

To facilitate review of this Memorandum Opinion And Order construing certain claims of 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:

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a. The Parties' Proposed Constructions.

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I. THE PATENTS AT ISSUE.¹

On July 23, 1999, William R. McDonnell filed a provisional patent application on a "Launch and Recovery System for Unmanned Aerial Vehicles." 3rd Am. Compl. ¶ 25. On July 24, 2000, he also filed a Patent Cooperation Treaty ("PCT") patent application ("PCT No. US00/20099"), claiming priority of 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 he also filed a national phase patent application of the PCT 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 application³ for 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, he also filed a divisional application for the application for the '137 patent, "Launch and Recovery System for Unmanned Aerial Vehicles," that issued on August 27, 2013 as U.S. Patent No. 8,517,306 ("the '306 patent"). 3rd Am. Compl. Ex. D ('306 patent). As sequential divisional applications of the '729 patent, the '137 and '306 patents disclose and claim only subject matter disclosed in the '729 patent. *See* MPEP § 201.06.

On September 29, 2010, Mr. McDonnell filed a divisional application for the application for 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, he also filed a divisional application for the application for 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). Likewise, the '242, and '718 patents,

¹ The facts cited and discussed herein were derived from the patents at issue, 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").

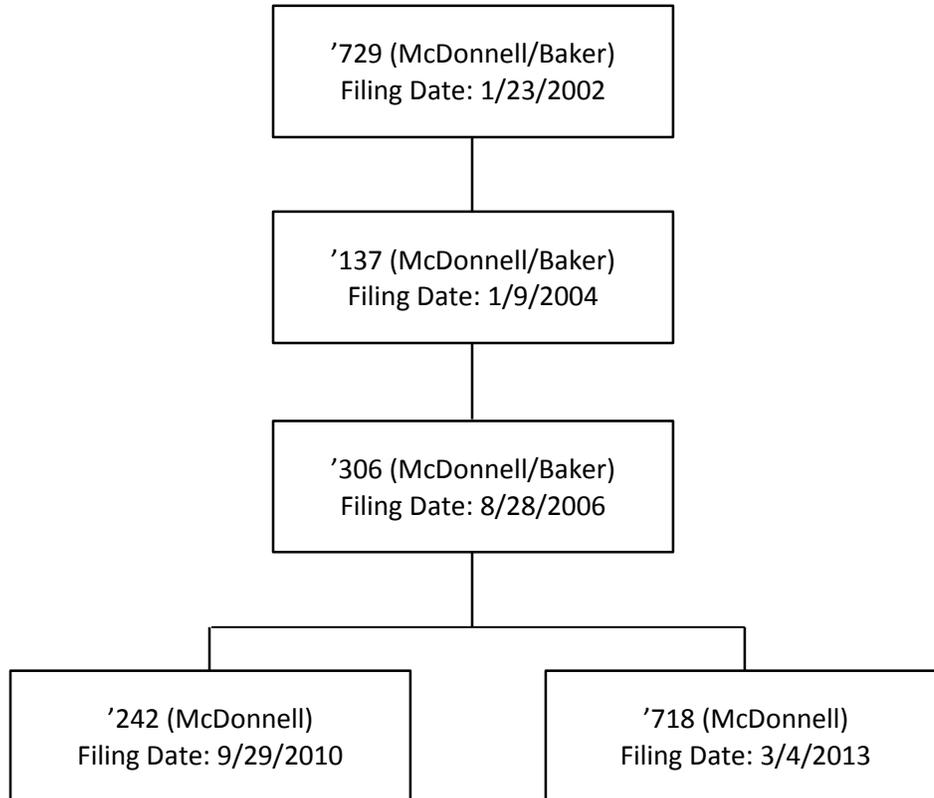
² Section 371 governs the commencement of the national stage of processing under the Patent Cooperation Treaty. *See* 35 U.S.C. § 371.

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").

as divisional applications of the '306 patent, disclose and claim only subject matter disclosed in the '306 patent.

Thereafter, on an unspecified date, Mr. McDonnell assigned all “rights, title, and interest” in these 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

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 and Boeing infringed, with the Government’s authorization and consent, the '729 and '137 patents in performing contracts for the Government.⁵

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 February 16, 2010, which name 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 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.*,

On April 6, 2012, the Government filed a Motion To Notify The Boeing Company (“Boeing”) as an interested party that the court granted on April 23, 2012. On April 27, 2012, that Notice was served on Boeing, in its corporate capacity and as the corporate entity that acquired Insitu, Inc. (“Insitu”) in 2008.⁶

On May 10, 2012, AATI filed a First Supplemental Complaint (“Supp. Compl.”). In addition to the four claims alleged in the February 8, 2012 Complaint, the May 10, 2012 First Supplemental Complaint alleged new claims regarding infringement of the ’242 patent for the Government and Boeing’s use or manufacture of certain of AATI’s patented systems for and with the authorization and consent of the Government. Supp. Compl. ¶¶ 61–71, 80–83. On June 8, 2012, the Government filed an Answer. On June 11, 2012, Boeing filed an Answer.

On July 30, 2012, the parties filed a Joint Preliminary Status Report and a Joint Motion For Protective Order. On August 1, 2012, the court issued a Protective Order. On August 9, 2012, the court issued a Scheduling Order. On September 20, 2012, the parties filed a Joint Motion For Protective Order Concerning E-Discovery. The court declined to rule on that Motion as premature.

On October 15, 2012, Boeing filed a Motion To Dismiss, pursuant to Rule 12(b)(1) of the Rules of the United States Court of Federal Claims (“RCFC”), arguing that the Government’s waiver of sovereign immunity in patent cases did not extend to acts of indirect infringement under 35 U.S.C. § 271(f)⁷ and that the court did not have jurisdiction to hear AATI’s claims under Section

including 35 U.S.C. § 271, 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. *See* Compl., *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 the Motion To Stay.

⁶ Insitu is a corporation “in the business of making . . . UAVs and guidance, launch and retrieval systems” in Bingen, Washington. 3rd Am. Compl. ¶ 14. The court will refer to Third-Party Defendants, Boeing and Insitu, collectively as “Boeing.”

⁷ Section 271(f) provides:

- (1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States shall be liable as an infringer.

271(f). On October 17, 2012, the court held a telephone status conference and asked the Government to inform the court of its position on the jurisdictional issues presented by Boeing's October 15, 2012 Motion To Dismiss. On October 19, 2012, the parties entered a Stipulation regarding the contracts relevant to this action.

On November 16, 2012, AATI filed an Opposition To Boeing's October 15, 2012 Motion To Dismiss. On December 3, 2012, Boeing filed a Reply.

On May 22, 2013, the court convened an oral argument on Boeing's October 15, 2012 Motion To Dismiss ("5/22/13 TR 1-81"). On June 12, 2013, the Government filed a Supplemental Brief. On June 26, 2013, both AATI and Boeing filed Responses.

On October 31, 2013, the court granted Boeing's October 15, 2012 Motion To Dismiss, pursuant to RCFC 12(b)(1), dismissing ¶¶ 43-44, 47-48, 54-55, 58-59, 65-66, and 69-70 of the May 10, 2012 Amended Complaint and dismissing Boeing as a Third-Party Defendant. On November 15, 2013, Boeing filed a Motion To Intervene and an Answer to the First Supplemental Complaint.

On November 25, 2013, AATI filed a Second Amended Complaint and a Motion For Leave To File A Third Amended Complaint. On November 26, 2012, the court granted Boeing's Motion To Intervene and AATI's Motion For Leave To File a Third Amended Complaint.

On December 11, 2013, AATI filed a Third Amended Complaint, alleging new claims regarding infringement of the '306 and '718 patents. 3rd Am. Compl. ¶¶ 80-101. The Third Amended Complaint included ten counts. Counts I, II, III, VII, and VIII allege that Boeing "has been, and now is, using or manufacturing, without license of AATI or lawful right to use or manufacture, the invention described in and covered by" the '729, '137, '242, '306, and '718 patents "by using or manufacturing Insitu UASs,⁸ and all like systems and services." 3rd Am. Compl. ¶¶ 47-67, 80-93. Counts IV, V, VI, IX and X allege that the Government "has been, and now is, using or manufacturing, without license of AATI or lawful right to use or manufacture, the invention described in and covered by" the '729, '137, '242, '306, and '718 patents "by using or

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- (2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

35 U.S.C. § 271(f).

⁸ The parties use the terms "Unmanned Aerial Vehicles" ("UAVs") and "Unmanned Aerial Systems" ("UASs") in reference to the patents at issue. For ease of reference, the court will use UAVs.

manufacturing Insitu UASs, and all like systems and services.” 3rd Am. Compl. ¶¶ 68–79, 94–101.

On December 20, 2013, the Government and Boeing each filed an Answer.

On January 23, 2014, the court held a telephonic status conference.

On March 28, 2014, the parties submitted a Joint Claim Construction Submission (“JBR”). On April 2, 2014, the court convened a telephonic pretrial conference. On April 7–8, 2014, the court held a Claim Construction Hearing (“4/7/14 TR 1–330” and “4/8/14 TR 331–421”).

On May 14, 2014, the parties submitted a Joint Statement Regarding Claims Constructions Tentatively Agreed To At The *Markman* Hearing (“5/14/14 Jt. Statement”).⁹

On May 20, 2014 and June 17, 2014, the court held telephonic status conferences.

On September 18, 2014, the court entered a Scheduling Order for claim construction and indefiniteness briefing.

On October 10, 2014, AATI, the Government, and Boeing each filed Post-Hearing *Markman* Briefs (“AATI PHMB,” “Gov’t PHMB,” and “Boeing PHMB”). 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 held a telephonic status conference and informed the parties that it would address claim construction generally prior to adjudicating indefiniteness issues. 10/24/14 TR at 9. On October 29, 2014, the court entered an Amended Scheduling Order for claim construction briefing.

On November 21, 2014, AATI, Boeing, and the Government each filed Responses to the October 10, 2014 Post-Hearing *Markman* Briefs (“AATI Resp.,” “Gov’t Resp.,” and “Boeing Resp.”).

On December 5, 2014, AATI, the Government, and Boeing filed Memoranda Regarding The Qualifications Of A Person Of Ordinary Skill In The Art (“AATI POSA,” “Gov’t POSA,” and “Boeing POSA”).

On February 6, 2015, in light of the Supreme Court of the United States’ recent opinion in *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831 (2015),¹⁰ the court entered an

⁹ The parties submitted the May 14, 2014 Joint Statement by electronic mail with the permission of the court.

¹⁰ In *Teva*, the United States Supreme Court held that a trial court’s factual determinations during claim construction should be reviewed for clear error, but that legal conclusions should be reviewed *de novo*. 135 S. Ct. at 835 (“Should the Court of Appeals review the district court’s fact finding *de novo* as it would review a question of law? Or, should it review that factfinding as it would review a trial judge’s factfinding in other cases, namely by taking them as correct ‘unless clearly erroneous? We hold that the appellate court must apply a ‘clear error’, not a *de novo*, standard of review.”) (internal citations omitted); *see also id.* at 840–41 (“In some cases, however,

Order permitting the parties to file expert affidavits in support of their claim construction briefs. On March 31, 2015, AATI and the Government each filed Expert Affidavits (“AATI Exp. Aff.” and “Gov’t Exp. Aff.”).¹¹

the district court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand for example, the background science or meaning of a term in the relevant art during the relevant time period. In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the ‘evidentiary underpinnings’ of claim construction that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal.”). The United States Supreme Court further explained that the “clear error” standard should be applied to certain testimony by experts. *Id.* at 843 (“[T]he [United States Court of Appeals for the] Federal Circuit did not accept Teva’s expert’s explanation as to how a skilled artisan would expect the peaks of the curves to shift. And it failed to accept that explanation without finding that the District Court’s contrary determination was ‘clearly erroneous.’ The [United States Court of Appeals for the] Federal Circuit should have accepted the District Court’s finding unless it was ‘clearly erroneous.’”).

But, on remand, the United States Court of Appeals for the Federal Circuit held that “Teva cannot transform legal analysis about the meaning or significance of the intrinsic evidence into a factual question simply by having an expert testify on it.” *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, 2015 WL 3772402, at *5 (Fed. Cir. June 18, 2018). “And whether their statements or disclaimers impact the meaning of a claim term in a given patent is a legal question, not a factual one.” *Id.* But see *Lighting Ballast Control LLC v. Philips Elecs. N.A. Corp.*, 2015 WL 3852932, at *5–*6 (Fed. Cir. June 23, 2015) (quoting *Phillips*, 415 F.3d at 1324) (holding that, “it was not legal error for the district court to rely on extrinsic evidence, because the extrinsic evidence was ‘not used to contradict claim meaning that is unambiguous in light of the intrinsic evidence’” and specifically referring to expert testimony).

In dissent, Judge Mayer stated:

Teva mandates that the trial court’s factual findings are to be respected, barring clear error, and that the required legal analysis must be performed in view of those findings, 135 S. Ct. at 841. Here, however, the court takes the opposite tack, first embarking on an independent review of the record and then considering, as an afterthought, the important and carefully considered factual findings made by the trial court.

Id. at *8 (Mayer, J., dissenting).

¹¹ AATI’s expert, Dr. Duncan C. Cumming, is the Principal in Emmanuel Avionics, Inc. and has nearly three decades of experience “in the design of systems used in unmanned aerial vehicles[.]” AATI Exp. Aff. ¶ 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.” AATI Exp. Aff. ¶ 3.

On June 23, 2015, the Government filed a Notice, attaching the United States Court of Appeals for the Federal Circuit’s *en banc* decision in *Williamson v. Citrix Online, LCC*, 2015 WL 3687459 (Fed. Cir. June 16, 2015).

On July 27, 2015, the court held a hearing on to discuss the reasons the terms required construction and whether the parties could agree to constructions of any additional terms (“7/27/15 TR 1–42”).

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 invokes 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.

B. Standing.

Federal trial courts have been advised to “decide standing questions at the outset of a case. That order of decision (first jurisdiction then the merits) helps better to restrict the use of the federal courts to those adversarial disputes that Article III defines as the federal judiciary’s business.” *Steel Co. v. Citizens for a Better Env’t*, 523 U.S. 83, 111 (1998) (Breyer, J., concurring). The party invoking federal jurisdiction has the burden of proof to satisfy the constitutional requirements of Article III standing. *See FW/PBS, Inc. v. Dallas*, 493 U.S. 215, 231 (1990) (holding that the burden is on the party seeking to exercise jurisdiction to clearly allege facts sufficient to establish jurisdiction).

“A patentee shall have remedy by civil action for infringement of his patent.” 35 U.S.C. § 281; *see also* 35 U.S.C. § 100(d) (“The word ‘patentee’ includes not only the patentee to whom the patent was issued but also the successors in title to the patentee.”); *Paradise Creations, Inc. v. UV Sales, Inc.*, 315 F.3d 1304, 1308 (Fed. Cir. 2003) (“[T]his court has determined that in order to assert standing for patent infringement, the plaintiff must demonstrate that it held

The Government’s expert, Professor Eric N. Johnson, is the Lockheed Martin Associate Professor of Avionics Integration in the Daniel Guggenheim School of Aerospace Engineering at the Georgia Institute of Technology and “an instrument rated private pilot, model aircraft operator, and research/developer of Unmanned Aircraft Systems[.]” Gov’t Exp. Aff. ¶ 10. Professor Johnson “received a B.S. degree from the University of Washington, M.S. degrees from the Massachusetts Institute of Technology and the George Washington University, and a Ph.D from Georgia Technical Institute. Gov’t Exp. Aff. ¶ 10.

enforceable title to the patent *at the inception of the lawsuit.*)” (emphasis in original). The standard set forth by the United States Supreme Court over a century ago in *Waterman v. MacKenzie*, 138 U.S. 252 (1891) still governs:

There can be no doubt that he is “the party interested, either as patentee, assignee, or grantee,” and as such entitled to maintain an action at law to recover damages for an infringement; and it cannot have been the intention of [C]ongress that a suit in equity against an infringer to obtain an injunction and an account of profits, in which the court is authorized to award damages, when necessary to fully compensate the plaintiff, and has the same power to treble the damages as in an action at law, should not be brought by the same person.

Id. at 260–61 (1891) (internal citations omitted).

The December 11, 2013 Third Amended Complaint alleges that all “rights, title, and interest” in the ’729 patent, the ’137 patent, the ’306 patent, the ’242 patent, and the ’718 patent were issued by assignment to AATI. 3rd Am. Compl. ¶¶ 2, 5; *see also* ’729 patent (listing AATI as assignee); ’137 patent (same); ’306 patent (same); ’242 patent (same); ’718 patent (same). Therefore, AATI has standing.

C. Controlling Precedent Concerning Construction Of Patent Claims.

In *Markman v. Westview Instruments, Inc.* (“*Markman III*”), 517 U.S. 370 (1996), the United States Supreme Court unanimously affirmed the *en banc* decision of the United States Court of Appeals for the Federal Circuit in *Markman v. Westview Instruments, Inc.* (“*Markman II*”), 52 F.3d 967 (Fed. Cir. 1995) (*en banc*), holding that the meaning and scope of a patent’s claims are issues of law to be determined by the federal trial judge. *See* 517 U.S. at 391; *see also* 52 F.3d at 978–79. The significance of *Markman III*, however, was the United States Supreme Court’s expressed deference to the appellate court’s analysis for conducting claim construction. *See Markman III*, 517 U.S. at 390 (“It was just for the sake of such desirable uniformity that Congress created the [United States] Court of Appeals for the Federal Circuit as an exclusive appellate court for patent cases, H.R. Rep. No. 97–312, at 20–23 (1981), observing that increased uniformity would ‘strengthen the United States patent system in such a way as to foster technological growth and industrial innovation.’ *Id.* at 20.”). The court now turns to that analysis.

1. The Court Should First Examine Intrinsic Evidence.

The United States Court of Appeals for the Federal Circuit has instructed federal trial judges first to examine “intrinsic evidence,” because it is the “most significant source of the legally operative meaning of disputed claim language.” *Vitronics Corp. v. Conceptor Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). Intrinsic evidence is the “claim language, the written description, and, if introduced, the prosecution history.” *Phonometrics, Inc. v. N. Telecom Inc.*, 133 F.3d 1459, 1464 (Fed. Cir. 1998). In conducting this examination, the trial judge must determine, as a threshold matter, whether there is ambiguity in any claim term requiring construction. *See Vitronics*, 90 F.3d at 1582 (directing the trial judge to “look to the words of the claims themselves, both asserted and nonasserted, to define the scope of the patented invention”).

a. The Person Of Ordinary Skill In The Art.

The federal trial judge is required to examine patent claim terms and phrases “through the viewing glass of a person skilled in the art.” *Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1298 (Fed. Cir. 2003); *see also Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*) (“The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim construction.”); *Hockerson-Halberstadt, Inc. v. Avia Grp. Int’l, Inc.*, 222 F.3d 951, 955 (Fed. Cir. 2000) (holding that the court gives claim terms “their ordinary and accustomed meaning as understood by one of ordinary skill in the art”). In conducting this examination, as a threshold matter, the trial court must determine whether there is ambiguity in any claim term requiring construction. *See Vitronics*, 90 F.3d at 1582 (directing the trial judge to “look to the words of the claims themselves, both asserted and nonasserted, to define the scope of the patented invention”).

Determining the person of ordinary skill in the art (“POSA”) is a “basic factual inquir[y].” *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). And,

Factors that may be considered in determining the ordinary level of skill in the art include: 1) the types of problems encountered in the art; 2) the prior art solutions to those problems; 3) the rapidity with which innovations are made; 4) the sophistication of the technology; and 5) the educational level of active workers in the field.

Ruiz v. A.B. Chance Co., 234 F.3d 654, 666–67 (Fed. Cir. 2000).

i. AATI’s Proposed Definition Of The POSA.

AATI’s proposed definition of the POSA for the asserted patents is:

A [POSA] at the time of the invention of the asserted patents would have a bachelor’s degree in engineering or equivalent experience in the aviation or engineering fields. The [POSA] would also have 3–5 years of experience in the research, design, and testing of UAVs, including launch and recovery.

AATI POSA at 1.

AATI relies on the asserted patents’ titles, abstracts, and select parts of the specifications to support its contention that the skilled artisan should have experience with the launch and recovery of UAVs. AATI POSA at 2–4 (citing ’729 patent, col. 1, ll. 58–60 (“the launch and recovery of aircraft”), col. 2, l. 64 (“launching and retrieving conventional fixed wing aircraft”), col. 3, ll. 7–9 (“launch and recovery system that exerts lower loads and inflicts less damage to the UAV”)).

AATI rejects Boeing and the Government’s definition for a POSA due to lack of specificity concerning the minimum required amount of experience, as well as the form of aviation experience. AATI POSA at 4–5. AATI contends that experience in the launch and recovery of UAVs is necessary. AATI POSA at 5.

ii. The Government’s Proposed Definition Of The POSA.

The Government’s proposed definition of a POSA for the asserted patents is:

A [POSA] at the time of the invention, i.e., the effective filing date of the applications for the asserted patents, would have a bachelor’s degree in engineering or physics, or equivalent experience in the aviation or engineering fields. The [POSA] would also have some aviation experience, such as, but not limited to, designing aircraft or aircraft components, operating or building remote-controlled aircraft, and operating personal or commercial aircraft.

Gov’t POSA at 2.

In support, the Government cites the five factors identified by the United States Court of Appeals for the Federal Circuit in *Ruiz*, 234 F.3d at 666–67, and applies these factors to the asserted patents. Gov’t POSA at 3. As to the first factor—the types of problems encountered in the art—the Government points to a variety of problems identified in the patent, including the lack of retaining devices in some capture apparatuses and flight paths through turbulent air. *Ruiz*, 234 F.3d at 666–67; Gov’t POSA at 3. As to the second factor—the prior art solutions to the problems identified in factor one—the solutions come from prior art sources outside the field of UAVs, and, in some cases, from sources outside aviation generally. *Ruiz*, 234 F.3d at 666–67; Gov’t POSA at 3. As to the third factor—the rapidity of inventions—innovations in this field have been slow since 1909. *Ruiz*, 234 F.3d at 666–67; Gov’t POSA at 3. As to the fourth and fifth factors—the sophistication of the technology and education of workers in the field—the patent specifications describe “straightforward mechanical engineering,” and AATI has “already admitted[,] the technology in this case is not complex.” Gov’t POSA at 3.

Furthermore, the court should adopt only one definition of the POSA and use that definition for all stages of the proceedings. Gov’t POSA at 4. No party should be permitted to reserve the right to change its description of POSA at a later stage of the case. Gov’t POSA at 4–5.

iii. Boeing’s Proposed Definition Of The POSA.

Boeing agrees with the Government’s definition of a POSA and emphasizes the “simplicity and breadth of the technology,” citing AATI’s patents and the prosecution histories in support. Boeing POSA at 1–3. But, Boeing states that “the current dispute among the parties does not appear to be dispositive to any claim construction or indefiniteness issue[.]” Boeing POSA at 1.

In addition, “additional evidence may provide more insight about the level of skill in the art and the definition of an ordinarily skilled artisan.” Boeing POSA at 3. Therefore, the court may need to revise its definition of POSA in later proceedings. Boeing POSA at 1.

iv. The Court’s Resolution.

Although the parties did not all apply *Ruiz*, the parties’ arguments can be distilled into three issues: (1) whether “3–5 years” or just “some” experience is required; (2) whether physics is an acceptable educational field; and (3) whether the POSA may change at later stages of the proceedings. The court will address the first issue, i.e., the POSA’s experience level, using the

first four *Ruiz* factors, and the second issue, *i.e.*, the POSA's education, using the fifth *Ruiz* factor. Finally, the third, unrelated issue will be addressed without using the *Ruiz* factors.

As to the first and second *Ruiz* factors, *i.e.*, “the types of problems encountered in the art” and “the prior art solutions to those problems,” these problems are not limited to UAVs. Instead, many problems are general aeronautical problems, as well as problems encountered in other fields like mountaineering and commercial parasailing technologies. *See, e.g.*, '729 patent, col. 1, ll. 26–54 (discussing problems in the prior art, such as retaining devices, flights in turbulent air, and piloting skills); '729 patent, col. 2, ll. 13–16 (discussing commercial parasailing technology); '729 patent, col. 10, ll. 53–58 (discussing mountain climbing equipment). And, the majority of the claims and the field of invention of the asserted patents do not limit the invention to UAVs, but refer to aircraft. *See generally* '729 patent, cols. 20–26; '137 patent, cols. 20–24; '242 patent, cols. 20–22; '306 patent, cols. 20–22; '718 patent, col. 20, ll. 36–58. Therefore, the first and second *Ruiz* factors favor finding that the POSA does not require specific UAV experience. Instead, the POSA may have experience with the research, design, testing, and operation of aircraft, including launch and recovery.

As to the third factor and fourth *Ruiz* factors, *i.e.*, “the rapidity with which innovations are made” and “the sophistication of the technology,” AATI states that a POSA should have between three and five years of experience, while the Government's definition requires only “some” experience. AATI POSA at 1; Gov't POSA at 2. AATI, however, provides no evidentiary support that between three and five years' experience is required to have ordinary skill in the art. In addition, prior art arrestment techniques date back to 1909, and both parties have stipulated that the invention here is not complex. *See* '718 patent at 1 (citing U.S. Patent No. 965,881 (1909 patent)); *see also* Gov't POSA at 3; 4/7/14 TR at 6 (stating that the invention is “pretty simple”); Dkt. No. 22, at 16 (“AATI does not believe that the technology in this case is particularly difficult to comprehend”). The generally slow pace of innovation in the field and simplicity of the invention further support broadening the POSA's field to experience beyond UAVs to include the research, design, testing, and operation of aircraft, including launch and recovery.

As to the fifth *Ruiz* factor, *i.e.*, “the educational level of active workers in the field,” both AATI and the Government state that a POSA should have a bachelor's degree in engineering, or equivalent experience in engineering or aviation. AATI POSA at 1; Gov't POSA at 2. The Government contends that a bachelor's degree, or equivalent experience, in physics is also acceptable. Gov't POSA at 2. But, physics is too broad a definition of the relevant art and would include many unrelated fields, such as particle physics. Therefore, the court has determined that a POSA should have a bachelor's degree in engineering or equivalent experience in engineering or aviation.

Additionally, AATI and Boeing contend that the definition of the POSA may change at a later point in the proceeding, but the Government counters that the court's definition of the POSA should not change. AATI POSA at 1 n.1; Gov't POSA at 4–5. Although determining the POSA is a “basic factual inquiry,” AATI presents no evidence as to why the POSA would change at the later stages of the proceedings. *Graham*, 383 U.S. at 17. Thus, the court has determined that the parties may not reserve the right to change the description of the POSA later in the proceedings.

For these reasons, the court has determined that the POSA should have a bachelor's degree in engineering, or equivalent experience in engineering or aviation. The POSA should also have

some level of experience in the research, design, testing, and operation of aircraft, including launch and recovery.

b. The Specification.

As a matter of law, “[t]he specification shall contain a written description of the invention[.]” 35 U.S.C. § 112, ¶ 1. For this reason, claims “must be read in view of the specification, of which they are a part.” *Phillips*, 415 F.3d at 1315 (internal citations omitted). The specification is “always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of the disputed term.” *Id.* (internal citations omitted). The specification is accorded deference in claim construction, because it is the patentee’s statement to the public describing the invention. *See Honeywell Int’l, Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1318 (Fed. Cir. 2006) (“[T]he public is entitled to take the patentee at his word[.]”).

The specification is particularly important in two circumstances. The first is where the specification includes a “special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess.” *Phillips*, 415 F.3d at 1316; *see also Edwards Lifesciences LLC v. Cook, Inc.*, 582 F.3d 1322, 1329 (Fed. Cir. 2009) (stating where two terms are used interchangeably, it “is akin to a definition equating the two”). As such,

a patentee can act as his own lexicographer to specifically define terms of a claim contrary to their ordinary meaning[;] the written description in such a case must clearly redefine a claim term “so as to put a reasonable competitor or one reasonably skilled in the art on notice that the patentee intended to so redefine that claim term.

Elekta Instrument S.A. v. O.U.R. Scientific Int’l, Inc., 214 F.3d 1302, 1307 (Fed. Cir. 2000) (quoting *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357 (Fed. Cir. 1999)); *see also Vitronics*, 90 F.3d at 1582 (holding that, in ascertaining the scope of the patent, deference should be afforded claims as defined by their “customary meaning,” with the caveat that the law affords patentees the right to serve as “lexicographers,” if a special or unique definition is clearly stated in the specifications or prosecution history).

The second circumstance is where the specification “may reveal an internal disclaimer, or disavowal, of claim scope by the inventor.” *Phillips*, 415 F.3d at 1316; *see also Edwards Lifesciences*, 582 F.3d at 1330 (holding that where a specification uses a term only in a specific context, that term should not be construed to have a broader scope). The inventor’s intent with respect to the claims “must be clear” to overcome their customary meaning. *Voda v. Cordis Corp.*, 536 F.3d 1311, 1320 (Fed. Cir. 2008) (citations omitted).

Where the claim language is ambiguous, the “specification, including the inventors’ statutorily-required written description of the invention[] is the primary source for determining claim meaning.” *Astrazeneca AB v. Mutual Pharm. Co.*, 384 F.3d 1333, 1336 (Fed. Cir. 2004); *see also id.* at 1337 (“[T]he patent is an integrated document, with the claims pointing out and distinctly claiming . . . the invention described in the rest of the specification and the goal of claim construction is to determine what an ordinary artisan would deem the invention claimed by the patent, taking the claims together with the rest of the specification.”) (internal quotation marks and citations omitted). Of course, the utility of the specification still depends on whether the “written

description of the invention [is] . . . clear and complete enough to enable those of ordinary skill in the art to make and use it.” *Vitronics*, 90 F.3d at 1582.

Three additional rules of construction must be considered. First, federal trial judges have been advised not to construe a claim to exclude the preferred and only embodiment disclosed in a specification, because “[s]uch an interpretation is rarely, if ever, correct.” *Vitronics*, 90 F.3d at 1583. Second, when more than one embodiment is present, as a matter of law, the court “do[es] not interpret claim terms in a way that excludes disclosed examples in the specification.” *Verizon Servs. Corp. v. Vonage Holding Corp.*, 503 F.3d 1295, 1305 (Fed. Cir. 2007); *see also Phillips*, 415 F.3d at 1323 (recognizing that the embodiments in a patent often are examples meant to teach a person of ordinary skill in the art how to make and use the invention, but should not be construed to limit the invention only to a specific embodiment). But, where an interpretation of a term contradictory to its ordinary meaning would be required to cover all of the embodiments, and the applicant was not acting as his own lexicographer, such language can be interpreted to claim less than all of the embodiments. *See Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1383 (Fed. Cir. 2008) (holding that, even if “totally” would have covered all embodiments, “partially” could not include “totally,” unless the applicant had acted as his own lexicographer); *see also Baran v. Med. Device Tech., Inc.*, 616 F.3d 1309, 1315–16 (Fed. Cir. 2010) (holding that, if a term is used in the specification to differentiate two different embodiments and to describe the invention, it is proper to construe the claims to cover only one of the two embodiments, because the differentiation concedes coverage of one of the embodiments).

Third, although the specification is important in discerning the meaning of the claims, federal trial judges must not “import” or graft limitations from the specification into the claim. *See Am. Piledriving Equip., Inc. v. Geoquip, Inc.*, 637 F.3d 1324, 1331 (Fed. Cir. 2011) (reaffirming that “the role of a [federal trial judge] in construing claims is not to redefine claim recitations or to read limitations into the claims to obviate factual questions of infringement and validity but rather to give meaning to the limitations actually contained in the claims, informed by the written description, the prosecution history[,] if in evidence, and any relevant extrinsic evidence”); *see also Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1348 (Fed. Cir. 2009) (“The patentee is entitled to the full scope of his claims, and we will not limit him to his preferred embodiment or import a limitation from the specification into the claims.”); *Intervet Am., Inc. v. Kee-Vet Labs., Inc.*, 887 F.2d 1050, 1053 (Fed. Cir. 1989) (holding that “[federal trial judges] cannot alter what the patentee has chosen to claim as his invention, that limitations appearing in the specification will not be read into claims, and that interpreting what is meant by a word in a claim is not to be confused with adding an extraneous limitation appearing in the specification, which is improper”) (internal quotation marks omitted) (emphasis omitted).

c. The Prosecution History.

In addition, “the prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Phillips*, 415 F.3d at 1317; *see also Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1344 (Fed. Cir. 1998) (observing that the prosecution history “may contain contemporaneous exchanges between the patent applicant and the [United States Patent and Trademark Office] about what the claims mean”).

Under certain circumstances, the prosecution history can even trump the specification. *See Graham*, 383 U.S. at 22 (holding that claims narrowed to obtain issuance over prior art during prosecution may not subsequently be interpreted by the specification to cover what was disclaimed before the United States Patent and Trademark Office); *see also Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 733–34 (2002) (“When . . . the patentee originally claimed the subject matter alleged to infringe but then narrowed the claim in response to a rejection, he may not argue that the surrendered territory compromised unforeseen subject matter that should be deemed equivalent to the literal claims of the issued patent.”). Therefore, prosecution history may preclude “a patentee from regaining, through litigation, coverage of subject matter relinquished during prosecution of the application of the patent.” *Wang Labs., Inc. v. Mitsubishi Elecs. Am., Inc.*, 103 F.3d 1571, 1577–78 (Fed. Cir. 1997), *cert. denied*, 522 U.S. 818 (1997). In sum, regardless of whether an examiner agreed with an applicant’s statements during prosecution, any argument made “may lead to a disavowal of the claim scope[.]” *Seachange Int’l, Inc. v. C-Cor Inc.*, 413 F.3d 1361, 1374 (Fed. Cir. 2005); *see also Microsoft Corp. v. Multi-Tech Sys.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) (“We have stated on numerous occasions that a patentee’s statements during prosecution, whether relied on by the examiner or not, are relevant to claim interpretation.”).

2. The Federal Trial Judge May Examine Extrinsic Evidence, But Only In Limited Circumstances.

As the United States Supreme Court recently acknowledged, “In some cases . . . the [federal trial] court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period.” *Teva*, 135 S. Ct. at 841. But, if the court’s consideration of the intrinsic evidence resolves any ambiguity about the meaning of a patent claim, as a matter of law, it is improper for the judge to rely on extrinsic evidence, *i.e.*, evidence outside of the patent record, such as expert and inventor testimony, dictionaries, learned treatises, and articles. *See Vitronics*, 90 F.3d at 1584 (allowing extrinsic evidence “to help the court come to the proper understanding of the claims,” but not to contradict intrinsic evidence or vary the scope of the claims). The United States Court of Appeals for the Federal Circuit, however, clarified in *Key Pharm. v. Hercon Lab. Corp.*, 161 F.3d 709 (Fed. Cir. 1998):

This court has made strong cautionary statements on the proper *use* of extrinsic evidence, which might be misread by some members of the bar as restricting a trial court’s ability to *hear* such evidence. We intend no such thing. To the contrary, trial courts generally can hear expert testimony for background and education on the technology implicated by the presented claim construction issues, and trial courts have broad discretion in this regard.

Furthermore, a trial court is quite correct in hearing and relying on expert testimony on an ultimate claim construction question in cases in which the intrinsic evidence (*i.e.*, the patent and its file history—the “patent record”) does not answer the question.

What is disapproved of is an attempt to use extrinsic evidence to arrive at a claim construction that is clearly at odds with the claim construction mandated by the

claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.

Id. at 716 (citations omitted) (emphasis in original); *see also Zodiac Pool Care, Inc. v. Hoffinger Indus., Inc.*, 206 F.3d 1408, 1414 (Fed. Cir. 2000) (cautioning federal trial judges “to turn[] to extrinsic evidence only when the intrinsic evidence is insufficient to establish the clear meaning of the asserted claim”); *Advanced Fiber Techs. (AFT) Trust v. J & L Fiber Servs., Inc.*, 674 F.3d 1365, 1375 (Fed. Cir. 2012) (“[E]xtrinsic evidence may be useful to the court, but it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.”) (citation omitted).

IV. THE COURT’S CONSTRUCTION OF CERTAIN PATENT CLAIMS REQUESTED BY THE PARTIES.

The parties have requested that the court construe certain terms in the following claims: claim 5 of the ’729 patent; claims 1, 20, 25, and 30 of the ’137 patent; claims 1, 2, 9, 13, 14, 15, and 19 of the ’242 patent; claims 13, 17, 19, and 21 of the ’306 patent; and claim 1 of the ’718 patent. The following claims are independent¹² claims: claim 5 of the ’729 patent; claims 1, 20, and 25 of the ’137 patent; claims 1, 9, 14, and 19 of the ’242 patent; claim 21 of the ’306 patent; and claim 1 of the ’718 patent. The following claims are dependent¹³ claims: claim 30 of the ’137 patent; claims 2, 13, and 15 of the ’242 patent; and claims 13, 17, and 19 of the ’306 patent.

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

1. Independent Claim 5.

Claim 5 of the ’729 patent describes:

An aerial recovery system for an aircraft, said system comprising:
an arrestment line held up at at least one end,
said aircraft containing a device for capturing said line, said aircraft containing structure suitable for deflecting said line laterally into engagement with said capturing device, said structure comprising a wing of said aircraft, a sensor being attached to said recovery system near the point of engagement of said aircraft to said recovery system, for guidance in maneuvering said aircraft into engagement with said recovery system.

’729 patent, col. 21, ll. 39–49.

¹² An “independent claim” is “a claim that does not refer back to or depend on another claim.” U.S. PATENT & TRADEMARK OFFICE, *Glossary* (“PTO Glossary”), <http://www.uspto.gov/main/glossary/index.html> (last visited July 29, 2015).

¹³ A “dependent claim” incorporates by reference a previous claim and includes all of the limitations of the claims on which they depend. *See* PTO Glossary.

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

1. The Independent Claims.

a. Claim 1.

Claim 1 of the '137 patent describes:

An aerial recovery system for recovering an aircraft, said system comprising;

the aircraft and

an arrestment line held up at an upper end by support structure supported by a base, a lower end of the arrestment line also being connected to the base, said arrestment line not being a support for said support structure in the form of a rigid, straight-line guy line tension-tie connection between an immovable upper end attached to the support structure and an immovable lower end,

said aircraft containing a capturing device for capturing said line, said capturing device comprising a hook positioned laterally of a longitudinal axis of said aircraft, said hook being adapted to releasably secure said line to said aircraft, said hook being the primary means of capturing said aircraft,

said aircraft containing structure suitable for deflecting said line laterally into engagement with said hook, said structure comprising a wing of said aircraft.

'137 patent, col. 20, l. 60–col. 21, l. 12.

b. Claim 20.

Claim 20 of the '137 patent describes:

In combination, a flying object and an apparatus adapted for capturing the flying object,

the flying object having a spanwise lifting surface with a capture device positioned laterally of the centerline of the flying object, the capture device comprising a hook adapted to releasably secure the flying object to the apparatus, the hook being the primary means of capturing said flying object, the flying object being adapted for flying along a flight path,

the apparatus comprising:

an arrestment line positionable in the flight path of the flying object, at least a portion of the arrestment line being inclined at an angle relative to the spanwise lifting surface to intersect the leading edge of the spanwise lifting surface, the arrestment line being positioned to engage the capture device of the flying object to releasably secure the flying object of the apparatus; and

a support structure coupled to the arrestment line at two spaced-apart positions and positioned to support a portion of the arrestment line between said positions in the flight path,

said arrestment line not being a support for said support structure in the form of a rigid, straight-line guy line tension-tie connection between an immovable upper end attached to the support structure and an immovable lower end.

'137 patent, col. 21, l. 60–col. 22, l. 20.

c. Claim 25.

Claim 25 of the '137 patent describes:

In combination, a flying object and an apparatus adapted for capturing the flying object, the combination comprising:

- a) a line suspended across the flight path of the object in an orientation which includes a component normal to the flight path;
- b) support structure, with a load path to a base, suspending the line, a lower end of the line being restrained to prevent the line from blowing freely in the wind, the arrestment line not being a support for the support structure in the form of a rigid, straight-line guy line tension-tie connection between an immovable upper end attached to the support structure and an immovable lower end; and
- c) a device located of the centerline of the flying object, the device being adapted for intercepting the line after the line slides laterally along a leading edge of a structure comprising a wing of the flying object and holding the flying object to the line, the device being the primary means of capturing the flying object, the load path not including the arrestment line below the flying object.

'137 patent, col. 22, ll. 30–51.

2. The Dependent Claims.

a. Claim 30.

Claim 30 of the '137 patent describes:

The combination of claim 29,¹⁴ wherein the device adapted for intercepting the line comprises a hook on the wing of the flying object and includes an inner throat smaller than the diameter of the line so as to generate a sufficient amount of braking force such that after the line is intercepted by the hook, sliding of the line through the hook is substantially arrested.

'137 patent, col. 22, l. 64–col. 23, l. 3.

¹⁴ Claim 29 of the '137 patent describes, “The combination of claim 25 wherein the leading edge of the structure comprising a wing swept at least fifteen degrees.” '137 patent, col. 22, ll. 61–63.

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

1. The Independent Claims.

a. Claim 1.

Claim 1 of the '242 patent describes:

An aircraft and an aircraft recovery system designed to recover said aircraft, said aircraft recovery system having an arrestment line and an arrestment line support, said aircraft including a line capturing and retaining device located off centerline of said aircraft, said line capturing and retaining device having a passageway with an open entrance and a closed end, said passageway having at least two obstructions the line passes during recovery, each of said obstructions increasing the force required to move the line back past the obstruction toward the open entrance of said passageway relative to the force required to move the line initially past the obstruction toward the closed end of the passageway, a first of said at least two obstructions being closer to the open entrance than a second of said at least two obstructions.

'242 patent, col. 20, ll. 29–42.

b. Claim 9.

Claim 9 of the '242 patent describes:

An aircraft designed to be recovered by an aircraft recovery system having an arrestment line and an arrestment line support, said aircraft including a line capturing and retaining hook mounted to a wing of the aircraft and located off centerline of said aircraft, said hook having an open entrance forming a smooth continuation of a leading edge of said wing, a closed end outboard of the open entrance, and, between the open entrance and closed end, an inner throat, an outer throat, and a first obstruction which requires less force for the line to enter the outer throat than to exit the outer throat through the open entrance and a second obstruction between said inner throat and outer throat which requires less force during the arrestment for the line to pass from the outer throat to the inner throat than from the inner throat to the outer throat.

'242 patent, col. 20, l. 64–col. 21, l. 10.

c. Claim 14.

Claim 14 of the '242 patent describes:

A method of capturing an aircraft with an aircraft recovery system, said aircraft recovery system having an arrestment line and an arrestment line support, said aircraft comprising at least one wing, and a capturing and retaining device mounted on said wing off centerline of the aircraft, the method comprising flying said aircraft

into said arrestment line to cause the arrestment line to slide along a leading edge of said wing into an open entrance of a passageway in said capturing and retaining device, said passageway having a closed end, said passageway having at least two obstructions the line passes during recovery, each of said at least two obstructions increasing the force required to move the line back past the obstruction toward the open entrance of said passageway relative to the force required to move the line initially past the obstruction toward the closed end of the passage way, a first of said at least two obstructions being closer to the open entrance than a second of said at least two obstructions.

'242 patent, col. 21, l. 20–col 22, l. 3.

d. Claim 19.

Claim 19 of the '242 patent describes:

A method of capturing an aircraft with an aircraft recovery system, said aircraft recovery system having an arrestment line and an arrestment line support, said aircraft comprising at least one wing, and a capturing and retaining device mounted on said wing and located off centerline of said aircraft, the method comprising flying said aircraft into said arrestment line to cause the arrestment line to slide along a leading edge of said wing into an open entrance of said capturing and retaining device, the open entrance forming a smooth continuation of the leading edge, past a first obstruction in the capturing and retaining device into an outer throat of the capturing and retaining device, the first obstruction requiring less force during arrestment for the line to enter the outer throat than to exit the outer throat through the open entrance, and past a second obstruction into an inner throat of the capturing and retaining device, the second obstruction requiring less force during arrestment for the line to pass from the outer throat to the inner throat than from the inner throat to the outer throat, the inner throat having a closed end outboard of the open entrance, the line being retained in the inner throat.

'242 patent, col. 22, ll. 13–34.

2. The Dependent Claims.

a. Claim 2.

Claim 2 of the '242 patent describes, “The combination of claim 1 wherein the first obstruction comprises a spring-loaded latch.” '242 patent, col. 20, ll. 43–44.

b. Claim 13.

Claim 13 of the '242 patent describes, “The aircraft of claim 9 wherein the inner throat is smaller than the diameter of the line.” '242 patent col. 21, ll. 18–19.

c. Claim 15.

Claim 15 of the '242 patent describes, "The method of claim 14 wherein the first obstruction comprises a spring-loaded latch." '242 patent, col. 22, ll. 4–5.

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

1. The Independent Claims.

a. Claim 21.

Claim 21 of the '306 patent describes:

In combination, an aircraft and a capturing apparatus adapted for capturing the aircraft,

the aircraft comprising

a) a hook attached to an outboard portion of a wing of said aircraft, said hook comprising an inboardly-extending forward part defining a forward side of an outboardly-extending passageway, the passageway having an inboardly-facing mouth, said hook being constructed and proportioned to intercept an arrestment line and reliably and releasably attach said aircraft to said arrestment line with a line retaining mechanism, and

b) lateral deflecting structure constructed and arranged to reliably deflect the arrestment line laterally into engagement and attachment with the hook, the lateral deflecting structure comprising a leading edge of the wing of said aircraft,

the capturing apparatus comprising

c) the arrestment line, and

d) an arrestment line support structure supported by a base, the arrestment line being designed to deflect when contacted by said aircraft, 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, and being connected at its lower end to the base,

said support structure being kept clear of the intended flight path of the aircraft and extending down to said base on only one side of said the intended flight path.

'306 patent, col. 21, l. 63–col. 22, l. 27.

2. The Dependent Claims.

a. Claim 13.

Claim 13 of the '306 patent describes, "The combination of claim 1 wherein the hook has an open entrance and a closed end, the line retaining mechanism comprising at least one obstruction that makes it easier for said line to move toward the closed end of the hook than to move back toward the open entrance." '306 patent, col. 21, ll. 30–34.

b. Claim 17.

Claim 17 of the '306 patent describes, "The combination of claim 1 wherein said flexible support structure includes a pole." '306 patent, col. 21, ll. 44–45.

c. Claim 19.

Claim 19 of the '306 patent describes:

The combination of claim 1 wherein the passageway is closed at its outboard end, the open mouth of the passageway is closed at its outboard end, the open mouth of the passageway lying adjacent the leading edge of the wing, and the line retaining mechanism comprising at least one obstruction that makes it easier for said line to move toward the closed end of the hook than to move back toward the open entrance.

'306 patent, col. 21, ll. 49–54.

E. United States Patent No. 8,567,718.

1. Independent Claim 1.

Claim 1 of the '718 patent describes:

An unmanned aircraft comprising a fixed hook located more than half way outboard on a main wing of said aircraft, said hook including a portion that extends outboard relative to the aircraft then forward relative to the aircraft and then extends inboard relative to the aircraft to form an inboardly-facing mouth of a passageway adjacent a leading edge of the wing, said hook being positioned such that a portion of the hook that extends inboard relative to the aircraft is in front of a line described by the forward edge of the wing just inboard of the mouth of the hook.

'718 patent, col. 20, ll. 37–46.

F. Construction Of Disputed Terms.

This Memorandum Opinion And Order construes nine disputed terms in the five asserted patents.¹⁵

¹⁵ In the March 28, 2014 Joint Claim Construction Submission, the parties listed ten "Agreed Constructions" and forty-four "Disputed Constructions." *See* JBR at i–ii. Of the original forty-four disputed constructions, the parties subsequently have agreed to constructions of sixteen terms, *see* Ct. App'x at B, and, the court previously determined that one term, "throat," does not require construction, *see* 4/7/14 TR at 194 ("Okay, so I'm not construing that one."). This Memorandum Opinion And Order construes the nine terms whose constructions are disputed for reasons other than indefiniteness.

All of the patents asserted by AATI are related as divisional applications. 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.” MPEP § 201.06 (defining divisional application); *see also* MPEP § 201.04 (defining “parent” application).

In this case, the parties have asked the court to construe terms that are used in different patents, where they may have different meanings because of different context, different dependency considerations, and different prosecution histories. The parties’ constructions and briefs generally do not account for this, so the court has attempted to reconcile the differences in usage between different patents, because as a matter of law, each patent is a document unto itself, and the claims of that patent are construed in light of the relevant specifications and the prosecution histories. *See Invitrogen Corp. v. Clontech Labs., Inc.*, 429 F.3d 1052, 1078 (Fed. Cir. 2005) (“[T]he prosecution of one claim term in a parent application will generally not limit different claim language in a continuation application.”); *see also Biogen, Inc. v. Berlex Labs., Inc.*, 318 F.3d 1132, 1141 (Fed. Cir. 2003) (“In prosecuting a related application the applicant is not barred from raising new arguments or correcting past errors. When the applicant is seeking different claims in a divisional application, estoppel generally does not arise from the prosecution of the parent.”). *But see Gemalto S.A. v. HTC Corp.*, 754 F.3d 1364, 1368–71 (Fed. Cir. 2014) (holding that “memory” should be construed across multiple patents derived from the same initial application); *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 980 (Fed. Cir. 1999) (“When multiple patents derive from the same initial application, the prosecution history regarding a claim limitation in any patent that has issued applies with equal force to subsequently issued patents that contain the same claim limitation.”).

1. “Fixed Hook.”

The parties propose the following competing constructions of “fixed hook” for the court’s consideration:

“fixed hook”		
Asserted Patent/Claim(s): 718/1		
AATI	Government	Boeing
A hook that is securely placed or fastened.	Agrees with Boeing.	A curved or bent device for catching, holding, or pulling that is permanently attached to the aircraft or flying object.

Either the Government, Boeing, or both challenged the remaining eighteen “Disputed Constructions” on indefiniteness grounds, so the court will construe the remaining terms in its opinion on indefiniteness. *See* Gov’t PHMB at 13–35; Boeing PHMB at 15–44; *see also* 10/24/14 TR at 9 (stating that there were approximately twenty terms disputed on indefiniteness grounds). During the October 24, 2014 status conference, the court stated that it would first construe terms before addressing indefiniteness, and directed the parties to forego further indefiniteness briefing until directed otherwise by the court. 10/24/14 TR at 9–10. And, during the July 27, 2015 hearing, the parties agreed to discuss the potential for reduction of the terms disputed on indefiniteness grounds. 7/27/15 TR at 34–41.

The parties agree that “hook” means “a device for catching, holding, or pulling an arrestment line that is either permanently or non-permanently attached to the aircraft or flying object.” AATI PHMB at 10; JBR at 27. The parties disagree as to the meaning of “fixed.” AATI PHMB at 10; JBR at 27.

a. The Parties’ Proposed Constructions.

AATI argues that, because the applicant did not act as its own lexicographer and define “fixed hook” in the specification, it should be construed according to the plain and ordinary meaning, citing the dictionary definition as “securely placed or fastened.” JBR at 26 (citing MERRIAM-WEBSTER ONLINE DICTIONARY, <http://www.merriam-webster.com/dictionary/fixed>) (last visited July 29, 2015)); AATI PHMB at 10 (same). AATI points to several lines where “fixed” is used in the specification, but does not require permanence of the “fixed” component. AATI PHMB at 11 (citing ’729 patent, col. 10, ll. 59–61, col. 13, ll. 19–21). As such, the court should adopt an interpretation of “fixed” limiting the degree to which the object is free to move without requiring permanence. AATI PHMB at 11–12; *see also* AATI Exp. Aff. ¶ 50 (“Whether the hook is fixed merely refers to whether it is securely placed on or fastened to the wing. Therefore, a POSA would understand a hook that is attached to the wing with fasteners as being fixed.”). In contrast, the Government’s proposed construction is not supported by the specification and imports limitations from the ’729 patent, col. 8, ll. 20–21 that references a “[h]ook [that] may be permanently attached.” AATI PHMB at 11; AATI Exp. Aff. ¶ 52. And, the Government’s construction is confusing, because the meaning of “permanently” is unclear. AATI PHMB at 13; AATI Exp. Aff. ¶ 52.

The Government argues that “fixed hook” should be interpreted to be consistent with the specification’s disclosure of permanently and non-permanently attached hooks. JBR at 27; *see also* Gov’t Exp. Aff. ¶ 16 (“It is my opinion that a [POSA] . . . would understand the term ‘fixed hook,’ to mean that the design engineer intends for the hook to remain both permanent and securely placed and fastened during normal flight operations. This is distinct from and different than a hook intended to tear off during a normal landing or capture.”); Gov’t Resp. at 6 (AATI’s “proposed construction . . . fail[s] to give appropriate deference to the context in which claim terms are used in the patent.”). The specification of the ’718 patent, however, does not refer to “fixed hook,” but does disclose “permanent hook.” JBR at 27; *see also* Gov’t Resp. at 6 (citing ’729 patent, col. 8, ll. 20–23 (describing a “[h]ook” that is either “permanently attached at the wingtip” of an aircraft or “retained with tape 270 that is designed to tear under the load of an engagement”)).

The Government warns that if the court does not interpret “fixed hook” as a permanent hook, then “fixed hook” will “lack the written description required by 35 U.S.C. § 112, ¶ 1.”¹⁶ JBR at 27.

Boeing argues that “fixed hook” describes one that is “fixed in place,” necessarily requiring that the hook be “permanently attached.” JBR at 28 (citing ’718 patent, figs. 3–4). Moreover, AATI does not explain how “fixed” means “non-permanent,” instead of “permanent.” Boeing Resp. at 3. In addition, AATI relies on the “taped hook” as an example that “is the epitome of a ‘nonpermanent hook,’ and thus the antithesis of a ‘fixed hook.’” Boeing Resp. at 4.

b. The Court’s Construction.

The parties agree on the definition of “hook.” 5/14/14 Jt. Statement at 2; Gov’t Resp. at 4; AATI PHMB at 9–10. Therefore, the court must construe the adjective “fixed,” as used in claim 1 of the ’718 patent.

As an initial matter, an object cannot be “fixed” in the abstract; it must be fixed in relation to some other object. In claim 1, the structures recited are the “aircraft,” “fixed hook,” and “wing.” ’718 patent col. 20, ll. 37–46. Claim 1 states that the hook is “located more than half way outboard on a main wing.” ’718 patent, col. 20, ll. 37–38. The parties do not dispute these facts. Instead, the dispute is the degree or permanence of the fixing. AATI argues that the fixing must be “secure,” whereas the Government argues that the fixing must be “permanent.” JBR at 26.

It is well-established that patent claims should be viewed in light of the claim language, the specification, and the prosecution history. *See Phillips*, 415 F.3d at 1314–17 (explaining the sources comprising the intrinsic evidence). As a general rule, the specification “is the single best guide to the meaning of a disputed term.” *Vitronics*, 90 F.3d at 1582. The ’718 patent specification makes no reference to a “fixed hook,” but it uses “fixed” in six different contexts. *See, e.g.*, ’718 patent, col. 3, l. 5 (“fixed wing aircraft”), col. 10, l. 49 (“fixed stop”), col. 10, ll. 50–51 (“fixed grappling hook”), col. 13, l. 6 (“fixed or sliding stop”), col. 13, ll. 9–10 (“fixed amount of clamping or braking force”), col. 15, l. 3 (“fixed geometry parasails”).

Examination of the specification’s use of “fixed” in “fixed wing aircraft” and in “fixed geometry parasails” is helpful in construing the meaning of “fixed hook.” For example, “fixed wing aircraft” have wings that do not adjust in position during flight. *See* DAVID CROCKER, DICTIONARY OF AVIATION 96 (2d ed. 2007) (“AVIATION”) (defining “fixed-wing” as “referring to an aircraft that has wings that do not move, rather than rotor blades”). The other two categories of aircraft are defined as having either variable-geometry wings or rotary wings. *See* AVIATION at

¹⁶ Section 112, ¶ 1 provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

35 U.S.C. § 112, ¶ 1.

244–45 (defining “variable-geometry” as “referring to an aircraft with hinged wings that can move backwards or forwards during flight”); AVIATION at 198 (defining “rotary wing aircraft” as “an aircraft with a rotor which provides lift, such as a helicopter”). A subset of “fixed wing aircraft” has folding wings that allow for storing the aircraft. See AIRTRONICS, INC., THE DIFFERENCE BETWEEN FIXED-WING & ROTARY WING AIRCRAFT, <http://airtronicsinc.com/airtronics-blog/difference-fixed-wing-rotary-wing-aircraft/> (last visited July 29, 2015) (“AIRTRONICS”) (explaining that “fixed-wing aircraft” include aircraft with wings that are stationary during flight, but may move when stored); see also NEW WORLD ENCYCLOPEDIA, AIRPLANE, <http://newworldencyclopedia.org/entry/airplane> (last visited July 29, 2015) (“AIRPLANE”) (explaining that “fixed-wing aircraft” “embraces aircraft with folding wings that are intended to fold when on the ground”). Fixed wing aircraft’s wings do not change position during flight; variable-geometry aircraft are capable of adjusting their position during flight. Compare AVIATION at 96, with AVIATION at 244–45. Therefore, “fixed” in “fixed wing aircraft” does not indicate that the wings never move. Instead, an aircraft with folding wings is a “fixed wing aircraft,” but these wings can be folded to accommodate airplane storage. See AIRTRONICS; see also AIRPLANE. Therefore, “fixed” indicates that the wings are stationary when the aircraft is in flight.

Another example found in the specification is “fixed geometry parasails” that describe parasails that remain in a constant shape during flight. ’729 patent col. 15, l. 23. But, parasails are made of a flexible fabric that can be folded or stuffed into a bag when placed in storage. ’729 patent col. 2, ll. 57–59 (explaining the storage process). In fact, due to their flexible nature, fixed-geometry parasails are unable to maintain their in-flight geometry if not in use. ’729 patent col. 2, ll. 49–59 (describing parasail deployment by holding the mouth of the parachute part open or by running it up risers to fill it with air). In contrast, a distinguishing feature of variable geometry parasails is their ability to be cinched down or opened wide while in flight. ’718 patent, figs. 25A, 25B, col. 15, ll. 24–60 (describing the use and advantages of a variable geometry parasail as shown in Figures 25A and 25B). Thus, the use of “fixed” in “fixed geometry parasails” does not indicate that the parasails’ geometry never changes, as it changes when the parasails are folded or stuffed in a bag for storage.

The Government’s proposed construction creates ambiguity, *i.e.*, what is permanent? But AATI’s proposed construction also creates ambiguity by using “securely.” More importantly, AATI’s use of a general dictionary to define the “plain and ordinary meaning” of the claim term in the abstract—*i.e.*, divorced from the patent—is contrary to *Phillips*, 415 F.3d at 1320 (Fed. Cir. 2005) (“Although the concern expressed by the court . . . was valid, . . . it . . . placed too much reliance on extrinsic sources such as dictionaries, treatises, and encyclopedias and too little on intrinsic sources, in particular the specification and prosecution history.”).

Therefore, “fixed” signifies that a structure is held constant during the aircraft’s and fixed geometry parasails’ ordinary and intended operation, *i.e.*, flight. AATI Exp. Aff. ¶¶ 51–52 (stating the “basic engineering concern of wanting the hook to remain in place during normal use,” but also being able to remove the hook “to replac[e] a worn component without damage”).

For these reasons, the court has determined that, after reading the entire specification, prosecution history, and claim 1 of the ’718 patent, a POSA would understand “fixed hook” to

mean “a hook that is placed in a position remaining constant, while catching, holding, or pulling an arrestment line.”

2. “Hook Being The Primary Means Of Capturing Said Aircraft.”

The parties propose the following competing constructions of “hook being the primary means of capturing said aircraft” for the court’s consideration:

<i>(1) “hook being the primary means of capturing said aircraft”</i>		
<i>(2) “hook being the primary means of capturing”</i>		
<i>(3) “the device being the primary means of capturing”</i>		
Asserted Patent/Claim(s): 137/1, 20, 25		
AATI	Government	Boeing
The hook is the principal means of controlling the aircraft.	Said hook is the most important means of capturing an aircraft or flying object compared to a secondary means on the aircraft or flying object.	Agrees with Government.

The parties agree that “hook” means “a device for catching, holding, or pulling an arrestment line that is either permanently or nonpermanently attached to the aircraft or flying object.” AATI PHMB at 10. The parties also agree that “device” means “an object, machine, or piece of equipment that has been made.” 4/7/14 TR at 19; *see also* 5/14/14 Jt. Statement at 2. But, the parties disagree about the meaning of “being the primary means of capturing,” particularly “primary.” AATI PHMB at 14.

a. The Parties’ Proposed Constructions.

AATI argues that, because the applicant did not act as its own lexicographer and define “primary” in the specification, it should be construed according to the plain and ordinary meaning. AATI PHMB at 14; *see also* AATI Exp. Aff. ¶ 56. “Primary” means “most important” or “principal.” JBR at 31 (citing MERRIAM-WEBSTER ONLINE DICTIONARY, <http://www.merriam-webster.com/dictionary/primary>) (last visited July 29, 2015); *see also* AATI PHMB at 14 (same); AATI Exp. Aff. ¶ 59 (“It is my opinion that the reference to ‘primary’ means of retrieval signifies importance, not an implicit requirement for a secondary means of retrieval of the same UAV.”).¹⁷ And, “[c]laims 1, 20, and 15 of the ’137 patent . . . disclose a single means of retrieval using a hook on the UAV’s wing,” indicating that “primary” does not require a secondary means. AATI Exp. Aff. ¶ 62.

The Government and Boeing’s interpretation improperly imports limitations, *i.e.*, “a secondary means on the aircraft or flying object.” AATI PHMB at 16. In addition, the plain and

¹⁷ A POSA also would be familiar with common uses of “primary” that do not require secondary things of the same type and “be familiar with aircraft that have two means of landing.” AATI Exp. Aff. ¶¶ 60–61.

ordinary meaning of “primary” excludes systems that have another “more important” approach, such as the “net enveloping approach” referenced in the ’729 patent. AATI PHMB at 16. “Primary” imposes an alternative relationship on the claim and does not require that both a primary and a secondary mechanism be present. AATI PHMB at 16–17; *see also* AATI Exp. Aff. ¶¶ 57–58 (stating that the different approaches, including approaches using hooks, “are described as alternatives—not as primary or secondary means of capturing the same UAV”).

The Government counters that “primary means” requires the presence of a secondary means. JBR at 32; Gov’t Resp. at 8. The specification “uses ‘primary’ to indicate a comparison between more than one element.” Gov’t Resp. at 8 (citing ’729 patent, col. 13, l. 65–col. 14, l. 5); *see also* JBR at 32. In support, the Government references Figures 17 and 18 that show a net used to capture an aircraft, and Figures 3, 4, 15, and 16 that “disclose embodiments . . . that make use of a variety of hook configurations.” JBR at 32 (citing ’729 patent, col. 14, l. 21–col. 15, l. 7). The aircraft also must have a secondary capture means, because otherwise, “primary” has no meaning. JBR at 32. Therefore, “primary means” necessarily requires that there be some other means for capturing an aircraft. JBR at 32; *see also* Gov’t Exp. Aff. ¶ 18 (“It is my opinion that a [POSA], after reading the patent, would understand this term to mean that the hook would be the design/normal method for aircraft recovery, and that all other methods would be less desirable contingencies.”).

Although “Boeing submits that there is no meaningful differen[ce] between the proposed constructions,” it agrees with the Government’s proposed construction and argues that if there is a primary means, necessarily there must be a secondary means. JBR at 32–33. “[T]he patent’s use of ‘primary difference’ explicitly acknowledges the existence of another (*i.e.*, secondary) difference.” Boeing Resp. at 7 (citing ’729 patent, col. 13, l. 65–col. 14, l. 5 (explaining two differences in the configurations of the arrestment lines); ’729 patent col. 20, ll. 32–36 (listing another “primary source of lift and drag” when the UAV itself is the secondary means)). AATI, however, “ignores the [dictionary] entries defining ‘primary’ that establish the existence of secondary or additional elements,” as well as United States Supreme Court and United States Court of Appeals for the Federal Circuit precedent. Boeing Resp. at 5–6, 6 n.2 (citing *Blonder-Tongue Labs., Inc. v. Univ. of Ill. Found.*, 402 U.S. 313, 336 n.28 (1971) (stating that “the President’s Commission identified as one of its primary objectives ‘reduc[ing] the expense of obtaining and litigating a patent,’” demonstrating that other objectives existed); *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1333–34 (Fed. Cir. 2012) (addressing the plaintiff’s “primary argument” before addressing the plaintiff’s other arguments)); *see also* Boeing Resp. at 6 (stating that AATI’s proposed construction would “lead to a guessing game, with the factfinder having to make an arbitrary decision about which capturing mechanism is the ‘most important,’” violating 35 U.S.C. § 112, ¶ 2).¹⁸ Moreover, “primary” does not mean “sole.” Boeing Resp. at 8 (citing *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 877 (Fed. Cir. 1985) (differentiating “primary” from “sole”), *overruled by Nobelpharma AB v. Implant Innovations, Inc.*, 141 F.3d 1059 (Fed. Cir. 1998)).

¹⁸ Section 112 provides, “The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112, ¶ 2.

b. The Court’s Construction.

“Primary” is an adjective that differentiates the claimed hook or device from other means of capturing the aircraft. “Primary” indicates that the hook or device described is the preferred means of capturing the aircraft. Gov’t Exp. Aff. ¶ 18 (“It is my opinion that a [POSA], after reading the patent, would understand this term to mean that the hook would be the design/normal method for aircraft recovery, and that all other methods would be less desirable contingencies.”); AATI Exp. Aff. ¶ 59 (“It is my opinion that the reference to a ‘primary’ means of retrieval signifies importance, not an implicit requirement for a secondary means of retrieval on the same UAV.”). But, the parties disagree about whether “primary” requires that a secondary “means” be attached to the aircraft.

The Government argues that “primary” requires multiple *objects* or *elements*. Gov’t Resp. at 8 (“between two or more objects”; “comparison between more than one element”; “a comparison between two or more elements”). But, the claim language reads “primary means of capturing,” wherein the adjective “primary” modifies “means.” ’137 patent, col. 21, ll. 8–9, col. 21, l. 66–col. 22, l. 1, col. 22, l. 49. This indicates that other “means of capturing” the aircraft may exist, but that the hook is the “primary means.” The specification describes several arrestment “means” for capturing an aircraft, some of which involve attachments to the aircraft, some of which do not. *Compare* ’137 patent col. 8, ll. 8–29 (describing a wing-mounted hook), col. 10, ll. 7–12 (describing Figure 15 that shows four hooks on an aircraft, any one of which could arrest the aircraft), *and* col. 19, ll. 3–22 (describing Figure 23 that shows one latching hook attached to the mid-line of the wing), *with* col. 14, ll. 18–42 (describing the net enveloping approach without hooks). The Government’s additional limitation—“a secondary means *on the aircraft or flying object*,” JBR at 32 (emphasis added)—is not supported in the claim language.

For these reasons, the court has determined that, after reading the entire specification, prosecution history, and claims 1, 20, and 25 of the ’137 patent, a POSA would understand “hook being the primary means of capturing said aircraft” to mean “the hook is the most important means of capturing said aircraft.”

3. “Obstruction.”

The parties propose the following competing constructions of “obstruction” for the court’s consideration:

“obstruction”		
Asserted Patent/Claim(s): 242/1, 2, 9, 14, 15, 19; 306/13, 19		
AATI	Government	Boeing
Something that blocks something else and makes it difficult (and even impossible) for things to move through; at least two obstructions: more than one obstruction.	Any element between the open entrance and closed end of a passageway or hook that is passed by the arrestment line during recovery and that increases the force required to move the line from the closed end of the passageway to its open entrance, as compared to the force required to move the line from the open entrance of the passageway to its closed end. An obstruction does not completely prevent entrance or exit from the passageway. Where more than one obstruction is recited, the obstructions must be separate and distinct elements.	Something that blocks something else and makes it difficult, but not, impossible for another object, such as a line, to move through.

a. The Parties’ Proposed Constructions.

AATI argues that the applicant did not act as his own lexicographer for “obstruction,” so that the plain and ordinary meaning controls. AATI PHMB at 19. The plain and ordinary meaning should be determined based on the dictionary definition of “obstruction,” *i.e.*, “something that blocks something else and makes it difficult for things to move through.” AATI PHMB at 19; *see also* AATI Exp. Aff. ¶ 71 (“The plain and ordinary meaning of obstruction . . . is ‘something that blocks something else and makes it difficult (and even impossible) for things to move through.’”); AATI Exp. Aff. ¶¶ 66–67 (“A POSA would understand that trapping the line would mean that the line enters, but does not exit the hook during arrestment,” and “that an obstruction in the hook is meant to increase reliability of UAV retrievals using an arrestment line.”). AATI’s ’242 and ’306 patents disclose alternative configurations to prevent the line from exiting the hook during arrestment, so “a POSA would understand that the latch is the preferred ‘obstruction,’ which makes it impossible for the line to escape the hook during arrestment.” AATI Exp. Aff. ¶¶ 69–70 (citing ’729 patent, col. 8, ll. 34–41, 46–48, 53–55). This construction also is supported by the specification referencing the “spring-loaded latch” elsewhere in the claim. ’242 patent, col. 20, ll. 43–44; *see also* AATI Exp. Aff. ¶ 66 (“Based on the claims where ‘obstruction’ appears, . . . it is clear that the term can refer to the ‘spring-loaded latch’ described in the patents-in-suit.”). Finally, impossibility is integral to the construction, because it furthers the goal of “retaining” the UAV with an arrestment line. AATI Exp. Aff. ¶ 72. Therefore, “obstruction” means “designed to allow one-way access for the line to enter the hook without exiting during arrestment.” AATI PHMB at 19.

In addition, AATI argues that the Government’s construction seeks to use other concepts from the claims to “burden the term ‘obstruction.’” AATI PHMB at 20. The Government’s

argument as to the disavowal of claim scope during prosecution of the '242 patent is also incorrect, because there is no evidence showing “a clear disavowal or intention to modify the meaning of the term.” AATI PHMB at 21. In addition, Boeing’s construction is improper, because the inclusion of “but not impossible for another object . . . to move through” is not supported by the plain and ordinary meaning of “obstruction,” and “obstruction” should encompass both partial and complete blockages. JBR at 39–40; AATI PHMB at 21.

The Government counters that “obstruction” should be construed in light of the claim language, defining “obstruction” in terms of how much force is required to move the line. JBR at 40; *see also* Gov’t Resp. at 9 (“[T]he claim language clearly contemplates that an arrestment line can move in both directions past the obstruction.”); Gov’t Exp. Aff. ¶ 19 (A POSA “would understand ‘obstruction’ in the context of the patent to mean a one-way latch in some instances, *and* a device where the force required is different for entry versus exit in other instances.”) (emphasis in original) (citing ’242 patent, col. 20, ll. 29–44). Significantly, the claims were amended during prosecution to: remove text describing the “obstruction” as “making it easier for said line to move initially toward the closed end . . .”; and add language that requires “each of said obstructions [to] increas[e] the force required to move the line back past the obstruction toward the open entrance of said passageway[.]” JBR at 40. As such, “obstruction” does not completely prevent entrance or exit from the passageway. JBR at 41.

Boeing adds that “obstruction” should not be construed as impossible to move through, because AATI’s specification only discloses structures that allow the line to pass in both directions. JBR at 41–42. And, “[t]he patent’s explicit recognition that the arrestment line may pass back out ‘through the throat 24’ if ‘a significant load [is] applied’ completely undercuts AATI’s argument.” Boeing Resp. at 8 (quoting ’729 patent, col. 8, ll. 47–48).

b. The Court’s Construction.

The term “obstruction” is a noun that appears in claims 1, 2, 9, 14, 15, at 19 of the ’242 patent and in claims 13 and 19 of the ’306 patent. Therein, the aircraft is described as having a line capturing and retaining device with a passageway with at least two obstructions. During prosecution, the following modifying phrase was added: “increasing the force required to move the line past the obstruction.” JBR App’x 3, at A3-129. The Examiner Remarks indicate that this additional phrase was added to distinguish the claimed invention from prior art and defeated obviousness concerns (JBR App’x 3, at A3-129–30), and is consistent with one of the “object[s] of the invention to provide a recovery system that exerts lower loads and inflicts less damage to the UAV and arrestment system.” ’729 patent, col. 3, ll. 7–9.

“Obstruction” is not defined in the specification of the asserted patents. Therefore, the court must construe it according to its plain and ordinary meaning in light of the surrounding claim language. *See Phillips*, 415 F.3d at 1314 (citing *Vitronics*, 90 F.3d at 1582) (“Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claim terms.”); *see also ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003) (“[T]he context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms.”).

The '242 patent at claim 1 describes an obstruction that “increase[es] the force required to move the line back past the obstruction toward the open entrance of said passageway *relative* to the force required to move the line initially past the obstruction toward the closed end of the passageway.” ’242 patent, col. 20, ll. 37–40 (emphasis added). The ’306 patent claims an obstruction that “makes it easier for said line to move toward the closed end of the hook *than* to move back toward the open entrance.” ’306 patent, col. 21, ll. 32–34 (emphasis added). Because the language surrounding “obstruction” in claim 1 of the ’242 patent and claim 13 of the ’306 patent reference each other, their meaning is the same. *Compare* ’306 patent, col. 21, ll. 32–34 (“easier . . . to move towards the closed end of the hook than . . . back towards the open entrance”), *with* ’242 patent, col. 20, ll. 37–40 (“increasing the force required to move . . . past the entrance . . . relative to the force require to move . . . past the obstruction”).

For these reasons, the court has determined that, after reading the entire specification, prosecution history, claims 1, 2, 9, 14, 15, and 19 of the ’242 patent, and claims 13 and 19 of the ’306 patent, a POSA would understand “obstruction” to mean “an object requiring added force to be moved.”

4. “A Passageway With An Open Entrance And A Closed End.”

The parties propose the following competing constructions of “a passageway with an open entrance and a closed end” for the court’s consideration:

<i>(1) “a passageway with an open entrance and a closed end”</i>		
<i>(2) Variants: “said hook having an open entrance”; “a closed end outboard of the open entrance”; “open entrance of a passageway”; “said passageway having a closed end”; “the hook has an open entrance and a closed end”; “open mouth of the passageway”; “an open entrance of said capturing and retaining device”</i>		
Asserted Patent/Claim(s): 242/1, 9, 14, 19; 306/13, 19		
AATI	Government	Boeing
No construction necessary; plain and ordinary meaning. ¹⁹	The entrance or mouth is not blocked or obstructed. The end is blocked or obstructed.	Agrees with Government.

¹⁹ AATI originally proposed the following construction of “a passageway with an open entrance and a closed end”: “A passageway with an end that permits passage in at least one direction and another end which prevents passage in any one direction.” JBR at 43. But, “AATI has modified its proposed construction[,] because the [c]ourt indicated that no construction is necessary here.” AATI PHMB at 22 n.14 (citing 4/7/14 TR at 167 (“I don’t see that there’s anything that needs to be construed here. It seems it’s awfully clear.”)).

The Government counters that AATI “has manipulated the transcript of the claim construction hearing for its own benefit.” Gov’t Resp. at 11. “To the extent the [c]ourt indicated

The parties agree that “passageway” means “a way that allows passage.” JBR at 5; 5/14/14 Jt. Statement at 1. The parties disagree as to whether “open entrance” requires the passageway entrance actually to be “open,” or if it means the entrance is capable of being opened and whether “a closed end” requires the end always to be closed. JBR at 43–45.

a. The Parties’ Proposed Constructions.

AATI argues that the applicant did not act as their own lexicographer; therefore, no construction is necessary, and the plain and ordinary meaning should control. AATI PHMB at 22–23.

The Government responds that this term should be interpreted to mean that the “open entrance” and “closed end” must structurally be open and closed. JBR at 45; *see also* Gov’t Exp. Aff. ¶ 22 (“It is my opinion that a [POSA] would understand ‘open entrance,’ as used in the patents, to mean that passageway would be normally open (not blocked) during aircraft recovery.”). The Government also cites dictionary definitions in support of its construction. JBR at 45–46 (citing MERRIAM-WEBSTER ONLINE DICTIONARY, <http://www.merriam-webster.com/dictionary/open>) (last visited July 29, 2015)).

Boeing agrees with the Government’s claim construction. JBR at 43, 46 (adding that “the specification of the AATI patents does not define. . . [or] use the term ‘passageway’”); *see also* Boeing Resp. at 10. And, “AATI has changed its proposed construction of the term ‘a passageway with an open entrance and closed end,’” thereby waiving its previous claim construction argument. Boeing Resp. at 10 (citing *Abbott Labs. v. Syntron Bioresearch, Inc.*, 334 F.3d 1343, 1352 (Fed. Cir. 2003) (holding that the plaintiff waived its claim construction argument “by agreeing to that portion of the adopted construction”)).

b. The Court’s Construction.

Because the parties agree that “passageway” means “a way that allows passage” (JBR at 5; 5/14/14 Jt. Statement at 1), the court only must construe “open entrance” and “closed end.”

The claims use “open entrance” and “closed end” as structural limitations. For example, claim 13 of the ’306 patent states that “the hook has an open entrance and a closed end, the line retaining mechanism comprising at least one obstruction that makes it easier for said line to move toward the closed end of the hook than to move back toward the open entrance.” ’306 patent, col. 21, ll. 30–34. And, claim 9 of the ’242 patent states that the “hook ha[s] an open entrance . . . , a closed end outboard of the open entrance, and, between the open entrance and closed end, an inner throat, and outer throat, and a first obstruction[.]” ’242 patent, col. 21, ll. 1–5. In other words, the

that there was nothing to construe, the Government understood that statement to be an acknowledgement that [AATI]’s construction was a drastic and unsupported departure from the plain and ordinary meaning of ‘open.’” Gov’t Resp. at 12 (citing 4/7/14 TR at 166–67 (“Open means open.”)). Therefore, the court should “affirmatively rule that the Government’s construction is correct and that ‘open’ does not merely mean ‘capable of being opened.’”

entrance or mouth is open, not just capable of being opened, and the end is closed, not just capable of being closed.²⁰

For these reasons, the court has determined that, after reading the entire specification, prosecution history, claims 1, 9, 14, and 19 of the '242 patent, and claims 13 and 19 of the '306 patent, a POSA would understand an “open entrance” or “open mouth” and a “closed end” to mean “the entrance or mouth always is unblocked or unobstructed, and the end always is blocked or obstructed.”

5. “Increasing The Force Required”

The parties propose the following competing constructions of “increasing the force required” for the court’s consideration:

- (1) “increasing the force required to move the line back past the obstruction toward the open entrance of said passageway relative to the force required to move the line initially past the obstruction toward the closed end of the passageway”*
- (2) “each of said obstructions increasing the force required to move the line back past the obstruction toward the open entrance of said passageway relative to the force required to move the line initially past the obstruction toward the closed end of the passageway”*
- (3) Variants: “a first obstruction, which requires less force for the line to enter the outer throat than to exit the outer throat through the open entrance”; “a second obstruction . . . which requires less force during the arrestment for the line to pass from the outer throat to the inner throat than from the inner throat to the outer throat”; and*
- (4) nominal additional variations*

Asserted Patent/Claim(s): 242/1, 14, 19

AATI	Government	Boeing
The force that would be required to move the line back past the obstruction toward the open entrance of the passageway is greater than the force required to move the line initially past the obstruction toward the closed end of the passageway.	Agrees with Boeing.	The obstructions are configured such that the line can be pulled through the passageway in either direction but pulling the line into the passageway requires less force than pulling the line out of the passageway.

²⁰ The extrinsic evidence and dictionary definitions for the terms also support the conclusion that the “entrance or mouth always is unblocked or unobstructed, and the end always is blocked or obstructed.” See MERRIAM-WEBSTER ONLINE DICTIONARY, <http://www.merriam-webster.com/dictionary/> (last visited July 29, 2015) (defining “open” as “having no enclosing or confining barrier” and “closed” as “covering an opening” and “not open”). These definitions support the idea that the terms “open” and “closed” refer to what the passageway *is*, rather than what the passageway *does*.

The parties agree that this term specifies the “relative magnitude of forces necessary to move the line past the obstruction . . . in different directions[.]” AATI PHMB at 23. But, the parties disagree as to “whether an obstruction must allow an arrestment line to move past it in either direction, albeit while requiring different amounts of force, or whether an obstruction can allow movement in one direction, while completely preventing it in the other.” JBR at 48.

a. The Parties’ Proposed Constructions.

AATI argues that it did not act as its own lexicographer, so the plain and ordinary meaning controls. AATI PHMB at 23; AATI Exp. Aff. ¶ 75. The claim language indicates relative degrees of force and excludes the possibility that the line can both enter *and* exit the hook. AATI PHMB at 24; *see also* AATI Exp. Aff. ¶¶ 76 (“A POSA would understand that this term describes the relative magnitude of the force required for the line to enter the hook during arrestment compared to the force required for the line to exit the hook during arrestment. The patents-in-suit explain that the force to ‘enter’ is less than the force to ‘exit’ the hook during arrestment.”) (citing ’729 patent, col. 8, ll. 12–14, 46–55; JBR App’x 3, at A3-129–31). And, contrary to Boeing’s proposed construction, the applicant put no upper limit on the force required, so such a requirement would improperly limit the claim. AATI PHMB at 24–25; *see also* AATI Exp. Aff. ¶¶ 76, 78. The language at the beginning of the claim terms, as well as the agreed constructions of other terms, supports AATI’s construction. AATI Exp. Aff. ¶¶ 79–80. Moreover, Boeing’s proposed construction that the line can move through the passageway “in either direction” runs counter to function of capturing and retaining the arrestment line and conflicts with the construction of the term “line capturing and retaining device.” AATI PHMB at 24–25; *see also* Court App’x B.11 (explaining that all of the terms in “line capturing and retaining device” have been construed and that “line capturing and retaining device” thus requires no further construction).

Boeing argues that there is no support in the specification for the assumption that “the hooks and obstructions are configured so that the arrestment lines are impossible to pull out of the hooks.” Boeing Resp. at 9. AATI’s proposed construction only relates to “the forces necessary to move the line through ‘the passageway,’ whereas the claims recite the forces necessary to move the lines past ‘an obstruction.’” JBR at 49; *see also* Boeing Resp. at 9 (“AATI again ignores the express language of the patent, which recognizes that the arrestment line may pass back through the throat 24 if a significant load [is] applied.”) (internal quotations omitted) (alterations in original). For example, the ’729 patent specification supports the interpretation that “the line can be pulled through the passageway in either direction.” JBR at 49 (citing ’729 patent, col. 8, ll. 41–55). And, AATI’s position “make[s] little sense,” because it would “require[] the destruction of some component of the system every time it is used.” Boeing Resp. at 9.

The Government agrees with Boeing. JBR at 48. And, the Government submits that the dispute over “increasing the force required” is identical to the dispute regarding “obstruction.” Gov’t Resp. at 12–13. Therefore, the construction of “obstruction” also will resolve the dispute over this term. Gov’t Resp. at 12–13.

b. The Court’s Construction.

The court has construed “obstruction” to mean “an object requiring added force to be moved.” *See supra* Section IV.F.3.b. For this reason, the court has determined that, after reading

the entire specification, prosecution history, and claims 1, 14, and 19 of the '242 patent, a POSA would understand “increasing the force required” to mean “requiring added force to be moved.”

6. “Inner Throat” And “Outer Throat.”

The parties propose the following competing constructions of “inner throat” and “outer throat” for the court’s consideration:

<i>(1) “inner throat”</i>		
<i>(2) “outer throat”</i>		
Asserted Patent/Claim(s): 137/30; 242/9, 13, 19		
AATI	Government	Boeing
Two portions of a passageway one being further into the passageway than the other.	Two distinct constrictions or narrowed parts between the open entrance and the closed end of the hook, the inner being closer to the closed end and the outer being closer to the open entrance.	A distinct section of the passageway between the open entrance and the closed end of the hook located closer to the closed end for the inner throat (and closer to the open end for the outer throat) and such that the size and configuration of the inner throat is different than the size and configuration of the outer throat.

At the April 7–8, 2014 *Markman* hearing, the court found that “throat” did not require construction. 4/7/14 TR at 194 (“Okay, so I’m not construing that one. All right, so I’m not going to construe [‘throat’] at all, then). The parties also agree that the “inner throat” must be “closer to the closed end” and the “outer throat” must be “closer to the open entrance.” AATI PHMB at 26. The parties, however, disagree as to whether the inner and outer throats must be distinguishable or “may merely be two portions of a single passageway.” JBR at 54.

a. The Parties’ Proposed Constructions.

AATI argues that the claims use “inner” and “outer” to distinguish relative positions of the two throats. AATI PHMB at 27. AATI relies on dictionary definitions of “inner” and “outer” to demonstrate that the terms define relative positions, but do not impose any additional limitations like those advanced by Boeing and the Government. AATI PHMB at 27–28; *see also* AATI Exp. Aff. ¶¶ 86–87 (same). The Government’s and Boeing’s use of “distinct” would impose limitations from the specification on the claims and tie in other unrequired features, such as different sizing of the throats or the presence of barbs on the outer throat. AATI PHMB at 29; *see also* AATI Exp. Aff. ¶ 84 (“The patents-in-suit disclose a single throat in the hook,” not multiple throats.); AATI Exp. Aff. ¶ 85 (“The patents-in-suit also disclose that the inner and outer parts of the throat can have different or identical sizes.”). Regarding Boeing’s construction, AATI counters that the inner and outer throats are “separately identifiable line-capture areas, each with respective obstructions . . . at their outer ends to block the line from moving back toward the entrance and exiting the hook.” AATI PHMB at 30. As such, the inner throat and outer throat are distinguished by position, and no further distinguishing features are necessary. AATI PHMB at 30. In addition,

Boeing's reliance on hook 33 in Figure 3 is misplaced, because hook 33 is placed on the propeller guard and not on the wing. AATI PHMB at 31.

The Government argues that each throat must be distinguishable. JBR at 54–55; *see also* Gov't Exp. Aff. ¶ 23 (“It is my opinion that a [POSA] would interpret the border between the ‘inner throat’ and ‘outer throat’ to be where the nature of the passageway has changed substantially. . . . If there is no such substantial change in the passageway, then this border is not precisely defined[.]”). The ’729 specification discloses that the “inner throat” corresponds to reference numeral 24, and that the “outer throat” corresponds to reference numeral 23. JBR at 55; *see also* Gov't Resp. at 14 (same). And, in light of Figure 3 of the ’137 patent, each throat must be distinguishable in some manner, *e.g.*, by size or by the presence of barbs on the outer throat that are not present on the inner throat. JBR at 55; Gov't Exp. Aff. ¶ 23. The Government warns that AATI's construction would “amount to an arbitrary division of a single passageway into an inner and an outer portion.” JBR at 55; *see also* Gov't Resp. at 14–15 (“Because every throat can be divided into inner and outer portions, [AATI]'s construction would expand the reach of its claims to include all devices including any throat. That interpretation impermissibly renders the ‘inner throat’ and ‘outer throat’ limitations superfluous.”).

Boeing adds that “AATI has changed its proposed construction of the term ‘throat,’” thereby waiving its prior arguments. Boeing Resp. at 10. As to the distinction between the “inner” and “outer” throat, the AATI patents do not expressly define “inner throat” or “outer throat,” and those terms are not accepted terms of art. JBR at 55. Therefore, these terms should be construed to require a “distinct section” to remain consistent with Figure 3 of the ’729 patent, illustrating the relationship between the “inner throat 23” and the “outer throat 24.” JBR at 53, 56. AATI's proposed construction “blurs the distinction between these two discrete claim elements.” JBR at 56; *see also* Boeing Resp. at 11 (AATI's “proposed construction offers no way for a [POSA] to know where the inner throat ends and the outer throat begins.”). But, Boeing's proposed construction permits the POSA to distinguish between the “inner throat” and “outer throat.” Boeing Resp. at 11.

b. The Court's Construction.

Although the terms “inner throat” and “outer throat” appear in four claims, the court finds claims 9 and 19 of the ’242 patent particularly helpful.

Claim 9 of the ’242 patent describes:

An aircraft designed to be recovered by an aircraft recovery system having an arrestment line and an arrestment line support, said aircraft including a line capturing and retaining hook mounted to a wing of the aircraft and located off centerline of said aircraft, said hook having an open entrance forming a smooth continuation of a leading edge of said wing, a closed end outboard of the open entrance, and, between the open entrance and closed end, an *inner throat*, an *outer throat*, and a first obstruction which requires less force for the line to enter the *outer throat* than to exit the *outer throat* through the open entrance and a second obstruction between said *inner throat* and *outer throat* which requires less force

during the arrestment for the line to pass from the *outer throat* to the *inner throat* than from the *inner throat* to the *outer throat*.

'242 patent, col. 20, l. 64–col. 21, l. 10 (emphases added).

Claim 19 of the '242 patent describes:

A method of capturing an aircraft with an aircraft recovery system, said aircraft recovery system having an arrestment line and an arrestment line support, said aircraft comprising at least one wing, and a capturing and retaining device mounted on said wing and located off centerline of said aircraft, the method comprising flying said aircraft into said arrestment line to cause the arrestment line to slide along a leading edge of said wing into an open entrance of said capturing and retaining device, the open entrance forming a smooth continuation of the leading edge, past a *first obstruction* in the capturing and retaining device into an *outer throat* of the capturing and retaining device, the first obstruction requiring less force during arrestment for the line to enter the *outer throat* than to exit the outer throat through the open entrance, and past a second obstruction into an *inner throat* of the capturing and retaining device, the second obstruction requiring less force during arrestment for the line to pass from the *outer throat* to the *inner throat* than from the *inner throat* to the *outer throat*, the *inner throat* having a closed end outboard of the open entrance, the line being retained in the *inner throat*.

'242 patent, col. 22, ll. 14–34 (emphases added).

The '242 patent describes the terms “inner throat” and “outer throat” as being located between the “open entrance” and “closed end.” '242 patent, col. 21, ll. 3–4. And, the “inner throat” is the area between a “closed end outboard of the open entrance” and a second obstruction. '242 patent, col. 22, ll. 32–33; *see also* '242 patent col. 21, ll. 7–8 (stating that there is “a second obstruction between said inner throat and outer throat”). This is distinct from the “outer throat” that is an area “past a first obstruction” and with a “second obstruction between said inner throat and outer throat.” '242 patent, col. 22, ll. 23–24, col. 21, ll. 7–8.

For these reasons, the court has determined that, after reading the entire specification, prosecution history, claim 30 of the '137 patent, and claims 9, 13, and 19 of the '242 patent, a POSA would understand “inner throat” and “outer throat” as “a throat located between the open entrance and closed end, separated by a second obstruction.”

7. “Sensor.”

The parties propose the following competing constructions of “sensor” for the court’s consideration:

“sensor”		
Asserted Patent/Claim(s): 729/5		
AATI	Government	Boeing
A device that responds to a stimulus (such as heat, light, sound, pressure, signals, magnetism, or a particular motion) and transmits a resulting impulse.	A video camera.	Agrees with Government.

The parties disagree as to whether “sensor” is a structural term or a functional term that should be interpreted under 35 U.S.C. § 112, ¶ 6.²¹ JBR 66–68.

a. The Parties’ Proposed Constructions.

AATI argues that, because it did not act as its own lexicographer, the plain and ordinary meaning controls. AATI PHMB at 33; *see also* AATI Resp. at 8–9 (stating that “[t]his is not the first time ‘sensor’ has been construed by a federal court as having its plain and ordinary meaning” and that “[n]o court has construed the term ‘sensor’ as proposed by the Government and Boeing”) (citing *Research In Motion Ltd. v. Dataquill BVI, Ltd.*, 2008 WL 4977370, at *3 (N.D. Tex. Aug. 14, 2008) (finding that a POSA “would understand ‘sensor’ to mean a device that can sense/detect and report the presence of some stimulus”); *Harmonic Design, Inc. v. Hunter Douglas, Inc.*, 88 F. Supp. 2d 1102, 1108 (C.D. Cal. 2000) (finding that a POSA “would understand the term ‘sensor’ to mean a ‘device designed to respond to a physical stimulus (as heat or cold, light, a particular motion) and transmit a resulting impulse for interpretation or measurement or for operating a control’”)); AATI Exp. Aff. ¶ 95 (“The plain and ordinary meaning of ‘sensor’ must account for the possibility that the sensor could be camera or some other type of sensor[.]”). In support, AATI cites several dictionary definitions that define “sensor” as “a device that responds to a stimulus . . . and transmits a resulting impulse.” AATI PHMB at 33 (quoting MERRIAM-WEBSTER ONLINE DICTIONARY, <http://www.merriam-webster.com/dictionary/sensor>) (last visited July 29, 2015); ACAD. PRESS DICTIONARY OF SCI. & TECH. 1957 (1992) (“[T]he component of an instrument that converts an input signal into a quantity that is measured by another part of the instrument[.]”); DICTIONARY OF AERONAUTICAL ENGLISH 202 (1999) (“[D]evice which receives and responds to a signal or stimulus[.]”). Although a “camera” is one example of a sensor

²¹ Section 112, ¶ 6 provides:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112, ¶ 6.

disclosed in the specification, there is no evidence that “sensor” was limited to this example. JBR at 69; *see also* AATI Exp. Aff. ¶ 92 (“A POSA would understand the use of ‘such as’ and ‘or’ means that ‘sensor’ is not limited to one particular type.”); Gov’t Exp. Aff. ¶ 94 (“[T]here is no indication that the applicant intended a camera to be the only type of sensor that could be used for guidance.”).

In response to the Government’s arguments, AATI contends that the term is not written in the “means-plus-function” format, and therefore, does not raise the 35 U.S.C. § 112, ¶ 6 presumption. AATI PHMB at 34–35; *see also* AATI Resp. at 7–8 (“35 U.S.C. § 112, ¶ 6 is *not* invoked without reciting means-plus-function language . . . [which] supports a rejection of 35 U.S.C. § 112, ¶ 6 where, as here, other claims in the same patent explicitly invoke ¶ 6.”) (emphasis in original). Nor is there any evidence in the claim nor intrinsic record to overcome the “strong²² presumption against means-plus-function construction.” AATI PHMB at 35. In fact, other courts have considered and rejected the exact same argument” that “‘sensor’ is a functional limitation.” AATI Resp. at 9 (citing *Personalized Media Commc’ns, LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 704 (Fed. Cir. 1998) (“‘Detector’ is not a generic structural term such as ‘means,’ ‘element,’ or ‘device’; nor is it a coined term lacking a clear meaning, such as ‘widget’ or ‘ram-a-fram.’”)).

The Government responds that “sensor” is a functional term that should be interpreted under 35 U.S.C. § 112, ¶ 6. JBR at 67; *see also* Gov’t Resp. at 15 (“[W]hile it is true that the absence of the phrase ‘means for’ raises a presumption that § 112, ¶ 6 does not apply, that presumption is overcome if ‘the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function.’”) (quoting *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1097 (Fed. Cir. 2014)). Therefore, “sensor” should be restricted to the only corresponding structure, *i.e.*, a “video camera.” JBR at 67; *see also* Gov’t Resp. at 15–16 (“Here, because ‘sensor’ refers only to a general category of devices that can perform the function of sensing, § 112, ¶ 6 requires ‘sensor’ to be construed according to the clearly-linked corresponding structure in the specification,” *i.e.*, a video camera.); ’729 patent, col. 7, l. 45–col. 8, l. 5 (describing the use of cameras 201 and 205 in Figure 6 when maneuvering into arrestment); ’729 patent, col. 21, ll. 47–49 (indicating that the “sensor” is “for guidance in maneuvering said aircraft into engagement with said recovery system”); Gov’t Exp. Aff. ¶¶ 24–25 (“In the context of UAV launch and recovery, . . . a [POSA] would not be able to determine which particular combination of sensor choices this refers to. . . . [But,] it is my opinion that a [POSA] would understand the ‘sensor’ of claim 5 to mean a camera.”). Moreover, the prosecution history of the ’729 patent supports the “equivalence” between “sensor” and “video camera.” JBR at 67 (citing JBR App’x 3, at A3-9–10 (changing “camera” to “sensor”)).

Boeing adds that “sensor” should not be construed separately from its surrounding context, because “it seems likely that a video camera is the only device in the specification that could

²² AATI’s November 21, 2014 Response was submitted before the United States Court of Appeals for the Federal Circuit’s decision in *Williamson* that “abandon[ed] characterizing as ‘strong’ the presumption that a limitation lacking the word ‘means’ is not subject to § 112, para. 6.” 2015 WL 3687459, at *7.

feasibly accomplish the function[.]” Boeing Resp. at 12; *see also* JBR at 68.²³ When considered in context, the only sensor disclosed is the “video camera.” JBR at 69. If “sensor” is construed broadly, “a substantial question of validity will be raised,” because AATI’s patents do not support the inclusion of radar, TV, and infrared sensors. Boeing Resp. at 12. And, “AATI’s proposed construction includes many sensors that would likely not work[.]” Boeing Resp. at 12.

b. The Court’s Construction.

i. The Applicability of 35 U.S.C. 112, ¶ 6.

Section 112, ¶ 6 applies when “[a]n element in a claim for a combination [is] expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof.” 35 U.S.C. § 112, ¶ 6. Claim terms that fall under 35 U.S.C. 112, ¶ 6 are limited to cover only “corresponding structure, material, or acts described in the specification and equivalents thereof.” 35 U.S.C. § 112, ¶ 6.

A claim limitation is presumed to invoke 35 U.S.C. 112, ¶ 6 when it expressly includes “means for” or “step for” and functional language. *See York Prods., Inc. v. Centr. Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1574 (Fed. Cir. 1996) (“In determining whether to apply the statutory procedures of section 112, ¶ 6, the use of the word ‘means’ triggers a presumption that the inventor used this term advisedly to invoke the statutory mandates for means-plus-function clauses.”). But, this presumption may be overcome, if the claim includes sufficient structure for performing the recited function. *See TriMed, Inc. v. Stryker Corp.*, 514 F.3d 1256, 1259–60 (Fed. Cir. 2008) (“Sufficient structure exists when the claim language specifies the exact structure that performs the function in question without need to resort to other portions of the specification or extrinsic evidence for an adequate understanding of the structure.”).

Conversely, if a claim limitation does not use “means for” or “step for,” it is presumed that 35 U.S.C. 112, ¶ 6 does not apply. *See Personalized Media*, 161 F.3d at 703–04 (“[T]he failure to use the word ‘means’ creates a presumption that § 112, ¶ 6 does not apply[.]”); *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1023 (Fed. Cir. 2006) (“[A] claim term that does not use ‘means’ will trigger the rebuttable presumption that § 112, ¶ 6 does not apply.”) (alterations omitted). *But see Apple*, 757 F.3d at 1299 (“Even if a patentee elects to use a ‘generic’ claim term, such a nonce word or a verbal construct, properly construing that term (in view of the specification, prosecution history, etc.) may still provide sufficient structure such that the presumption against mean-plus-function claiming remains intact.”) (quotations omitted). The United States Court of Appeals for the Federal Circuit previously characterized this presumption as “a strong one that is not readily overcome.” *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed. Cir. 2004). But, the *en banc* United States Court of Appeals for the

²³ Boeing’s November 21, 2014 Response did not address “sensor.” But, Boeing’s arguments as to “a sensor being attached . . .” discussed only whether “sensor” means “video camera.” *See* Boeing Resp. at 12.

Federal Circuit recently overruled *Lighting World* in *Williamson v. Citrix Online, LCC*, 2015 WL 3687459 (Fed. Cir. June 16, 2015):

Our consideration of this case has led us to conclude that such a heightened burden is unjustified and that we should abandon characterizing as “strong” the presumption that a limitation lacking the word “means” is not subject to § 112, para. 6.

* * *

Henceforth, we will apply the presumption as we have done prior to *Lighting World*, without requiring any heightened evidentiary showing and expressly overrule the characterization of that presumption as “strong.” We also overrule the strict requirement of “a showing that the limitation essentially is devoid of anything that can be construed as structure.”

The standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure. *Greenberg [v. Ethicon Endo-Surgery, Inc.]*, 91 F.3d 1580, 1583 (Fed. Cir. 1996)]. When a claim term lacks the word “means,” the presumption can be overcome and § 112, para. 6 will apply if the challenger demonstrates that the claim term fails to “recite sufficiently definite structure” or else recites “function without reciting sufficient structure for performing that function.” *Watts [v. XL Sys., Inc.]*, 232 F.3d [877,] 880 [(Fed. Cir. 2000)]. The converse presumption remains unaffected: “the use of the word ‘means’ creates a presumption that § 112, ¶ 6 applies.” *Personalized Media*, 161 F.3d at 703.

Id., 2015 WL 3687459, at *7.

Claim 5 of the ’729 patent does not use “means for” or “step for.” See ’729 patent, col. 21, ll. 38–48. Therefore, the court presumes that 35 U.S.C. 112, ¶ 6 does not apply. See *Personalized Media*, 161 F.3d at 703–04 (“[T]he failure to use the word ‘means’ creates a presumption that § 112, ¶ 6 does not apply.”). The fact that “sensor” in claim 5 is described in functional terms—“a sensor . . . for guidance in maneuvering said aircraft into engagement with said recovery system” (’729 patent, col. 21, ll. 45–49)—does not “demonstrate[] that the claim term fails to ‘recite sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function.’” *Williamson*, 2015 WL 3687459, at *7.

At this point, the court looks to the United States Court of Appeals for the Federal Circuit’s endorsement of dictionaries “to determine if a disputed term has achieved recognition as a term denoting structure.” *Williamson v. Citrix Online, LLC*, 770 F.3d 1371, 1379 (Fed. Cir. 2014) (“The district court, in characterizing the word ‘module’ as a mere nonce word, failed to appreciate that the word ‘module’ has understood dictionary meanings as connoting either hardware or software structure to those skilled in the computer arts.”), *vacated on other grounds*, *Williamson*, 2015 WL 3687459; see also *Personalized Media*, 161 F.3d at 704–05 (“Instead, as noted by the ALJ by reference to dictionary definitions, ‘detector’ had a well-known meaning to those skilled in the electrical arts connotative of structure[.]”); *Phillips*, 415 F.3d at 1322–23 (quoting *Vitronics*, 90

F.3d at 1584 n.6) (“[J]udges are free to consult dictionaries and technical treatises ‘at any time in order to better understand the underlying technology and may also rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.’”).

Here, dictionary definitions reflect that “sensor” has a reasonably well-understood meaning that connotes a structure. The Merriam-Webster Dictionary defines “sensor” as “a *device* that responds to a physical stimulus (as heat, light, sound, pressure, magnetism, or a particular motion) and transmits a resulting impulse (as for measurement or operating a control).” MERRIAM-WEBSTER ONLINE DICTIONARY, <http://www.merriam-webster.com/dictionary/sensor> (last visited July 29, 2015) (emphasis added); *see also* ACAD. PRESS DICTIONARY OF SCI. & TECH. 1957 (1992) (defining “sensor” as “the *component* of an instrument that converts an input signal to a quantity that is measured by another part of the instrument and changed into a useful signal for an information-gathering system”) (emphasis added); DICTIONARY OF AERONAUTICAL ENGLISH 202 (1999) (defining “sensor” as a “*device* which receives and responds to a signal or stimulus”) (emphasis added). In addition, nothing in the ’729 specification rebuts the presumption against using 35 U.S.C. 112, ¶ 6.

Therefore, the court has determined that 35 U.S.C. 112, ¶ 6 does not apply to “sensor” in claim 5 of the ’729 patent.

ii. The Plain And Ordinary Meaning Of “Sensor.”

Because 35 U.S.C. 112, ¶ 6 does not apply, “sensor” should not be limited only to the structure recited in the specification, *i.e.*, a “camera.” *See* ’729 patent col. 7, l. 32–col. 8, l. 5 (explaining the use of a camera during arrestment). Instead, “sensor” should be construed by its plain and ordinary meaning, unless one of two exceptions applies: lexicography or disavowal. *See Greenberg*, 91 F.3d at 1583 (applying the standard of whether persons of ordinary skill in the art would understand the term to have a sufficiently definite meaning); *see also Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014) (“There are only two exceptions to th[e] general rule [that the term is given its plain and ordinary meaning to one of skill in the art]: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution.”) (internal quotations omitted). Nowhere in the specification does the patentee “clearly set forth a definition of the disputed claim term.” *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002). The sentence in the specification that comes the closest to defining “sensor”—albeit in a different application than claim 5—lists types of sensors that can be attached to the parasail. ’729 patent col. 17, ll. 11–12 (“The parasail can also carry its own sensors *such as radar, TV or infrared sensors*[.]”) (emphasis added). But, this sentence falls short of “clearly set[ting] forth a definition of the disputed claim term” to redefine the term that is required for lexicography to apply. *CCS Fitness, Inc.*, 288 F.3d at 1366. Therefore, the patentee did not act as his own lexicographer, and the first exception does not apply. Similarly, the specification and prosecution history do not include any “expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope,” so the second exception does not apply. *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002).

The Government seeks to limit “sensor” to the “only structure in the specification that corresponds to [the sensor’s] function,” *i.e.*, the “camera” disclosed in an embodiment in the specification. Gov’t Resp. at 16 (citing ’729 patent, col. 7, l. 45–col. 8, l. 5, col. 18, ll. 27–29). But, the United States Court of Appeals for the Federal Circuit “has expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004). Accordingly, it would be improper for the court to limit “sensor” in claim 5 to the camera described in the specification. Furthermore, “a specification need not disclose what is well-known in the art” for a claim term to cover known embodiments. *Streck, Inc. v. Research & Diagnostic Sys., Inc.*, 665 F.3d 1269, 1288 (Fed. Cir. 2012). Many types of “sensors” are known in the aeronautical engineering art, and some are explicitly listed in the specification, namely radar, TV, and infrared. ’729 patent col. 17, ll. 11–12. The patentee need not list in the specification every type of sensor known in the art to convey plain and ordinary meaning. *See Streck*, 665 F.3d at 1288.

Here, the interpretation of “sensor” does not vitiate the other limitations of claim 5, *i.e.*, that the sensor is used “for guidance in maneuvering said aircraft into engagement with said recovery system.” ’729 patent col. 21, ll. 47–49. Of course, not all sensors known in the art will fulfill this additional claim limitation, but this does not justify excluding of other types of sensors from the plain and ordinary meaning.

The prosecution history also does not require a different construction. The Government emphasizes the patentee’s decision during prosecution to change the word “camera” to “sensor.” JBR App’x 3, at A3-9–10. This change, however, shows the patentee’s intent that the claim include more than a camera, not to equate “sensor” with “camera.” JBR App’x 3, at A3-31 (examiner remarking that the claim “has been *broadened*” by replacing “camera” with “sensor”) (emphasis added). Moreover, this is far from a clear and unmistakable disclaimer of all other sensors, as required for a prosecution history disavowal to apply. *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1325–26 (Fed. Cir. 2003) (“[F]or prosecution disclaimer to attach . . . the alleged disavowing actions or statements made during prosecution [must] be both clear and unmistakable.”).

For these reasons, the court has determined that, after reading the entire specification, prosecution history, and claim 5 of the ’729 patent, a POSA would understand “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.”

8. “Being Connected At Its Lower End To The Base.”

The parties propose the following competing constructions of “being connected at its lower end to the base” for the court’s consideration:

<i>“being connected at its lower end to the base”</i>		
Asserted Patent/Claim(s): 306/21		
AATI	Government	Boeing
Being joined or linked at its lower end to the base.	Agrees with Boeing.	The arrestment line is attached directly to the base at the end of the arrestment line closest to the ground.

The focus of this dispute is over the meaning of “connected,” and whether it requires “direct connection” or also includes “indirect connection.” JBR at 122.

a. The Parties’ Proposed Constructions.

AATI argues that the applicant did not act as its own lexicographer, and therefore, the plain and ordinary meaning controls. AATI PHMB at 50; *see also* AATI Exp. Aff. ¶ 113. The dictionary definition of “connected” is “joined or linked together.” AATI PHMB at 50 (citing MERRIAM-WEBSTER ONLINE DICTIONARY, <http://www.merriam-webster.com/dictionary/connected> (last visited July 29, 2015)). Therefore, “connected” allows connection through other elements. AATI PHMB at 50–51; *see also* AATI Exp. Aff. ¶ 114 (“A POSA would understand [‘being connected at its lower end to the base’] to allow for both direct and indirect connections.”); AATI Exp. Aff. ¶ 115 (providing examples of “other types of indirect connections used in the aviation context” with which a POSA would be familiar). And, the intrinsic evidence supports this construction. AATI PHMB at 51 (“For example, claim 24 of the ’306 patent recites, . . . ‘said arrestment line is *connected to the base through said support structure.*’”) (emphasis in original); *see also* AATI Exp. Aff. ¶ 114 (citing ’306 patent, fig. 21) (providing an example of an indirect connection where “the lines . . . connect indirectly to the posts . . . via horizontal lines”). Moreover, Boeing’s construction narrows the plain and ordinary meaning by requiring the arrestment line to be attached directly to the base. AATI PHMB at 52.

The Government contends that “being connected at its lower end to the base” should “encompass only arrestment lines that are actually connected to the base,” because that is the construction that “comports with the plain and ordinary meaning of the term to a [POSA.]” Gov’t Resp. at 18; *see also* Gov’t Exp. Aff. ¶ 27 (“It is my opinion that a [POSA] would understand ‘being connected at its lower end to the base’ to mean that it is directly connected to the base itself.”). AATI’s construction would render the term meaningless, because the claim requires that the lower end of the arrestment line be linked to the arrestment line support structure and that the arrestment line support structure be linked to the base. Gov’t Resp. at 18–19; *see also* Gov’t Exp. Aff. ¶ 27 (“If ‘being connected at its lower end to the base’ merely required being able to trace a path through any number of connected elements to the base, then this term would have no limiting effect.”).

Boeing and the Government agree on the construction of “being connected at its lower end to the base.” Boeing Resp. at 15. Boeing adds that AATI’s proposed construction is “fatally

flawed[,] because it places no limits on the number of elements that would ‘connect’ the arrestment line to the base . . . [and] AATI’s view [of] ‘connected’ covers indirect attachment.” Boeing Resp. at 15.

b. The Court’s Construction.

Figures 27 and 28 are the preferred embodiments of claim 21 described in the specification. ’306 patent, col. 17, ll. 41–63; ’306 patent, figs. 27–28; *see also* AATI Exp. Aff. ¶ 114 (citing ’306 patent, fig. 21 as another example of an indirect connection in the specification). These embodiments illustrate an arrestment line indirectly connected to the base. ’306 patent, col. 17, ll. 41–63; ’306 patent, figs. 27–28. Therefore, the construction of “connected”²⁴ should not exclude the embodiments of Figures 27 and 28. *See Accent Packaging, Inc. v. Leggett & Platt, Inc.*, 707 F.3d 1318, 1326 (Fed. Cir. 2013) (“[A] claim interpretation that excludes the preferred embodiment from the scope of the claim is rarely, if ever, correct.”); *On-Line Tech. v. Bodenseewerk Perkin-Elmer GmbH*, 386 F.3d 1133, 1138 (Fed. Cir. 2004) (same). Moreover, the United States Court of Appeals for the Federal Circuit has stated that “[c]onnected” is broad, and it is not restricted to “direct” connections. *See Douglas Dynamics, LLC v. Buyers Prods. Co.*, 717 F.3d 1336, 1343 (Fed. Cir. 2013) (“In sum, the correct construction of the term ‘connected to’ . . . is not limited to direct connections.”).

For these reasons, the court has determined that, after reading the entire specification, prosecution history, and claim 21 of the ’306 patent, a POSA would understand “being connected at its lower end to the base” to mean “being attached at its lower end to the base.”

9. “Pole.”

The parties propose the following competing constructions of “pole” for the court’s consideration:

“pole”		
Asserted Patent/Claim(s): 306/17		
AATI	Government	Boeing
A long slender object.	A long, slender, rounded object with one end planted in the ground and used as a support for something else; not a beam, boom, or mast. ²⁵	A long slender usually cylindrical object (as a length of wood).

²⁴ During the April 7–8, 2014 *Markman* hearing, there was extensive debate over whether “connected” includes both “direct” and “indirect” connections. Therein, the court determined that the critical term for construction is “connected” and construed the term to mean “attached.” 4/8/14 TR at 359–60.

²⁵ The Government’s expert, Professor Johnson, proposes that “pole” be construed to mean “a long, slender, rounded piece of wood or metal—possibly with its lower end placed in the ground.” Gov’t Exp. Aff. ¶ 28.

On July 27, 2015, AATI and Boeing agreed that “pole” does not require construction, but the Government continued to contest the term’s construction. 7/27/15 TR at 6–7.

a. The Parties’ Proposed Constructions.

AATI states that it “agrees to the construction proposed by Boeing,” except for the optional examples included in the definition, *i.e.*, “usually cylindrical” and “(as a length of wood).” AATI PHMB at 53. “Pole” is “a broad, generic word” with a “plain and ordinary meaning with no special definitions,” such as requirements that it be mounted in the ground, cylindrical, or made of specific materials like wood. AATI Exp. Aff. ¶¶ 120–22. And, “a POSA would understand that the plain and ordinary meaning of pole would not exclude beams, booms, or masts[,] because there is nothing in the patents-in-suit that clearly points to such a special meaning.” AATI Exp. Aff. ¶ 123 (citing ’306 patent, figs. 27–28). Therefore, pole should be construed to mean “‘a long slender object’—that is, an elongate object.” AATI Resp. at 11.

The Government states that the dispute is whether “pole” includes elements that are not “poles,” including “beams and booms on a ship or articulated telescoping mechanical arms.” Gov’t Resp. at 19. The patent uses “pole” and “post” interchangeably, but a “post” *must* be set in the ground, while a “pole” *may* be set in the ground. Gov’t Exp. Aff. ¶ 28 (citing ’729 patent, fig. 21). And, “a [POSA] would understand a ‘pole’ or ‘post’ to describe different structures from a ‘beam’ or ‘boom.’” Gov’t Exp. Aff. ¶ 28 (stating that “pole” and “post” refer to vertical elements, while “beam” and “boom” refer to horizontal elements) (citing ’729 patent, figs. 21, 28). Thus, the court’s construction of “pole” should exclude a mechanical telescoping boom. Gov’t Resp. at 20.

b. The Court’s Construction.

The court declines to construe “pole,” because a POSA would understand the term to have a plain and ordinary meaning, and nothing in the specification indicates that the term has any other meaning. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) (stating that the *Markman* decisions require claim construction where there is a “dispute[in] meanings and technical scope” rather than an “obligatory exercise in redundancy”); *see also EON Corp. IP Holdings, LLC v. Sensus USA Inc.*, 741 F. Supp. 2d 783, 795 (E.D. Tex. 2010) (“As an initial matter, the Court declines to construe ‘stationary.’”).

V. CONCLUSION.

For the reasons discussed herein, the court has determined that the disputed claims are to be construed, pursuant to this 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.

IT IS SO ORDERED.

s/Susan G. Braden
SUSAN G. BRADEN
Judge