standard for measuring when the sensors are "near" the point of engagement nor examples of when the sensors would not be considered "near." 10/29/15 TR 19:17–19

(Government Counsel: "There are multiple possible definitions of "near," and there is no way to pick one standard."). As such, there was no context for a person of ordinary skill in the art to understand the scope of the disputed term with "reasonable certainty." *Nautilus*, 134 S. Ct. at 2124. And, as the *Largan* court observed, "just because a certain claim term is definite in the context of a different patent does not necessarily mean that it is here." *Largan*, 2014 WL 5358426, at *8.

For these reasons, the court has determined that the term "near the point of engagement" is indefinite.

3. Claim 44: "Outboard Portion"

Claim Language:
• "and a capture device mounted on an ***outboard portion*** of the at least one wing" • "a hook attached to an ***outboard portion*** of a wing of said aircraft"
The Parties Asserting Indefiniteness: Government & Boeing
The Court's Ruling: Indefinite

a. The Parties' Arguments

The Government argues that AATI's construction of "outboard," *i.e.*, "away from the vessel's centerline or the airplane's centerline," is not sufficient to determine the scope of the term "outboard portion." Gov't PHMB at 15. "Outboard" is a term describing "relative position with respect to the centerline of the aircraft and some other reference point on the airplane." Gov't PHMB at 15. Because the agreed construction does not include "an additional reference point," all points along the aircraft's wing could be "outboard" of the aircraft's centerline. Gov't PHMB at 15. For example, "outboard portion" could mean "a position farther away from the centerline of an airplane than some other reference point," although both the '729 and '306 patents do not provide a point of reference, "each fails to describe the scope of the patentee's invention." Gov't PHMB at 15–16. And, there is "no significant difference" between the original construction proposed by AATI, *i.e.*, "in a position closer or closest to either of the wingtips of an aircraft," and the one to which the parties agreed. Gov't PHMB at 20; *see also* JBR at 61. Moreover, AATI's construction of "outboard" does not address the indefiniteness aspect of the term "outboard portion." Gov't PHMB at 21.

Much like the Government, Boeing asserts that the terms "inboard" and "outboard" is a directional reference that could include "the outer quarter of the wing, the outer third of the wing, or the outer half of the wing." Boeing PHMB at 20. Boeing faults AATI for failing to include demarcating measurements, suggesting this failure was an affirmative choice "not to be clear and concise." Boeing PHMB at 20 ("the inventors certainly could have, for example, specified a dependent claim that the outboard portion is hook [sic] was inboard by x meters or by x percentage of the wingspan."). Then, Boeing takes issue with the fact that neither AATI's proposed construction—"in a position closer or closest to either of the wingtips of an aircraft"—nor the specification, claims, or prosecution history include an explicit reference to a center line. Boeing PHMB at 21. In Boeing's view, any reference to the aircraft's center line is "an attempt to remedy the ambiguity" and "appears to have been concocted as part of this litigation." Boeing PHMB at

21. Therefore, Boeing concludes that these shortcomings make claims 1 and 21, and any claims that depend thereon, indefinite. Boeing PHMB at 21.

AATI counters that the parties' agreed construction of "outboard portion" is not indefinite, because there is sufficient support in the claim language, specification, and prosecution history to ascertain the placement of the hooks. AATI Resp. at 18–19. The intrinsic evidence supports the proposition that "'outboard portion' would be understood as 'closer or closest to either of the wingtips of an aircraft.'" AATI Resp. at 18–19. AATI also responds that the Government's and Boeing's arguments about the distinction between an "inboard" and "outboard" portion is irrelevant, because a "skilled artisan would understand that a hook placed on an 'outboard portion' of the wing is not limited to a single location." AATI Resp. at 20 (stating that *Nautilus* "reject[s] the Government's and Boeing's demands for pinpoint accuracy," because "absolute precision is unattainable"). AATI concludes that there was "no disagreement between the Government and [AATI] as to what the ['outboard portion'] term means," and an "agreed meaning" is "strong evidence of definiteness." AATI Resp. at 21 (citing *Procter & Gamble Co. v. Team Technologies, Inc.*, 46 F. Supp. 3d 764, 769 (S.D. Ohio 2014) ("[Expert]'s agreement with the Court's construction is strong evidence that the unnoticeable limitation is not indefinite.").

b. The Court's Ruling

AATI's reliance on the plain meaning of the term "outboard portion" to satisfy the "reasonable certainty" requirement under *Nautilus* is insufficient. Even if AATI is correct that a skilled artisan would understand that the "ideal" hook placement on the "outboard portion" of an aircraft wing is "as close to the wingtip as possible," the intrinsic evidence contains no guidance that would inform a skilled artisan, with reasonable certainty, as to where the "outboard portion" begins and ends. AATI Resp. at 21. Specifically, any point on an aircraft's wing could be considered as part of the "outboard portion," since each point would be "away from the vessel's centerline or the airplane's centerline." AATI Resp. at 18. If, in fact, AATI intended to claim the entire wing as a location for the hook placement, then the term "outboard portion" would not be necessary. But, the term "outboard portion" suggests that AATI intended to specify a particular segment of the wing in the claim, but failed to do so. Without more direction, reference to the "outboard portion" of the wing would not inform a skilled artisan with reasonable certainty as to the scope of the invention.

For these reasons, the court has determined that the term "outboard portion" is indefinite.

B. United States Patent No. 7,097,137

1. Claims 1, 20: "Releasably Secure"

Claim Language:
• "said hook being adapted to ***releasably secure*** said line to said aircraft" • "the capture device comprising a hook adapted to ***releasably secure*** the flying object to the apparatus."
The Party Asserting Indefiniteness: Boeing
The Court's Ruling: Not Indefinite

a. The Parties' Arguments

Boeing posits two arguments as to why the term "releasably secure" is indefinite. First, there is no art-recognized definition of "releasably secure." Boeing PHMB at 25. Second, the asserted patents do not provide any objective means for one of skill in the art reasonably to ascertain when a particular aircraft is "releasably secure" versus "non-releasably secure." Boeing PHMB at 25.

AATI counters that "releasably secure" is a "simple term with a readily apprehended meaning," *i.e.*, an aircraft that can first be secured, then released, if desired. AATI Resp. at 43. In support, AATI argues that, "releasably" is "simply the adverbial form of 'releasable' *i.e.*, capable of being released." AATI Resp. at 43. Moreover, the disputed term would be clear to a skilled artisan in light of the purpose of the '137 patent. AATI Resp. at 43. Finally, AATI cites to a case wherein "releasably secure" was construed as "something that is bound, fastened, or held back, but is configured such that it can be freed from being bound, fastened or held back." AATI Resp. at 43 (citing *Muzzy Prods., Corp. v. Sullivan Indus., Inc.*, 194 F. Supp. 2 d 1360, 1372 (N.D. Ga 2002)).

b. The Court's Ruling

A patent claim is definite, where a claim term has an objective meaning in the art and the patent uses the term consistently with that meaning. *See DDR Holdings*, 773 F.3d at 1260 ("Here, though NLG attempts to characterize "look and feel" as purely subjective, the evidence demonstrates that "look and feel" had an established, sufficiently objective meaning in the art, and that the '399 patent used the term consistent with that meaning."). "Releasably secure" is a term that would be reasonably clear to a person of skill in the art, because it refers to the purpose of these patents—to launch and recover unmanned aerial vehicles. '137 patent, col. 3:1–4 ("It is an object of the invention to provide a simple, compact, inexpensive, lightweight, and safer method of launching and retrieving conventional fixed wing aircraft from a point location.").

For these reasons, the court has determined that the term "releasably secure" is not indefinite.

2. Claims 9, 19: "Smooth Continuation"

Claim Language:
• "said hooking having an open entrance forming a ***smooth continuation*** of a leading edge of said wing." • "the open entrance forming a ***smooth continuation*** of the leading edge."
The Party Asserting Indefiniteness: Boeing
The Court's Ruling: Not Indefinite

a. The Parties' Arguments

The Government and AATI assign different meanings to the phrase "smooth continuation." In the Government's view, a "smooth continuation" is one where "the open entrance of the hook and the leading edge of said wing form a flat, even and continuous surface without any bumps, ridges, or gaps." JBR at 96. The Government asserts that the term "smooth continuation" is restricted to a structural limitation and that AATI's alleged attempt at *defining* "smooth," to exclude only obstructions that deflect the arrestment line, is not supported by either the intrinsic or extrinsic evidence. JBR at 97. But, AATI's construction includes unsupported "functional limitations," more specifically, an exclusion of "only bumps, gaps or ridges 'that would deflect the line.'" JBR at 97.

Boeing advances five arguments to show that "smooth continuation" is indefinite. First, "smooth continuation" is "a completely subjective term without any art-recognized meaning." Boeing PHMB at 26. Second, the patent fails to offer "any written description support" for what a "smooth continuation" is. Boeing PHMB at 28. Third, AATI's construction is "inherently inconsistent," because the initial dictionary definition AATI offered for "smooth"—"not having *any* bumps, ridges, or uneven parts"—is substantially different from AATI's subsequent position that "smooth" means "as free of bumps and ridges as possible," or, as Boeing suggests, allowing "for *some* bumps, ridges, or uneven parts." Boeing PHMB at 27 (citing JBR at 92) (emphasis added). Fourth, AATI could have provided greater clarity by "specif[ying] a minimum angle between the wing surface and the hook surface" or by using a "specific measurement, such as surface roughness," that Boeing suggests is a "well-known parameter in engineering." Boeing PHMB at 27. Here, AATI failed to provide an "objective means" to determine whether a particular configuration falls within the scope of the term, *i.e.*, whether an arrangement is "smooth" or "non-smooth." Boeing PHMB at 27; *see also* JBR at 93. Finally, Boeing joins in the Government's view that AATI's construction adds an unsupported claim limitation. Boeing PHMB at 29. In sum, since the meaning of "smooth continuation" is subjective, lacks written description support, and seeks to import an unsupported functional limitation, it is indefinite. Boeing PHMB at 29.

AATI counters that "smooth" is derived from the Joint Claim Construction, where the parties agree that this term is defined as "sufficiently free of bumps and ridges that it causes no resistance to sliding . . . [i]n other words, the continuation should be as smooth as possible, that is, as free of bumps and ridges as possible." JBR at 92. Therefore, in the context of the invention, an arrangement is sufficiently "smooth," if the "line is not deflected from entering the hook." JBR at 92. AATI adds that this construction is also consistent with the plain-meaning of "smooth," as understood by a person of ordinary skill in the art. AATI Resp. at 44; *see also* Cumming Decl. ¶

67 ("[T]he function of the hook is to engage with the arrestment line" and that "it is important for the rope to be able to slide smoothly into the hook."). Thus, "[a]n artisan . . . would have joined the wing and hook with adequate smoothness for this purpose." AATI Resp. at 44 (internal punctuation omitted).

AATI defines "continuation" to mean a "transition from one structure (the wing) to a second structure (the hook)" and states that "there may be a break in the surface due to the transition." JBR at 92. In AATI's view, "th[e] transition is smooth . . . if the line can pass freely over it." AATI Resp. at 45 (citing Cumming Decl. at ¶ 69). AATI disagrees with the Government's construction of "smooth continuation," as "a flat, even and continuous surface *without* any bumps, ridges, or *gaps*," because the Government erroneously considers "continuation" and "continuous" as interchangeable. JBR at 96 (emphasis added). Instead, AATI points out that a "continuation" is a "transition" and necessarily requires "some kind of break in the surface." AATI PHMB at 44. Therefore, adopting the Government's "continuous" construction would "add a new limitation" that would "exclud[e] transitions between the wing and the hook," and require the wing and hook to be "molded from the same piece of metal." AATI PHMB at 45. The Government's reliance on Figure 3 of the '729 patent also is misplaced, because it shows a "non-continuous transition between the wing and hook ("26")[,] represented by the tape ("270"), which must be made of a different material from the wing and hook." AATI PHMB at 44–45 (referencing '729 patent, Fig. 3). Therefore, as used in the relevant claims, "smooth" and "continuation" are not indefinite.

b. The Court's Ruling

The United States Court of Appeals for the Federal Circuit has observed that, a patent claim may be definite, even where a limitation has no explicit upper bound other than what is practically required. *See Halliburton Energy Serv., Inc. v. M-I LLC*, 514 F.3d 1244, 1253 n. 5 (Fed. Cir. 2008) ("Of course, a claim may contain a limitation that includes no explicit upper bound at all (*e.g.*, a claim limitation that requires 'at least 5%' of an element). Where a limitation does not contemplate an upper bound beyond what is practically required (*e.g.*, the total percentage must be less than 100%), the limitation may not present definiteness concerns."). Here, it would be reasonably clear to a skilled artisan to "join[] the wing and the hook with adequate smoothness" so that the line would not "snag" or be deflected as it transitioned from sliding along the wing to sliding into the hook. To determine whether the continuation is sufficiently "smooth," likely would require a person of ordinary skill in the art to test the arrestment line, *i.e.*, slide it along the wing from leading edge into the hook to verify that the line did not snag while traveling from the wing edge into the hook. This exercise would provide even a person of modest mechanical experience with "reasonable certainty" about why such an arrangement is necessary.

With respect to the term "continuation," Figure 3 of the '137 patent shows that the wing and hook are two separate items, adjoined to form a "transition" over which the arrestment line must cross in the course of arrestment and recapture of an aircraft. The non-continuous, but adjoined nature of the wing, 26 (hook), and the 270 (tape) elements shown in Figure 3 of the '137 patent render the Government's construction, *i.e.*, "without any bumps, ridges, or gaps," a conceptual impossibility. Therefore, the intrinsic evidence, particularly Figure 3 of the '137 patent, is sufficient to provide a skilled artisan with "reasonable certainty" as to what is meant by a "smooth continuation."

For these reasons, the court has determined that, as used in the '729 patent, the term "smooth continuation" is not indefinite.

3. Claim 30: "Substantially Arrested"

Claim Language: "sliding of the line through the hook is ***substantially arrested***."
The Parties Asserting Indefiniteness: Government & Boeing
The Court's Ruling: Not Indefinite

a. The Parties' Arguments

The Government argues that claim 30 is indefinite, because "substantially" is a subjective term of degree that could have multiple reasonable interpretations to a person of skill in the art. Gov't PHMB at 33. And, there is no evidence to support a finding that the term "substantially arrested" is definite. Gov't PHMB at 34. Specifically, "substantially arrested," as used in the specification, could require either sufficient braking force to "stop the aircraft at or very near the point where the hook intercepts the arrestment line" or keep the aircraft from "slid[ing] all the way off the arrestment line." Gov't PHMB at 33. Therefore, the term "substantially arrested" inherently is ambiguous. Gov't PHMB at 33.

Boeing notes that "substantially arrested" was added years after the original patent application was filed in 2000 and is "precisely the gamesmanship that the Supreme Court has endeavored to eliminate with *Nautilus*." Boeing PHMB at 37–38 (citing 7/27/15 TR 389:16-19).

AATI counters that the term "substantially" is permitted in patent claims. AATI Resp. at 37 (citing *Deering Precision Instruments, L.L.C. v. Vector Distribution Sys., Inc.*, 347 F.3d 1314, 1322–23 (Fed. Cir. 2003) (recognizing that "substantially" has been held to be a term of approximation or a term of magnitude, depending on context). Therefore, a skilled artisan would know that "substantially" is a term of approximation, "encompassing circumstances when the motion of the aircraft is completely arrested," as well as those "when it has been arrested enough so that the aircraft can be considered retrieved – that is, essentially arrested." AATI Resp. at 38 (citing Cumming Decl. ¶ 91).

b. The Court's Ruling

In determining whether a term is definite, the court must consider clarity, but also recognize that absolute precision is unattainable. *See Nautilus*, 134 S. Ct. at 2129 ("The definiteness requirement . . . mandates clarity, while recognizing that absolute precision is unattainable."). The quantum of clarity and precision necessary depends on how a person of skill in the art would understand the scope of the invention, in light of the term's use in the context of the specification. *See Nautilus*, 783 F.3d at 1377 (remand) ("Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention.").

The term "substantially" is one of approximation. *See Apple Inc. v. Samsung Elecs. Co., Ltd.*, 786 F.3d 983, 1003 (Fed. Cir. 2015). In *Apple*, our appellate court held that the term "substantially centered" was definite, where evidence was presented to show that a skilled artisan

would interpret "substantially centered" as "*essentially* centered except for a marginal spacing to accommodate ancillary graphical user interface elements." *Id.* (emphasis added).

In light of the purpose of the invention, as described in the specification, *i.e.*, to capture an unmanned aircraft, a person of skill in the art would be reasonably certain about the meaning of "substantially arrested." Cumming Decl. ¶ 91.

For these reasons, the court has determined that "substantially arrested" is not indefinite.

4. Claim 30: "Sufficient Amount"

Claim Language: "an inner throat smaller than the diameter of the line so as to generate a ***sufficient amount*** of braking force"
The Parties Asserting Indefiniteness: Government & Boeing
The Court's Ruling: Not Indefinite

a. The Parties' Arguments

The Government argues that "sufficient amount" is dependent on the meaning of another ambiguous term – "substantially arrested" – and is indefinite. Gov't PHMB at 33. The dictionary definition of "sufficient" is "enough to meet the needs of a situation or a proposed end." Gov't PHMB at 33 (citing *Sufficient Definition*, *Merriam-Webster Online Dictionary*, www.merriam-webster.com/dictionary/sufficient (last visited Mar. 25, 2014). Because "substantially arrested" is ambiguous, a person of skill in the art would not understand the meaning of "sufficient amount," as used in claim 30 of the '137 patent. Gov't PHMB at 33.

Boeing posits three additional arguments that "sufficient amount" is indefinite. First, there is no accepted definition of the term "sufficient amount" in the relevant art, nor did AATI suggest otherwise. Boeing PHMB at 40. Second, the term "sufficient amount" is only used once in the specification of the contested patents, but provides no further guidance. Boeing PHMB at 40. Third, "sufficient amount" is dependent on the meaning of "substantially arrested," which adds to the ambiguity of "sufficient amount," creating "an ambiguity upon a separate ambiguity." Boeing PHMB at 41.

AATI counters that no construction is needed for the term "sufficient amount," because a skilled artisan would understand that the plain and ordinary meaning means "enough braking force to prevent sliding of the line though the hook." AATI Resp. at 37 (citing Cumming Decl. ¶ 90 and *Merriam-Webster* at A7-7 (defining "sufficient" as "enough to meet the needs of a situation or a proposed end.")).

b. The Court's Ruling

When a "word of degree" is used, the trial court must determine whether the patent provides "some standard for measuring that degree." *Nautilus*, 783 F.3d at 1378 (remand); *see also Interval Licensing*, 766 F.3d at 1370 ("Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention."). The court, however, should not impose a level of precision that exceeds the definiteness required of valid patents. *See Apple*, 786 F.3d at 1002 ("Samsung's complaint about

a lack of an "objective standard [of] measure" is seeking a level of precision that exceeds the definiteness required of valid patents."). Again, as the United States Supreme Court held, "[t]he definiteness requirement . . . mandates clarity, while recognizing that absolute precision is unattainable." *Nautilus*, 134 S. Ct. at 2129.

"Substantially arrested" and "sufficient amount" are interrelated terms. Claim 30 of the '137 patent provides a "standard for measuring" the term "sufficient amount" with reasonable certainty, as it describes the amount of braking force necessary to effectuate the "*substantial" arrestment*" of a line in the hook of a flying object. '137 patent, claim 30. In light of the purpose of the invention, as described in the specification, *i.e.*, to capture an unmanned aircraft, a person of skill in the art would be reasonably certain of the meaning of "sufficient amount."

For these reasons, the court has determined that "sufficient amount," is not indefinite.

C. United States Patent No. 8,167,242

1. Claim 1: "The Flexible Support Structure Being Constructed"

Claim Language: "the ***flexible support structure being constructed***[8] to absorb energy by bending without breaking."
The Party Asserting Indefiniteness: Boeing
The Court's Ruling: Not Indefinite

a. The Parties' Arguments

AATI and the Government accept the court's construction of "flexible" to mean "the ability to be repeatedly bent and still maintain its original shape afterward." 4/8/14 TR 381:6–13. Boeing, however, argues the term "flexible" and phrase "flexible support structure being constructed to absorb energy by bending without breaking," is ambiguous and indefinite, because they are subjective and undefined. Boeing PHMB at 41–43. Boeing faults AATI for failing to provide specific examples of materials that AATI regards as appropriately "flexible" to construct the support structure. Boeing PHMB at 42. Boeing also contends that it is "unclear" how "bending without breaking" differs from "flexible" and "adds additional ambiguity to the claim language." Boeing PHMB at 43. As to the phrase, "bending without breaking," Boeing argues that "breaking" is amenable to several interpretations, *e.g.*, "bend so much that it may stop functioning yet still is not broken," or "not functioning any longer," or "bending but not to the point of breaking into pieces." Boeing PHMB at 43. Therefore, AATI's use of this ambiguous phrase, "flexible support being constructed to absorb energy by bending without breaking," renders the claim indefinite. Boeing PHMB at 43.

AATI responds by citing to two poles numbered "78" in Figure 21 of the '306 patent, which the specification describes as "flexible supporting posts" that can "bend without breaking." '306 patent, col. 17:37–39. The nature of these "flexible supporting posts" is further clarified by the

[8] AATI agrees with the Government that "designed or intended" are synonyms for "constructed." JBR at 131.

'306 patent's prosecution history, citing the specific example of "large plastic PVC pipes that flexed dramatically during arrestments, providing a large amount of shock absorption and energy absorbing capability." AATI Resp. at A3-25. AATI also relies on "this Circuit's technical dictionary," which defines "flexible" as, "having the property to be able to be repeatedly bent and still maintain [its] original shape afterwards." AATI Resp. at 52 (citing DICTIONARY OF SCIENCE & TECHNOLOGY 846 (1992)). Therefore, AATI contends that the combination of intrinsic and extrinsic evidence allows the skilled artisan to "readily understand that the disputed term has its plain and ordinary meaning," since "the support structure can undergo a certain amount of elastic deformation (given the anticipated load during use) and return to its original shape." AATI Resp. at 52.

b. The Court's Ruling

The United States Court of Appeals for the Federal Circuit has held that claim language that uses a word of degree is definite, if the term "provide[s] enough certainty to one of skill in the art when read in the context of the invention." *Interval Licensing*, 766 F.3d at 1370. For terms of degree, "specific and unequivocal examples may be sufficient to provide a skilled artisan with clear notice of what is claimed." *DDR Holdings*, 773 F.3d at 1260.

With respect to "flexible support structure," the example that AATI offers is the "inventor's test rig" employing "vertical poles" that were "large plastic PVC pipes that flexed dramatically during arrestments, providing a large amount of shock and energy absorbing capability." AATI Resp. at A3-25 ('306 patent prosecution history). If the claimed invention is to "absorb energy by bending without breaking," the court is satisfied that disclosure of PVC, *i.e.*, the specific material used in the working prototype of the device, offers "reasonable certainty" as to the scope of the claim to one skilled in the art.

For these reasons, the court has determined that the term "flexible support structure" is not indefinite.

2. Claim 12: "Inboard Point"

Claim Language: "said leading edge of said wing is swept at least fifteen degrees at an ***inboard point*** on said wing."
The Parties Asserting Indefiniteness: Government & Boeing
The Court's Ruling: Indefinite

a. The Parties' Arguments

The Government argues that the term "inboard point" is indefinite, because this term is not defined in the specification or claims, nor has a general-purpose dictionary meaning. Gov't PHMB at 17. For example, the term "inboard point" could refer to any point on the wing, because "inboard" is a term that indicates a relative position with respect to the centerline of the aircraft and some other reference point on the airplane. Gov't PHMB at 17. The Government does not assert that every claim, including the phrase "inboard," is indefinite, only those where the inboard limitation lacks an explicit description of included points. Gov't PHMB at 18. For example, claims 32 and 33 of the '729 patent describe an aircraft with a capturing device, "located inboard

of the aircraft's wingtip[,]" and an aircraft with a capturing device "located inboard more than 5% of the wing semi-span[,]" respectively. '729 patent, col. 24:25–26.

Similarly Boeing argues that the term "inboard point" is unclear, because it lacks a necessary point of reference and the specification does not provide any guidance. Boeing PHMB at 20. Without such guidance, "every portion of, or point on, an aircraft's wing could possibly be an 'inboard portion' because 'inboard' only has a meaning in relation to some other fixed reference point." Boeing PHMB at 17. For example, if the outer edge of the wing tip is set as the reference point, then "essentially every location on the wing is closer to the centerline" and represents an "inboard point." Boeing PHMB at 17. If the court accepts AATI's proposed construction, setting the centerline of the wing as its reference point, half the wing would be "inboard." Boeing PHMB at 17.

AATI counters that the term "inboard point" does not require a reference point, because a person of skill in the art would understand claim 12 of the '242 patent to require the aircraft to have a forward-swept or backward-swept wing with an angle of 15 degrees. AATI Resp. at 11–12. This is so, because the specification explains that the purpose of the swept wings is to "more reliably deflect the arresting cable to the hook independent of normal aircraft yaw angles." AATI Resp. at 13 (citing '729 patent, col. 10:5–6). In addition, AATI cites statements used to successfully traverse a rejection during prosecution that discloses "a leading edge of said lateral deflecting structure [that] is swept at least fifteen degrees at an inboard point on the wing (see fig 1, shows a sweep angle of at least 15 degrees)." AATI Resp. at A3-5 (citing prosecution history of the '242 patent). And, Dr. Cumming testified that "[a] skilled artisan would understand that the swept wings recited in claim 12 of the '242 patent do not require identification of an imaginary point, because all points along the leading edge form the same sweep angle." Cumming Decl. ¶ 39.

AATI adds that neither the Government nor Boeing has offered evidence that claim 12 of the '242 patent is indefinite. AATI Resp. at 14. Instead, the Government and Boeing engaged in "litigation-driven confusion" and "attorney argument" to "fabricate an appearance of confusion about the meaning of the disputed term." AATI Resp. at 14. Moreover, the existence of "so-called" reference points in other patent's claims, provide no basis for concluding that the differences between the '729 patent and '242 patent "had the effect of broadening the scope of [the '242 patents] claims." AATI Resp. at 15.

b. The Court's Ruling

As a general rule, "a patent is invalid for indefiniteness if the claims, read in light of the specification and the prosecution history, fail to inform, with reasonable certainty, one skilled in the art about the scope of the invention." *See Nautilus*, 134 S. Ct. at 2124. "[A] claim is indefinite if its language 'might mean several different things and no informed and confident choice is available among the contending definitions.'" *Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d at 1366, 1373 (Fed. Cir. 2015) (quoting *Nautilus*, 134 S. Ct. at 2130, n.8); *see also Interval Licensing*, 766 F.3d at 1373 (holding that a patentee's attempt to use one of two embodiments that unclearly define the term "'unobtrusive manner' . . . does not provide a reasonably clear and exclusive definition" and "leav[es] the facially subjective claim language without an objective boundary" and therefore, indefinite).

As an initial matter, the parties agree that the term "inboard" means "closer or closest to the longitudinal axis of a ship or aircraft." JBR at 57–58. Therefore, the issue is whether claim 12 of the '242 patent informs one skilled in the art, with "reasonable certainty," where on the wing the "inboard" portion is located. The specification, however, provides no reference point is for distinguishing an "inboard" portion from an "outboard" portion of the wing. Without a reference point, no informed or confident choice of location can be made. For example, if the reference point is the outer edge of the wing tip, every point on the wing could be an "inboard point." If the reference point is the lateral centerline of the wing, as AATI argues, then fully half of the wing is the "inboard portion." Because the specification fails to provide an informed or confident choice as to where the "inboard" portion of the wing is located, in relation to any number of reference points, such as the wingtip, the lateral centerline of the wing, or any other potential reference point, claim 12 fails to inform one of skill in the art, with "reasonable certainty," about the scope of the invention.

For these reasons, the court has determined that the term "inboard point" is indefinite.

D. United States Patent No. 8,517,306

1. Claim 1: Elastic Deformation . . . Absorbs Most Of Energy

Claim Language: "the capturing apparatus being so constructed and proportioned that ***elastic deformation*** of components of the capturing apparatus ***absorbs most of the energy*** during arrestment of the forward velocity of the aircraft"
The Party Asserting Indefiniteness: Boeing
The Court's Ruling: Not Indefinite

a. The Parties' Arguments

Boeing argues that "the AATI patents do not provide any definition of what is meant by 'elastic deformation,'" because "[t]he term 'elastic deformation' is unclear as used in claim 1 of the '306 patent . . . [and] can have any number of meanings with respect to the degree of elasticity involved." Boeing PHMB at 44. Boeing adds that "elastic deformation" could refer to the elasticity of the arrestment lines, meaning "that the energy is absorbed by . . . the arrestment lines, rather than purported 'flexible supporting posts.'" Boeing PHMB at 44; *but see* 10/29/15 TR 8:12–13 (Boeing defining "elastic deformation" to mean "capable of regaining its prestressed state.").

Boeing also faults AATI for failing to "provide any insight into which materials can be used as the components to satisfy the 'elastic deformation' limitation." Boeing PHMB at 44. Boeing emphasizes that "[a] wide range of materials may be considered 'elastic,'" arguing that "the AATI patents could have provided some guidance as to what is meant by 'elastic' by employing HOOKE'S LAW, a well-known formula that governs elastic deformation . . . [and] set forth the range of acceptable values of YOUNG'S MODULUS of their invention. . . . They did not." Boeing PHMB at 44-45.

And, "it is unclear what is meant by 'absorbs most of the energy during arrestment,'" because AATI failed to explain (1) whether the energy is absorbed permanently or temporarily during arrestment, and (2) how to measure whether a particular device has in fact "absorb[ed] most

of the energy during arrestment." Boeing PHMB at 45 ("Depending on how one were to measure the absorption of energy, one could obtain differing results, which would not enable a person of ordinary skill in the art to reasonably know the scope of the claims.") (citations omitted).

AATI counters that "the intrinsic and extrinsic evidence shows that the plain and ordinary meaning controls." AATI Resp. at 55, 57. A skilled artisan would not be confused, because "'elastic deformation' has a well-understood meaning similar to flexible, *i.e.*, "a temporary deformation in a solid material that has been subjected to a load, wherein the material returns to its original shape after the load is removed." AATI Resp. at 55 (citing the definition of "flexible" in DICTIONARY OF SCI. & TECH. 718 (1992)). In addition, as a matter of common sense, the phrase "absorbs most of the energy" means "more than half" or "a majority," so that a skilled artisan would understand that the "capturing apparatus can absorb most the aircraft's kinetic energy from its motion during arrestment via elastic deformation." AATI Resp. at 56.

AATI also argues that "[t]he intrinsic evidence supports a plain reading of the disputed term." AATI Resp. at 56. Specifically, the different embodiments disclosed in the specification utilize the elastic characteristics of the lines and the flexible support structure. AATI Resp. at 56. Moreover, "the Examiner had no problems understanding the term during prosecution." AATI Resp. at 56 (referencing AATI Resp. at A3-91).

In response to Boeing's argument that "elastic deformation" is unclear, with respect to the degree of elasticity involved, AATI argues that "[t]here is no clear and convincing evidence that a skilled artisan would be confused" and Boeing is wrong in "demanding mathematical accuracy even though the relevant case law has made it abundantly clear that such precision is not required." AATI Resp. at 57. Patent applicants have no duty to provide explicit definitions of all claim terminology and "[i]n the absence of definitions, the plain and ordinary meaning controls." AATI Resp. at 57.

As to Boeing's criticism that the patent fails to specify the materials used to satisfy the "elastic deformation" limitation, AATI responds that a skilled artisan would know the materials used in typical aviation applications and "the inventors did disclose an example of what materials satisfy the disputed limitation." AATI Resp. at 58 (referencing AATI Resp. at A3-25) ("On the inventor's test rig, the vertical poles were large plastic PVC pipes that flexed dramatically during arrestments, providing a large amount of shock and energy absorbing capability."). In other words, Boeing is "confus[ing] claim clarity with claim breadth" by "rattling off a list of possible alternative recitations," such as employing HOOKE'S LAW to define "elastic deformation." AATI Resp. at 58. In fact, the inventors stated that "their invention was not necessarily limited by structures that follow HOOKE'S LAW." AATI Resp. at 58 (referencing '306 patent prosecution history at AATI Resp. at A3-85). Therefore, a "skilled artisan [would] understand what is meant by elastic deformation without having it explained in terms of YOUNG'S MODULUS," particularly when "the intrinsic evidence discloses examples of suitable materials." AATI Resp. at 59.

Last, in response to Boeing's argument about the phrase "most of the energy," AATI states that a skilled artisan would not be concerned with whether the energy is absorbed permanently or temporarily or how to measure the energy. AATI Resp. at 59. The "risk of 'differing results' would not be a concern, because the claim term does not require a specific measurement within a narrow range—just confirmation of 'a majority of the energy' was absorbed." AATI Resp. at 59.

b. The Court's Ruling

The claim language, the specification, and prosecution history support a plain and ordinary meaning of the term "elastic deformation," referring both to the arrestment line and the flexible support structure. '306 patent, claim 1(c) and 1(d); *see also* '306 patent, col. 7:31–32. The different embodiments disclosed in the specification suggest that the ordinary meaning of "elastic deformation" describe the elastic characteristics both of the line and the support structure. '306 patent, col. 17:37–40 ("The energy absorbing mechanisms for this deck mounted system are flexible supporting posts 78 which can bend without breaking and the elasticity inherent in the lines 74, 76."); *see also* '306 patent, col. 7:31–32 ("[T]he arrestment energy is absorbed primarily by deflecting the tow line to the side."); *see also* '306 patent, col. 13:23–25 ("[A] sliding attachment which is designed to . . . absorb any kinetic energy parallel to the direction of travel of the tow line 4."). Moreover, during prosecution, the Examiner understood that "elastic deformation" refers to both the arrestment line and the flexible support structure. AATI Resp. at A3-91 ("[E]lastic deformation of components . . . appears broad enough to encompass material characteristics of the lines and support structure that are considered to be elastic to some degree and will deform to some degree."). Although the claim fails to specify that elastic deformation of "all" components of the capturing apparatus absorbs most of the energy, the claim teaches that the capturing apparatus includes both an arrestment line and a flexible support structure. '306 patent, claim 1(c) and 1(d).

Boeing incorrectly suggests that AATI must define "elastic deformation," based on HOOKE'S LAW, and provide a range of acceptable YOUNG'S MODULUS values. Boeing PHMB at 44. It is well established that a patentee "need not define his invention with mathematical precision in order to comply with the definiteness requirement." *Oakley, Inc. v. Sunglass Hut Int'l*, 316 F.3d 1331, 1341 (Fed. Cir. 2003); *see also In re Packard*, 751 F.3d 1307, 1313 (Fed. Cir. 2014) *cert. denied sub nom. Packard v. Lee*, 135 S. Ct. 2310, 191 L. Ed. 2d 978 (2015) ("The [indefiniteness] requirement is not a demand for unreasonable precision. The requirement, applied to the real world of modern technology, does not contemplate in every case a verbal precision of the kind found in mathematics."). In any event, in this case, the degree of elasticity and different phases of elastic deformation are not of concern. All that matters is the ability of the flexible support structure to maintain an elastic deformation *i.e.*, bending without breaking and returning to the original shape after stress is removed. Unlike other terms that require measurement, there is an "elastic limit" to the "elastic deformation" of a material, beyond which "permanent deformation will occur." COLLINS ENGLISH DICTIONARY; *see also* THE AMERICAN HERITAGE SCIENCE DICTIONARY ("The stress point at which a material, if subjected to higher stress, will no longer return to its original shape.). Therefore, it would be reasonably clear to one skilled in the art that a flexible support structure should be made of materials that can maintain the elastic deformation during the capturing process to absorb most of the kinetic energy from the aircraft being captured. 10/29/15 TR 12:9–12.

Boeing also incorrectly contends that AATI's failure to specify the type of suitable materials renders the term indefinite, because a wide range of materials may be considered elastic. Boeing PHMB at 44. During prosecution, AATI disclosed an example of suitable material that would allow "elastic deformation to absorb most of the energy." AATI Resp. at A3-25 (citing '306 patent prosecution history that "[o]n the inventor's test rig, the vertical poles were large plastic PVC pipes that flexed dramatically during arrestments, providing a large amount of shock

and energy absorbing capability."). The reference to "large plastic PVC pipes that flex dramatically," provides "a large amount of shock and energy absorbing capability" and would inform a skilled artisan with reasonable certainty about potential suitable materials and afford the public with notice about the scope of the claimed invention.

Moreover, the phrase "most of energy" is one of degree that does not require mathematical precision. *See Oakley*, 316 F.3d at 1341 ("[A] patentee need not define his invention with mathematical precision in order to comply with the definiteness requirement."). When a "word of degree" is used, the court must determine whether the patent provides "some standard for measuring that degree." *Nautilus*, 783 F.3d at 1378 (remand). That standard is the purpose of the invention—to capture a UAV. Moreover, this is not a case that requires the inventors to identify a specific method of measurement. *See Dow Chem. Co. v. Nova Chemicals Corp. (Canada)*, 803 F.3d 620, 634 (Fed. Cir. 2015) ("Because the methods do not always produce the same results, the method chosen for calculating the slope of strain hardening could affect whether or not a given product infringes the claims."). Instead, here, the degree of elasticity is not relevant.

With respect to the extrinsic evidence, AATI cites a dictionary definition for "elastic deformation" as "a temporary deformation in a solid material that has been subjected to a load, wherein the material returns to its original shape after the load is removed." AATI Resp. at 55 (citing DICTIONARY OF SCI. & TECH. 718 (1992)).

Finally, Boeing's expert, Dr. R. John Hansman, opines that the term "elastic" is unclear: "[d]epending on one's definition of 'elastic,' one of ordinary skill in the art would consider a variety of materials, some of which may or may not be 'elastic' as used in the patent. For instance, materials such as concrete, rubber, steel, and iron can all be considered to have some elastic properties to some degree or another." Hansman Decl. ¶ 121. Dr. Hansman's focus, however, was on the abstract meaning of the word "elastic," rather than on the meaning of "elastic deformation" and "most of the energy" in the context of the patent. In the light of the claim language, the specification, the prosecution history, and the plain and ordinary meanings of "elastic deformation" and "most of the energy," these terms would provide one skilled in the art with "reasonable certainty" about the scope of the invention.

For these reasons, the court has determined that the term "elastic deformation" and "absorbs most of the energy" are not indefinite.

2. Claim 21: "Being Designed To Deflect"

Claim Language: "the arrestment line ***being designed to deflect*** when contacted by said aircraft"
The Party Asserting Indefiniteness: Boeing
The Court's Ruling: Indefinite

a. The Parties' Arguments

Boeing argues that the phrase "being designed to deflect" is vague and indefinite, because it describes a particular type of structure based on an intended purpose, but the patent does not explain how one skilled in the art can achieve the intended purpose. Boeing PHMB at 31. If, "being designed to deflect" simply means "designed to change direction"—as the Government and

AATI contend—then the limitation is meaningless, because as a matter of physics, every structure that hits an arrestment line necessarily will change its direction. Boeing PHMB at 31–32. And, there is no art-recognized definition of "being designed to deflect." Boeing PHMB at 32.

AATI agrees with the Government that the proper construction of "deflect" is its dictionary definition, *i.e.*, "to cause (something that is moving) to change direction." AATI Resp. at 45–46. Moreover, this term is not an expression of an intended purpose, as Boeing contends, but is instead permissible functional language. AATI Resp. at 46. AATI adds that a skilled artisan would understand the plain and ordinary meaning of "being designed to deflect" and that a specific "art recognized definition" is not required. AATI Resp. at 46.

b. The Court's Ruling

Indefiniteness concerns whether functional language in a claim provides "a clear-cut indication of the scope of the subject matter embraced by the claim." *In re Swinehart*, 439 F.2d 210, 213 (C.C.P.A. 1971). "A patent applicant is free to recite features of an apparatus either structurally or functionally." *In re Schreiber*, 128 F.3d 1473, 1478 (Fed. Cir. 1997). But when claims recite a description of a problem to be solved or a function or result to be achieved by the invention, the boundaries of the claim scope must be clear. *See Halliburton*, 514 F.3d at 1255–56 (holding that "fragile gels" was indefinite, because the term was functional and was ambiguous as to the requisite degree of the fragileness of the gel); *but see Application of Barr*, 444 F.2d 588, 595 (C.C.P.A. 1971) (holding that "incapable of forming a dye with said oxidizing development agent," although functional, was acceptable, because it set definite boundaries on the patent protection sought); *see also Application of Venezia*, 530 F.2d 956, 957 (C.C.P.A. 1976) (holding that limitations such as "members adapted to be positioned" and "portions . . . being resiliently dilatable whereby said housing may be slidably positioned" serve to precisely define present structural attributes of interrelated component parts of the claimed assembly).

AATI argues that "[a] skilled artisan would have recognized that, within the scope of this invention, the line must deflect sufficiently to capture the aircraft . . . [so] he would select parameters such as length, tension, and diameter of the line suitable for the purpose of the invention—capturing a UAV." AATI Resp. at 46. The specification, however, does not provide any guidance of acceptable ranges to establish parameters, nor teach how such ranges could be determined. AATI provided no expert testimony nor other evidence to show how a person skilled in the art would be reasonably certain of acceptable ranges. Similar to *Hallibruton*, where the U.S. Court of Appeals for the Federal Circuit held "fragile gels" to be indefinite, because the requisite degree of fragileness was ambiguous, in claim 21 the requisite degree of acceptable deflection is unknown.

For these reasons, the court has determined that the term "being designed to deflect" is indefinite.

3. Claims 1/21: "Generally Vertical" / "Generally Perpendicular"

Claim Language:
• "supporting the arrestment line across a flight path of the aircraft in a ***generally vertical*** orientation" • "the arrestment line being suspended at its upper end by said support structure across a flight path of the aircraft in an orientation which is ***generally perpendicular*** to said leading edge of said wing at an intended point of interception of said aircraft"
The Party Asserting Indefiniteness: Boeing
The Court's Ruling: Not Indefinite

a. The Parties' Arguments

Boeing argues that "[t]he term 'generally' renders [terms 'generally vertical' and 'generally perpendicular'] vague and indefinite." Boeing PHMB at 33. Neither AATI's proposed construction that "generally vertical means vertical or close to vertical" nor the agreed construction between AATI and the Government "adds [any] further certainty to the claim scope." Boeing PHMB at 34. Specifically, Boeing asserts that "generally vertical" and "generally perpendicular" do not have any art-recognized meanings nor do the AATI patents define or use these terms in the specification. JBR at 109, 112. Therefore, these terms are "completely subjective . . . with no meaning that would permit a party to determine whether one falls within or outside the scope of the claim." JBR at 109. It is irrelevant that the word "generally" is used in claim drafting. Boeing PHMB at 33. The fact is, AATI intentionally "inject[ed] ambiguity into [the] claims" and "opted to create an impermissible 'zone of uncertainty.'" Boeing PHMB at 33, 34 (quoting *Nautilus*, 134 S. Ct. at 2129). AATI "could have provided the necessary notice to the public" by "specif[ying] a particular range within which purported invention worked . . . [or] giv[ing] examples of variations which fell within or outside of the scope of 'generally vertical' or 'generally perpendicular.'" Boeing PHMB at 34.

AATI responds that "there is ample support in the intrinsic evidence for a skilled artisan to understand the term 'generally.'" AATI Resp. at 47, 49. "[T]he plain and ordinary meaning to a person of ordinary skill in the art must control," because "[t]he applicant did not act as his own lexicographer with respect to [the terms]." AATI PHMB at 47, 48. Moreover, the specification supports a plain and ordinary meaning of "generally." AATI Resp. at 48 (referencing the non-perfectly vertical and horizontal lines in Figures 5 and 21 of the patent). In addition, "[t]he prosecution history of the '306 patent provides further support [that] . . . [t]he Examiner had no confusion—he knew what 'generally' meant and used it himself." AATI Resp. at 48 (referencing AATI Resp. at A3-107 (citing the Examiner's notes that the U.S. Patent No. 2,552,115 reference, "discloses at least one 'generally' vertically down slanted line (fig 1) . . . 'generally' perpendicular to said leading edge at an intended point of interception")).

Finally, AATI faults Boeing for "attempt[ing] to impose unrealistically rigid standards [by requiring absolute mathematical precision]" and opposes Boeing's suggestion that "terms of degree (like 'generally') are inherently indefinite without precise numerical boundaries," arguing

that "Boeing's arguments run afoul of controlling precedent." AATI Resp. at 49, 50 (citations omitted). It is well known, "'[g]enerally' is a term used in claiming to avoid mathematical exactness," JBR at 108, 111, and "a skilled artisan would understand 'generally' as a term of approximation [that simply means 'close to']." AATI Resp. at 48, 49 (citing Cumming Decl. ¶ 80). Therefore, "[a]fter reviewing the intrinsic evidence, a skilled artisan would understand that the claims recite the objective of having the wing perpendicular to a vertical arrestment line. . . . He would also understand, however, that achieving a perfect 90-degree angle between the line and wing would not be feasible." AATI Resp. at 48, 49 (citing Cumming Decl. ¶ 80).

b. The Court's Ruling

AATI and Boeing appear to agree that AATI's patents do not define nor give any special meaning to the terms "generally vertical" and "generally perpendicular." AATI PHMB at 47, 48 (AATI stating that "[t]he applicant did not act as his own lexicographer."); *see also* Boeing PHMB at 35 (Boeing arguing that "absent any guidance or explanation . . . the terms 'generally vertical' and 'generally perpendicular' are vague and ambiguous"). Therefore, the plain and ordinary meaning to a person of skill in the art controls. *See InterDigital*, 690 F.3d at 1324 ("The plain meaning of claim language ordinarily controls unless the patentee acts as his own lexicographer and provides a special definition for a particular claim term or the patentee disavows the ordinary scope of a claim term either in the specification or during prosecution.").

The United States Court of Appeals for the Federal Circuit has held that the term "substantially centered" was definite in the light of an example disclosed in the specification illustrating the meaning and usage of "substantially." *See Apple*, 786 F.3d at 1003. Similarly, in this case, the non-perfectly vertical and horizontal lines in Figures 5 and 21 of the '306 patent reasonably illustrate the meaning and usage of "generally vertical" and "generally perpendicular." Therefore, a skilled artisan would not be confused about the scope of the claim. *See Interval Licensing*, 766 F.3d at 1370 ("Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention."); *see also Georgia-Pac. Corp. v. U.S. Plywood Corp.*, 258 F.2d 124, 136 (2d Cir. 1958) ("If the claims, read in the light of the specifications, reasonably apprise those skilled in the art both of the utilization and scope of the invention, and if the language is as precise as the subject matter permits, the courts can demand no more.").

In addition, the terms "generally vertical" and "generally perpendicular" are as precise as the subject matter requires. For example, the specification discloses the objective of having the wing perpendicular to a vertical arrestment line. '306 patent, col. 9:44–46 ("the wings at a favorable more perpendicular angle to the tow line 4 for the largest capture envelope"); *see also* '306 patent, col. 11:14–18 ("Arrestments can be made with the vehicle intersecting the tow line 4 or secondary arrestment lines 20, 21 approximately perpendicular (which is the preferred approach) or approximately parallel or somewhere in between."). The phrases "approximately perpendicular," "favorable more perpendicular," and "generally perpendicular," are used interchangeably to inform a skilled artisan that achieving a perfect 90-degree angle between the line and the wing is not intended.

Moreover, Boeing offered no evidence that a skilled artisan would find these terms lacking reasonable certainty. The Examiner was not confused and used the terms during prosecution.

AATI Resp. at A3-107 (the Examiner arguing that the U.S. Patent No. 2,552,115 reference, "discloses at least one 'generally' vertically down slanted line (fig 1) . . . 'generally' perpendicular to said leading edge at an intended point of interception. Moreover, "words of approximation, such as "generally" and "substantially," are descriptive terms commonly used in patent claims to avoid a strict numerical boundary to the specified parameter." *See Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc.*, 340 F.3d 1298, 1310–11 (Fed. Cir. 2003) (internal citation and quotation marks omitted). Moreover, the law does not require "absolute precision," or a particular range in place of a word of close proximity such as "generally." *See Rosemount, Inc. v. Beckman Instruments, Inc.*, 727 F.2d 1540, 1546–47 (Fed. Cir. 1984) ("Beckman attacks the claims as indefinite, primarily because "close proximity" is not specifically or precisely defined. . . . [T]o accept Beckman's contention would turn the construction of a patent into a mere semantic quibble that serves no useful purpose.") (internal citation and quotation marks omitted).

Nevertheless, assuming, *arguendo*, the claim could have been written with greater precision, by specifying a particular range within which the invention worked, that does not affect the determination of definiteness, because the test is whether these terms would inform a skilled artisan with reasonable certainty about the scope of the invention. Moreover, whether a 50-degree or 60-degree angle falls outside of the scope of "generally vertical" or "generally perpendicular," is an issue of infringement, not claim indefiniteness. *See W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 842 F.2d 1275, (Fed. Cir. 1988) (holding that an "imprecise claim limitation, such as the phrase 'about 100% per second' does not impart invalidity to the claims, but is to be considered in determination of infringement).

Finally, Boeing's expert opined that, "the term 'generally' is susceptible to multiple reasonable interpretations, and thus without further guidance, one of ordinary skill in the art would not be reasonably certain as to the meaning of 'generally vertical' and 'generally perpendicular.'" Hansman Decl. ¶ 79. But, Dr. Hansman focused his inquiry on the abstract meaning of the word "generally," rather than on the meaning of claim terms within the context of the patent.

For these reasons, the court has determined that the terms "generally vertical" and "generally perpendicular," are not indefinite.

4. Claims 1, 21: "Outboard Portion"

The term "outboard portion" is discussed earlier herein. '729, Claim 44 "Outboard Portion" Analysis, *supra* at (IV)(A)(3).

5. Claims 1, 21: "Reliably . . . Attach/Deflect"

Claim Language:
• "said hook being constructed and proportioned to intercept an arrestment line and ***reliably and releasably attach*** said aircraft to said arrestment line" • "lateral defecting structure constructed and arranged to ***reliably deflect*** the arrestment line"
The Parties Asserting Indefiniteness: Government & Boeing
The Court's Ruling: Indefinite

a. The Parties' Arguments

The Government argues that "reliably" is a subjective term, amenable to multiple interpretations, and inherently ambiguous, because there is no intrinsic evidence that provides clarifying guidance about an acceptable range of "reliability." Gov't PHMB at 29. The Government adds that the dictionary definition that AATI proffers, *i.e.*, "able to be trusted to do or provide what is needed: able to be relied on," is equally subjective. Gov't PHMB at 30. What AATI is seeking is a construction that will allow it to reach devices that may not perform their intended function every time. Gov't PHMB at 30.

Boeing agrees with the Government that the term "reliably" is vague, the dictionary definition does nothing to resolve the ambiguity, and there is no intrinsic evidence that defines the term. Boeing PHMB at 30.

AATI counters that a skilled artisan would readily appreciate that the term "reliably" allows for the possibility that attachment or deflection may not occur every time, but instead with sufficient frequency, to be expected from a successful retrieval system. AATI Resp. at 32–33. The term "reliably" appears in over four million patents and published applications and at least one prior court has been able to construe the term without confusion, even though the term had not previously appeared in the specification. AATI Resp. at 33. "Reliably" simply means that in the claimed system, the UAV would not bounce off the arrestment line or drop off the arrestment system. AATI Resp. at 34.

b. The Court's Ruling

Claim language employing terms of degree are definite, if the claim provides reasonable certainty to one of skill in the art, when read in the context of the invention. *See Interval Licensing*, 766 F.3d at 1370. When a word of degree is used, the court must determine whether the patent provides "some standard for measuring that degree." *Nautilus*, 783 F.3d at 1378 (remand). Specific and unequivocal examples may be sufficient to provide a skilled artisan with clear notice of what is claimed. *See DDR Holdings*, 773 F.3d at 1260 (citing *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1334–35 (Fed. Cir. 2010) (holding that the phrase "not interfering substantially" was definite, where the intrinsic evidence provided multiple examples that would allow a skilled artisan to determine whether a particular chemical bond linkage group would "interfer[e] substantially" with hybridization)).

The '306 patent, however, provides no guidance for ascertaining when the system performs "reliably" nor examples of the system preforming "reliably," as opposed to unreliably. As Boeing points out, the dictionary definition that AATI provides is circular and does little to address ambiguity. Boeing PHMB at 30. Although AATI points to *Nuance Commc'ns Inc. v. Tellme Networks Inc.*, 707 F. Supp. 2d. 472, 489 (D. Del. 2010), where a trial court construed the word "reliably," in that case, the defendant never challenged the term "reliable" as indefinite. More recently, in *Bayer Intellectual Prop. GmbH v. Warner Chilcott Co., LLC*, No. 12-1032-GMS, 2015 WL 1849015, at *1–*4 (D. Del. April 21, 2015), the same trial court held a claim indefinite, where it contained words of degree such as—"high," "low," "satisfactory," and "reliable"—without more specificity in the intrinsic record. That is the same problem in this case, because the intrinsic record of the '306 patent provides no standards by which one skilled in the art can ascertain the scope of the claims with reasonable certainty.

For these reasons, the court has determined that "reliably attach" and "reliably deflect" are indefinite.

6. Claims 1, 21: "Kept Clear Of The Intended Flight Path"

Claim Language: "said support for said arrestment line ***being kept clear*** of the intended flight path of the aircraft"
The Parties Asserting Indefiniteness: Government & Boeing
The Court's Ruling: Indefinite

a. The Parties' Arguments

The Government argues that "kept clear" is a term of degree, subject to multiple reasonable interpretations, and is not clear as to how much separation must be present between the supporting structure and the "intended flight path" to meet the limitation. Gov't PHMB at 30. In addition, the claim uses a variable reference point, *i.e.*, "intended flight path." Gov't PHMB at 31. Because there could be multiple "intended flight paths," defining the structure by reference to "intended flight paths" provides no meaningful guidance. Gov't PHMB at 30–31. A single support structure and arrestment line configuration either could be infringing or not, based on the "intended flight path" and whether the arrestment line is "kept clear" of the support structure when the aircraft approaches from that path. Gov't PHMB at 31. The Government also points out that in a prior version of the '729 patent, claim 26 was more specific as it stated "suspension of the fixture is kept clear of said flight path by a distance greater than the height or width of said flying object." Gov't PHMB at 31.

Here, however, the specification neither defines "kept clear" nor provides examples to show a configuration that is "kept clear" and one that is not "kept clear." Boeing adds that it is unaware of any art-recognized definition of "kept clear." Boeing PHMB at 35.

AATI counters that no construction is needed for the phrase "kept clear" of the "intended flight path," because both terms have a plain and ordinary meaning. AATI Resp. at 36. Based on the dictionary definition of "clear"—"free from entanglement or contact"—in the context of the invention, "kept clear" simply means that the support for the arrestment line is maintained ("kept") free from contact ("clear") with the aircraft. AATI Resp. at 36. AATI also argues that "kept clear"

is not a term of degree as the Government and Boeing contend, but instead a binary concept, *i.e.*, the structure is kept clear or not. AATI Resp. at 36. The term "intended flight path" also is not subjective and there is no need for a specific art-recognized definition, because a skilled artisan would know that an aircraft could hit a support structure and therefore would design the system to keep the support structure clear of an "intended flight path." AATI Resp. at 35–36.

b. The Court's Ruling

The Government and Boeing correctly identify "kept clear" as a word of degree. In order for the court to know if a structure is built in a manner that will keep clear of an aircraft, when intersecting an arrestment line, it would need to know *how* much clearance is required. 10/29/15 TR 48:11–13 (The Court: "Does it make any difference, so long as it's kept clear of the flight path, whether it's by a wing [or] by an inch[?]"). The specification, however, fails to indicate an acceptable range of clearances and provides no examples describing when a support structure is "kept clear" and when it is not. Further ambiguity is added by the fact that a structure either would infringe or not, depending on the "intended flight path," the actions of a pilot during any individual arrestment attempt and whether the aircraft crashed into the support structure in attempting capture. 10/29/15 TR 50:7–9 (Government Counsel: "We should not be waiting to see how it is *used* to determine whether or not infringement has occurred.").

As the United States Court of Appeals for the Federal Circuit has observed, "[w]hen a proposed construction requires that an artisan make a separate infringement determination for every set of circumstances in which the composition may be used, and when such determinations are likely to result in differing outcomes (sometimes infringing and sometimes not), that construction is likely to be indefinite." *Halliburton*, 514 F.3d at 1255. In this case, because the structure depends on an unknown "intended flight path" elected by the pilot, the patent fails to inform the scope of the invention. In addition, the '306 patent does not provide a "standard for measuring [the] degree" of clearance required. *See Nautilus*, 783 F.3d at 1378 (remand).

For these reasons, the court has determined that the term "kept clear" is indefinite.

V. CONCLUSION

For the reasons discussed herein, the court has made the following rulings about the indefiniteness of certain disputed claim terms of U.S. Patent No. 6,874,729, U.S. Patent No. 7,097,137, U.S. Patent No. 8,167,242, and U.S. Patent No. 8,517,306.

Patent Number	Claim Number(s)	Claim Term	Indefiniteness Determination
6,874,729	5	"Sensor"	Not Indefinite
	5	"Near The Point Of Engagement"	Indefinite
	44	"Outboard Portion"	Indefinite
7,09,7,137	1, 20	"Releasably Secure"	Not Indefinite
	9, 19	"Smooth Continuation"	Not Indefinite
	30	"Substantially Arrested"	Not Indefinite
	30	"Sufficient Amount"	Not Indefinite
8,167,242	1	"The Flexible Support Structure Being Constructed"	Not Indefinite
	12	"An Inboard Point on Said Wing"	Indefinite
8,517,306	1	"Elastic Deformation Of Components . . . Absorbs Most Of The Energy During Arrestment"	Not Indefinite
	21	"Being Designed To Deflect"	Indefinite
	1/21	"Generally Vertical"/ "Generally Perpendicular"	Not Indefinite
	1, 21	"Outboard Portion" (refer to '729, Claim 44 analysis)	Indefinite
	1, 21	"Reliably And Releasably Attach"	Indefinite
	1, 21	"Said Support For Said Arrestment Line Being Kept Clear"	Indefinite

IT IS SO ORDERED.

s/Susan G. Braden
SUSAN G. BRADEN
Judge