

In the United States Court of Federal Claims

No. 12-484C

(Filed Under Seal: June 26, 2015)

(Reissued: July 2, 2015)

FASTSHIP LLC,)	Patent case; “manufactured” for purposes
)	of alleged infringement under 28 U.S.C.
)	§ 1498(a); partial summary judgment
Plaintiff,)	
)	
v.)	
)	
UNITED STATES,)	
)	
Defendant.)	
)	

Mark L. Hogge, Dentons US LLP, Washington, D.C., for plaintiff. With him on the brief and at the hearing were Shailendra K. Maheshwari, Dentons US LLP, Washington, D.C., and Donald E. Stout, Fitch, Even, Tabin & Flannery LLP, Washington, D.C. Also with him on the brief were Nicholas Jackson and Rajesh Noronha, Dentons US LLP, Washington, D.C.

Andrew P. Zager, Trial Attorney, Commercial Litigation Branch, Civil Division, United States Department of Justice, Washington, D.C., for defendant. With him at the hearing was Scott Bolden, Assistant Director, Commercial Litigation Branch, Civil Division, United States Department of Justice, Washington, D.C. With him on the briefs were Joyce R. Branda, Acting Assistant Attorney General, Benjamin C. Mizer, Principal Deputy Assistant Attorney General, and John Fargo, Director, Commercial Litigation Branch, Civil Division, United States Department of Justice, Washington, D.C.

OPINION AND ORDER¹

LETTOW, Judge.

In this patent case, plaintiff, FastShip LLC (“FastShip”), alleges that the United States (“the government”) through the Department of the Navy (“the Navy”) has infringed Claims 1 and 19 of its U.S. Patent No. 5,080,032 (“the ’032 patent”) and Claims 1, 3, 5, and 7 of its U.S.

¹Because this opinion and order might have contained confidential information within the meaning of Rule 26(c)(1)(G) of the Rules of the Court of Federal Claims (“RCFC”) and the protective order entered in this case, it was initially filed under seal. The parties were requested to review this opinion and order and to provide proposed redactions of any confidential information. No redactions were requested.

Patent No. 5,231,946 (“the ’946 patent”) and thus is liable for damages under 28 U.S.C. § 1498(a). Compl. ¶ 18. FastShip claims patent infringement regarding the *Freedom* class of Littoral Combat Ships (“LCS”), specifically LCS-1 (*USS Freedom*), LCS-3 (*USS Fort Worth*), and later ships in the class (LCS-5, -7, -9, and -11). Compl. ¶18. Before the court is the government’s motion for partial summary judgment pursuant to RCFC 56. Def.’s Mot. for Partial Summary Judgment (“Def.’s Mot.”), ECF No. 65. The government avers that LCS-3 and the later allegedly infringing ships were not “manufactured” by or for the government within the meaning of 28 U.S.C. § 1498 prior to the expiration of the patents-in-suit, and they thus provide no basis for FastShip’s recovery as to those ships. Def.’s Mot. at 1.² FastShip resists this motion, arguing that evidence shows that LCS-3 was substantially manufactured at the time the patents at issue expired. *See* Pl.’s Response to Def.’s Mot. for Partial Summary Judgment (“Pl.’s Opp’n”), ECF No. 75.³

BACKGROUND

A. ’032 and ’946 Patents

FastShip’s allegations of infringement are directed to a class of Navy vessels, specifically littoral combat ships that combine semi-planing monohulls with the use of waterjets for propulsion. Compl. ¶¶ 16-18.⁴ The ’032 and ’946 patents asserted in this case describe a semi-planing monohulled vessel that is longer than 200 feet with a displacement in excess of 2,000 tons. *See* Compl. ¶¶ 8-9; *see also* Tech. Tutorial Tr. 28:14-19 (Aug. 27, 2013).⁵ The vessel relies on its hull design and waterjet propulsion to enable speed capabilities exceeding 40 knots. *See* Compl. ¶ 8.

FastShip’s ’032 patent was issued on January 14, 1992, and the ’946 patent, a continuation of the ’032 patent, was issued on August 3, 1993. Def.’s Opening Claim Construction Br. Exs. A (U.S. Patent No. 5,080,032) (“’032 patent”), & B (U.S. Patent No.

²The government concedes that LCS-1, *USS Freedom*, was manufactured prior to the expiration of the patents-in-suit. Def.’s Mot. at 1.

³LCS-5, -7, -9, and -11 are ships that were constructed after LCS-3. The government contends that “FastShip has not advanced the idea that LCS-5, -7, -9, or -11 are still at issue,” but FastShip has not withdrawn its claims regarding these ships. *See* Def.’s Mot. at 20.

⁴The waterjet is an assembly that functions as a “ship or boat propulsion device.” McGraw-Hill Dictionary of Scientific and Technical Terms 2278 (6th ed. 2003). The assembly “consist[s] of a pump, usually located within the hull, that receives water through an inlet duct and discharges it through a nozzle at increased velocity to produce propulsive thrust.” *Id.* In this instance, the pump consists of an impeller within a housing, connected to a powered shaft. *See* Hr’g Tr. 36:17-21 (June 8, 2015) (“What we’ve been calling the waterjet is actually the impeller structure, the fan housing, if you will, that . . . is bolted inside the waterjet tunnel.”).

⁵Further citations to the transcript of the technical tutorial will omit reference to the date.

5,231,946) (“’946 patent”), ECF No. 26. Both patents expired on May 18, 2010.⁶ Compl. ¶ 5. At the time of expiration, LCS-1 (*USS Freedom*) was complete and in use by the Navy, and LCS-3 (*USS Fort Worth*) and later ships in the class (LCS-5, -7, -9, -11) were still under construction. See Hr’g Tr. 34:11 to 35:7 (June 8, 2015);⁷ see also Pl.’s Opp’n at 1; Def.’s Mot. at 1.

The ’032 patent consists of 20 claims, of which Claim 1 pertains to an apparatus, device, or assembly, stating hull and waterjet limitations. Claim 1 describes:

A vessel comprising:

a *hull* having a non-stepped profile which produces a high pressure area at the bottom of the hull in a stern section of the hull which intersects a transom to form an angle having a vertex at the intersection and hydrodynamic lifting of the stern section at a threshold speed without the hull planing across the water at a maximum velocity determined by a Froude Number, the hull having a length in excess of 200 feet, a displacement in excess of 2000 tons, a Froude Number in between about 0.42 and 0.90, and a length-to-beam ratio between about 5.0 and 7.0;

at least one *inlet* located within the high pressure area;

at least one *waterjet* coupled to the at least one inlet for discharging water which flows from the inlet to the waterjet for propelling the vessel;

a *power source* coupled to the at least one waterjet for propelling water from the at least one inlet through the waterjet to propel the vessel and to discharge the water from an outlet of the waterjet; and wherein

acceleration of water into the at least one inlet and from the at least one waterjet produces hydrodynamic lift at the at least one inlet which is additional to the lifting produced by the bottom of the hull in the high pressure area which increases efficiency of the hull and reduces drag.

’032 patent, Claim 1 (emphasis added); see also *id.*, Claim 19 (“[a] vessel conveying method” with similar limitations); ’946 patent, Claims 1, 3, 5, & 7 (describing similar limitations with

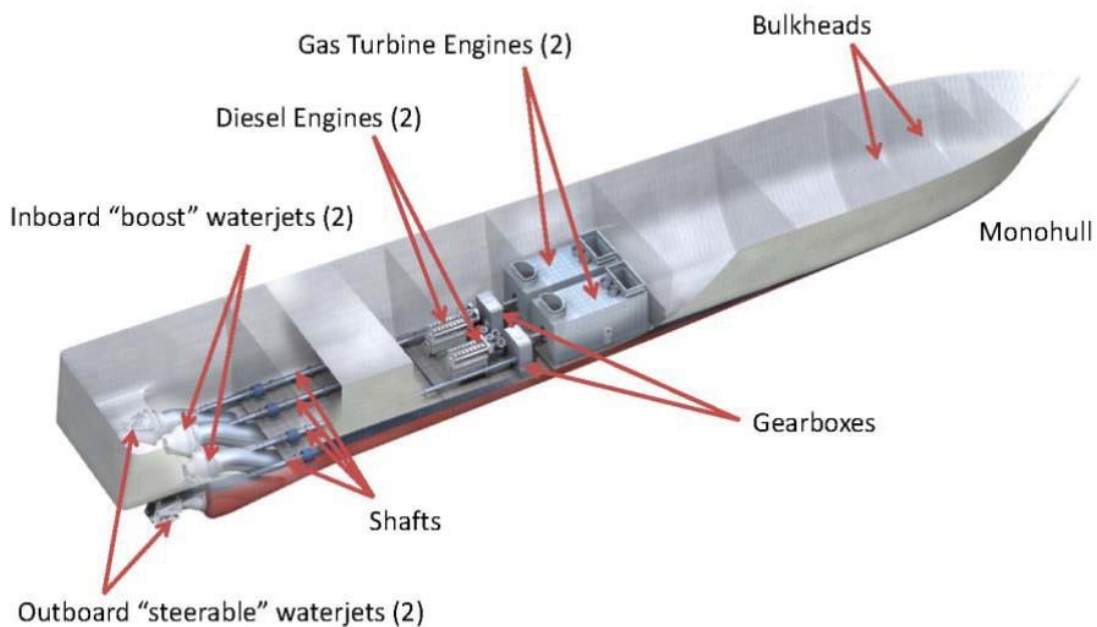
⁶The face of the ’946 patent indicates that “[t]he portion of the term of this patent subsequent to Jan. 14, 2009 has been disclaimed.” ’946 patent at 1. However, effective June 8, 1995, Congress changed the term of United States Patents, including those patents in force at the time. See generally 35 U.S.C. § 154. Based on the pleadings, the parties “agree that the language of FastShip’s terminal disclaimer . . . was effective in extending its term date to May 18, 2010 after the change in statute.” Def.’s Mot. at 4 n.3.

⁷Further citations to the transcript of the hearing on the government’s motion for partial summary judgment will omit reference to the date.

both method and apparatus claims).⁸

B. Pertinent Components of LCS-3

LCS-3 is powered by a combination of two diesel engines and two gas turbines that are connected to four waterjets using shafts and gearboxes. Def.'s Mot. Ex. C (Preliminary Technical Manual for LCS-3, Vol. 1 (Nov. 1, 2013)), at 11; *see also* Def.'s Mot. at 6, Figure 1 (depicting LCS-3 components). Inlets on the bottom portion of the ship's hull draw in water, and the waterjets discharge the water at high velocity, providing propulsive force to the ship. Def.'s Mot. Ex. C, at 66. The monohull of LCS-3 includes the bow (the forward [front] portion), the midships portion, and the stern (the aft [back] portion), with port (left, looking forward) and starboard (right, looking forward) sides. *See* Hr'g Tr. 31:16-19; *see also* Pl.'s Opp'n Ex. C (Dep. of Captain Casey J. Moton (Apr. 16, 2015)) ("Moton Dep.") 75:17 to 76:22;⁹ Def.'s Mot. at 7, 14; Def.'s Reply in Further Support of its Mot. for Partial Summary Judgment ("Def.'s Reply") at 6, ECF No. 75. The major components of the monohull can be seen in the figure provided by the government below.



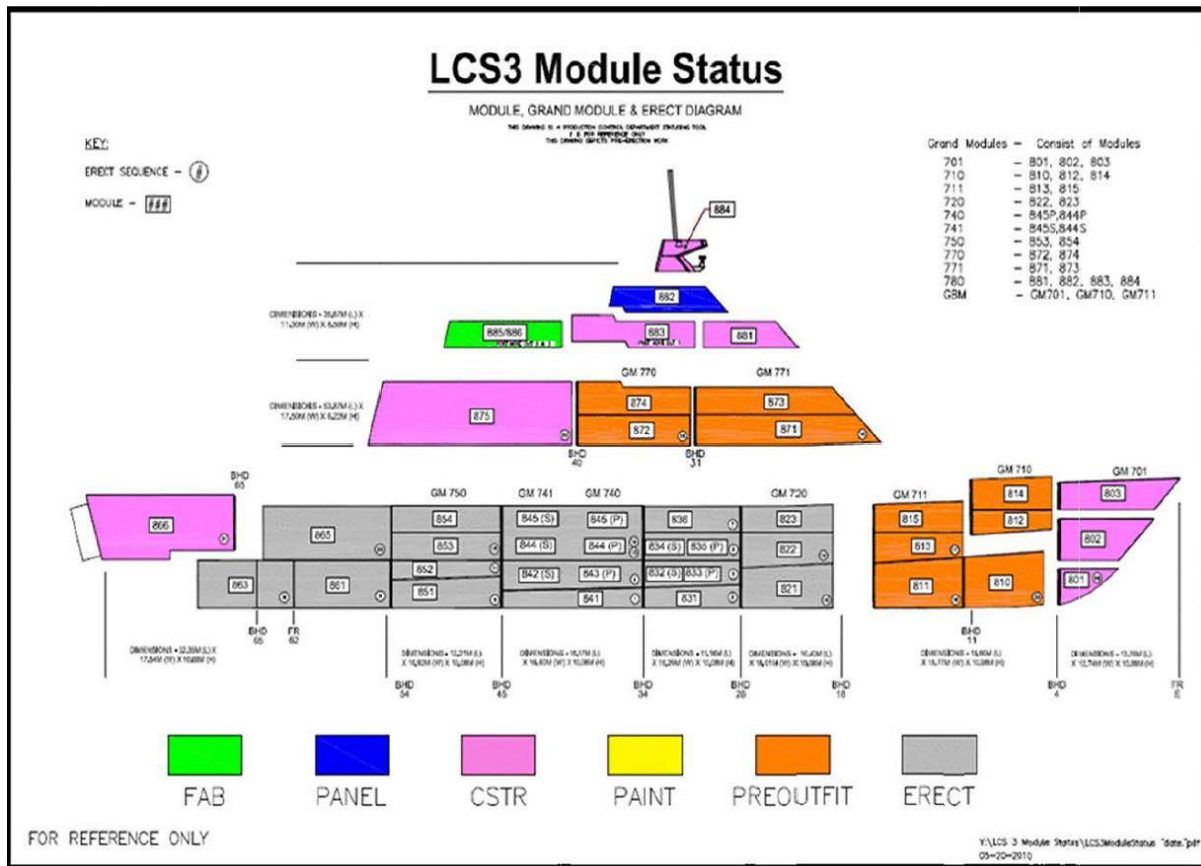
Def.'s Mot. at 6, Figure 1.

⁸The Froude Number is the ratio of a ship's speed in knots to the square root of its length in feet and is used to understand drag by describing the physics of a ship's speed relative to its size. It is analogous to the use of a Mach Number to describe aviation speed. *See* Tech. Tutorial Tr. 18:24 to 19:11.

⁹Further citations to the transcript of Captain Moton's deposition will omit reference to the date.

Both the superstructure above the main deck of the ship and the hull that supports the superstructure are built in a modular fashion. *See* Moton Dep. 49:1-3; *see also* Def.’s Mot. Ex. B (Decl. of Captain Moton (Nov. 17, 2014)) (“Moton Decl.”) ¶ 14. The *Freedom* class ships are constructed in modules, which are then assembled or erected. Moton Dep. 49:14-19. Individual elements of each ship’s warfighting system are also modular, allowing components to be interchanged to provide various combat capabilities. Moton Dep. 11:22 to 13:5, 49:9-14.

The modules are developed via a phased process that includes material fabrication, paneling, construction, painting, pre-outfitting, and erection. *See* Moton Dep. 49:20 to 52:4; *see also* Moton Decl. ¶ 14; Def.’s Mot. Ex. H (LCS-3 Module Status Chart (May 26, 2010)). Material fabrication consists of the process for building the ship’s pieces, and construction requires putting those pieces together to form the structure of a module. Moton Dep. 51:1-4. Pre-outfitting prepares a module for the outfitting process that includes installing insulation, piping, and electrical cabling. Moton Dep. 51:7-15. Erection, the final assembly step, consists of welding individual modules together to comprise either a larger portion of the ship, called a “Grand Module,” or the ship itself. Moton Dep. 51:18 to 52:4; Def.’s Mot. at 8. The status of the modules and Grand Modules for LCS-3 as of May 26, 2010, eight days after the ’032 and ’946 patents expired, are depicted in the figure below.



Def.’s Mot. Ex. H. The bow portion of the hull, comprised of Modules 801, 802, and 803, was still under construction. *Id.* Similarly, the transom, Module 866, to be secured to the stern

section of the hull, was still under construction. *Id.*

C. Construction of LCS-3

Lockheed Martin and Gibbs & Cox were contracted by the Navy to design and build the *Freedom* class of LCS. Compl. ¶¶ 12-13. As part of its performance, Lockheed Martin was required to maintain detailed documentation of the design and construction of each LCS. *See* Pl.’s Opp’n Exs. B (LCS Weekly Report (June 2, 2010)), F (LCS Weekly Report (May 12, 2010)), & H (LCS Weekly Report (Apr. 14, 2010)); *see also* Def.’s Mot. Ex. A (U.S. Navy Base Contract & Modifications (Feb. 28, 2003 and July 17, 2003, respectively)). Lockheed Martin was also required to “establish, maintain[,] and use an Earned Value Management System (EVMS) meeting the criteria set forth in [Defense Federal Acquisition Regulation Supplement (‘DFARS’) §] 252.234-7001 . . . as a management tool for cost, schedule[,] and technical performance.” *See* Def.’s Mot. Ex. A, at 81. Further, the contract required submission of a monthly Cost Performance Report, which included a description of the previous month’s accomplishments, the Program Cost Status, and the Program Schedule Status. *See id.* Exs. A, at 97, & E (Excerpts of Cost Performance Reports (June 29, 2009 through June 24, 2012)). An officer in the Navy, Captain Moton, served as the LCS Program Manager’s Representative who “was responsible for on-site contract management and oversight for LCS shipbuilding,” which included LCS-3. Moton Decl. ¶ 8.¹⁰ His role encompassed “[o]verseeing contractor-reported performance as to cost and schedule . . . [and] the reporting of [his] own observations . . . , [including] prepar[ing] an ‘LCS Weekly Report’ that was provided to the Program Office and other Navy leadership.” *Id.* ¶ 12.

LCS-3 was “on-order” by the Navy on June 26, 2006, to be built at the shipyard of Marinette Marine, Inc. in Marinette, Wisconsin. *See* Def.’s Mot. at 10.¹¹ The first constructed portion of the ship’s hull was the “keel,” which forms the ship’s primary “backbone.” *Id.* at 8. The keel of LCS-3 was laid on July 11, 2009, marking the start of the module erection process. *Id.* Exs. E (excerpt of Cost Performance Report), at 2-3, & G (Timeline of Major Events for LCS-1 and LCS-3 (July 17, 2003 through June 6, 2012)). Following this step, additional modules of LCS-3 were “fabricated, constructed, painted, outfitted with piping and electrical connections, loaded with major equipment, and erected onto the growing base portion of the hull.” *Id.* at 8. “Fabrication and construction of the superstructure occur[ed] in parallel with the hull work.” *Id.*

During September 2009, the two gas turbine engines “were delivered and landed,” meaning that they were placed in their ultimate destination in the ship. *See* Def.’s Mot. at 10; *see also id.* Exs. E, at 4, & G. The two diesel engines were landed in December 2009. *Id.* Ex. E, at 6. At least one, but “most likely” all four, of the impellers and housings for the waterjets were

¹⁰Captain Moton reported to the Supervisor of Shipbuilding, Conversion, and Repair (“SUPSHIP”), who “administers and manages the execution of [United States Department of Defense] contracts awarded to assigned commercial entities in the shipbuilding and ship repair industry, including production of the Navy’s Littoral Combat Ship.” Moton Decl. ¶¶ 3-4.

¹¹Marinette Marine served as a subcontractor to Lockheed Martin for this purpose.

present, assembled, and awaiting installation as of April 14, 2010. *See* Moton Dep. 82:6-20; *see also* Pl.’s Opp’n Ex. H, at 13. At this time, the impellers and housings had not yet been bolted inside the waterjet tunnels. *See* Pl.’s Opp’n Ex. H, at 13; *see also* Hr’g Tr. 28:12-21.

“[A]t the same time that the LCS[-]3 was being constructed,” corrosion was detected in waterjet tunnels on LCS-1, located in San Diego. Moton Dep. 57:22 to 58:2, 60:8 to 61:6.¹² In May 2010, components from the LCS-3 waterjets were borrowed or “cannibalized” for use on LCS-1.¹³ Pl.’s Opp’n Ex. F (LCS Weekly Report), at 3; *see also* Moton Dep. 114:17 to 119:18.¹⁴ When asked if he knew “whether or not the cannibalizing of the LCS[-]3 waterjets caused any delay in the installation of the waterjets on the LCS[-]3,” Captain Moton stated that he “[did not] suspect that they [did]” and that he “believe[d] there were other factors” causing delay of the waterjet installation on LCS-3 than the cannibalization work. Moton Dep. 123:11 to 124:5.¹⁵ Three of the LCS-3 waterjet impeller systems had also “been completely disassembled, inspected, repairs completed, and then tested and reassembled” as of May 28, 2010. Moton Dep. 133:17-19; *see* Pl.’s Opp’n Ex. D (LCS Overview and Production Status Packet (May 28, 2010)), at 18. Some of that work occurred in connection with shock testing of the waterjet impeller system. As Captain Moton testified, “[w]hen a ship class is first built, [it has] a shock requirement which essentially is if [the ships] are near an underwater explosion from a torpedo[, mine,] or some kind of other weapon . . . , the ship[s] will maintain watertight integrity.” Moton Dep. 134:21 to 135:4. Specifically, one waterjet impeller system was “used for shock testing . . . and then opened and inspected to make sure that there was no damage before it was sent to the shipyard.” Moton Dep. 135:22 to 136:5.

¹²SUPSHIP remained responsible for the repairs of LCS-1 during this period. *See* Moton Dep. 58:3-17.

¹³“[O]ne entire [waterjet] unit [was shipped] to San Diego and then it was shipped right back, they didn’t need it.” Hr’g Tr. 37:19-25.

¹⁴Zinc corrodes faster than iron, and accordingly it can be used to provide cathodic protection. *See* Moton Dep. 117:6-7. The shipbuilders discovered that some of the metal on LCS-1 had corroded and “that the cathodic protection inside the waterjet tunnels [using zinc] was not sufficient.” Moton Dep. 118:2-3. As a result, the zinc parts of LCS-1 that corroded were replaced with new zinc components, and additional zinc cathodic protection was installed inside the tunnel. “[T]o get [the] repair done on LCS[-]1 [by adding cathodic protection inside the waterjet tunnels], components of that system were borrowed from LCS[-]3 with the payback[, or replacement of the component part,] to follow.” Moton Dep. 119:13-16; *see also* Hr’g Tr. 34:11 to 35:22.

¹⁵According to the government, “what [Captain] Moton couldn’t remember was . . . the reason for a delay[, but] perhaps [it was] the other way around, which is [that the impeller systems for the waterjets] weren’t scheduled to be installed until July anyway and so one was available to be sent temporarily to the West Coast.” Hr’g Tr. 35:12-16.

All four waterjet impeller systems were installed in LCS-3 during July 2010, after the expiration of the patents-in-suit on May 18, 2010. Def.'s Mot. Exs. E, at 12, G (Timeline of Events), & J (Photographs of Stern and Bow Modules (July 7, 2010 through Dec. 4, 2010)), at 1; *see also* Moton Dep. 98:20 to 99:20.¹⁶ Three months after the patents had expired, on August 18, 2010, Grand Modules 701, 710, and 711, comprising the Grand Bow Module, were moved out of the shipbuilding factory in advance of their erection to the rest of the hull. *See* Def.'s Mot. Exs. J, at 2, & G (indicating that the Grand Bow Module was erected in August 2010); *see also* Moton Dep. 105:6-11 (“[I]n August . . . , the bow module would have been moved into place next to the hull and then there still would have had to have been that process of the welding up and the connecting . . . soon after [August 18, 2010].”). The ship’s final module, Module 866 comprising the transom, was erected onto LCS-3 on September 17, 2010. *See* Def.'s Mot. Exs. E, at 13, 16, G, & J, at 3 (depicting that Module 866 was erected onto the hull as of September 22, 2010).

On December 4, 2010, LCS-3 was christened and “launched,” although “[a]lignment and connection of the propulsion system continued throughout 2011,” as did testing of the ship. Def.'s Mot. Exs. E, at 22-37, & G. On June 6, 2012, LCS-3, *USS Fort Worth*, was delivered to the Navy. *See id.* Exs. E, at 38, & G.

D. Parties' Communications During Construction

FastShip informed the government of the alleged infringement of the patents-in-suit by the *Freedom* class of LCS on April 11, 2008, when FastShip sent a letter to the Navy setting out an administrative claim demanding compensation for patent infringement. Pl.'s Opp'n Ex. G (Letter from FastShip to the Navy (Apr. 11, 2008)). Two years later, on April 28, 2010, the Navy sent a reply to FastShip's counsel, informing FastShip that the Navy had investigated the claim and had chosen to deny the claim because it did not believe that the *Freedom* class of ships infringed the patents owned by FastShip. *Id.* Ex. I (Letter from the Navy to FastShip (Apr. 28, 2010)). On June 15, 2010, FastShip reiterated the “allegations of patent infringement.” *Id.* Ex. J (Letter from FastShip to the Navy (June 15, 2010)).

¹⁶The government contends that Lockheed Martin's Cost Performance Report detailing accomplishments from May 2010 indicated that LCS-3 was 49% complete at the time the patents expired. Def.'s Mot. Ex. F (Lockheed Martin's Cost Performance Reports (Apr. 26, 2010 through May 30, 2010)), at 10. This number was reached by “multiplying the estimate of completeness by a weight percentage” that was used to gauge the amount of time and effort necessary to complete building the ship. Pl.'s Opp'n at 5 n.3 (citing Moton Dep. 70:6 to 71:14). However, according to FastShip, this calculation estimated the amount of labor necessary for completing the overall LCS-3 project, so it “[did] not accurately reflect the level of completeness of the modules that ma[d]e up the LCS-3” in May 2010. Pl.'s Opp'n at 5.

As of May 18, 2010, Captain Moton estimated that LCS-3 was 74.5% complete, based upon the percentage completion of each of the modules combined to form “a ship level summary number.” Moton Dep. 69:8 to 71:15. This completion estimate was for LCS-3 overall, including unpatented features and structures. The completion of the patented assembly would have exceeded this estimate. Pl.'s Opp'n at 5-6. As discussed *infra*, however, the percentage completion values are immaterial to the court's decision in this case.

PROCEDURAL HISTORY

FastShip filed suit in this court on August 1, 2012, alleging that the Navy's "unlicensed use and manufacture" of LCS-1 and LCS-3 infringed its '032 and '946 patents. Compl. ¶ 18. FastShip further claimed that LCS-5, -7, -9, and -11, "under construction or on order," potentially constituted an infringement of its patents. Compl. ¶ 14. The parties briefed claim construction in August and September of 2013 and conducted a technological tutorial for the court on August 27, 2013. On September 13, 2013, the parties presented arguments at a *Markman* hearing, and the court issued an order on October 9, 2013, construing seven terms of the patents. *See FastShip, LLC v. United States*, 114 Fed. Cl. 499 (2013).

On November 26, 2014, the government filed its motion for partial summary judgment of non-liability on FastShip's claims for patent infringement with regard to LCS-3, -5, -7, -9, and -11. Def.'s Mot. at 1. This motion has now been thoroughly briefed and was argued at a hearing held on June 8, 2015.

STANDARDS FOR DECISION

A. A Claim Pursuant to 28 U.S.C. § 1498(a)

As explicated in 28 U.S.C. § 1498, the United States has waived sovereign immunity and granted this court exclusive jurisdiction to adjudicate patent infringement claims against the federal government "[w]hensoever 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." 28 U.S.C. § 1498(a); *see also Martin v. United States*, 99 Fed. Cl. 627, 632-33 (2011) (recognizing that Section 1498, rather than the Tucker Act, 28 U.S.C. § 1491(a), grants this court jurisdiction over patent infringement claims against the United States). The statute further states, in relevant part, that "the *use or manufacture* of an invention described in and covered by a patent of the United States by a contractor, a subcontractor, or any person, firm, or corporation for the Government and with the authorization or consent of the Government, shall be construed as use or manufacture for the United States." 28 U.S.C. § 1498(a) (emphasis added). The unauthorized "use or manufacture of an invention" under Section 1498(a) is analogous to a taking of property under the Fifth Amendment of the United States Constitution. *See Motorola, Inc. v. United States*, 729 F.2d 765, 768 (Fed. Cir. 1984); *see also Hughes Aircraft Co. v. United States*, 29 Fed. Cl. 197, 208 (1993). In this respect, the government "takes" a non-exclusive and compulsory license to any United States patent "as of the instant the invention is first used or manufactured by [or for] the [g]overnment." *Decca Ltd. v. United States*, 640 F.2d 1156, 1166 (Ct. Cl. 1980); *see also Liberty Ammunition, Inc. v. United States*, 119 Fed. Cl. 368, 385 (2014), *appeals pending*, Nos. 15-5054, 15-5061 (Fed. Cir.).

Given that the government has waived sovereign immunity only for the compulsory taking of a non-exclusive patent license, government liability under 28 U.S.C. § 1498 diverges from private liability under 35 U.S.C. § 271:

Government liability under Section 1498 arises from the “use[] or manufacture[] by or for the United States.” There is no mention of liability for a “sale” to the United States of a device covered by a patent. In contrast, with respect to private liability for patent infringement, the “sale” of a patented device is specifically defined in 35 U.S.C. § 271 as an act of infringement¹⁷

de Graffenried v. United States, 25 Cl. Ct. 209, 215 (1992) (alteration in original); compare 28 U.S.C. § 1498, with 35 U.S.C. § 271.

B. Patent Infringement

“The court determines whether the government has engaged in direct infringement [of a patent] using a two-step process that parallels the analysis for infringement litigation between private parties.” *Liberty Ammunition*, 119 Fed. Cl. at 385 (citing *Lemelson v. United States*, 752 F.2d 1538, 1548 (Fed. Cir. 1985)); see also *Casler v. United States*, 15 Cl. Ct. 717, 731 (1988), *aff’d*, 883 F.2d 1026 (Fed. Cir. 1989). Initially, the court construes the claims of the patent and then compares those claims to the characteristics of the accused product or process. See *JVW Enters. v. Interact Accessories, Inc.*, 424 F.3d 1324, 1329 (Fed. Cir. 2005). When comparing the patent claims to the accused device or process, the plaintiff has the burden of proving by a preponderance of the evidence that *every limitation* set forth in a patent claim is present in the accused device or process either literally or by a substantial equivalent. *Boeing Co. v. United States*, 69 Fed. Cl. 397, 426 (2006) (“[E]ach element of a claim is material and essential, and . . . for a court to find infringement, the plaintiff must show the presence of every element [for literal infringement] or its substantial equivalent [for infringement under the doctrine of equivalents] in the accused device.”) (alteration in original) (quoting *Lemelson*, 752 F.2d at 1551). This standard is commonly referred to as the “all elements” rule. See *TDM Am., LLC v. United States*, 92 Fed. Cl. 761, 768 (2010), *aff’d*, 471 Fed. Appx. 903 (Fed. Cir. 2012); see also *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 29 (1997). The plaintiff’s failure to meet even one element within a claim, literally or by its substantial equivalent, negates a finding of infringement. See *Lairtram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1535 (Fed. Cir. 1991).

C. Summary Judgment

A grant of summary judgment is appropriate when the pleadings, affidavits, and evidentiary materials filed in a case demonstrate that “there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” RCFC 56(a). A

¹⁷Section 271 of Title 35 of the United States Code provides in relevant part:

(a) . . . whoever without authority *makes, uses, offers to sell, or sells* any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.

35 U.S.C. § 271(a) (emphasis added).

material fact is one “that might affect the outcome of the suit under the governing law.” *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). A genuine dispute is one that might “return a verdict for the nonmoving party.” *Id.* If “the record taken as a whole [cannot] lead a rational trier of fact to find for the non-moving party, there is no ‘genuine issue for trial,’” and summary judgment is appropriate. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 587 (quoting *First Nat. Bank of Ariz. v. Cities Serv. Co.*, 391 U.S. 253, 288 (1968)).

The moving party has the burden of demonstrating the absence of genuine disputes. In that respect, “the inferences to be drawn from the underlying facts . . . must be viewed in the light most favorable to the party opposing the motion.” *Matsushita*, 475 U.S. at 587-88 (quoting *United States v. Diebold, Inc.*, 369 U.S. 654, 655 (1962)); *see also Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986). The non-moving party may defeat summary judgment by presenting material facts of its own, more than “[m]ere denials or conclusory statements,” that indicate “an evidentiary conflict created on the record.” *Barmag Barmer Maschinenfabrik AG v. Murata Mach., Ltd.*, 731 F.2d 831, 836 (Fed. Cir. 1984). To establish “that a fact cannot be or is genuinely disputed,” a party must “cite[] to particular parts of materials in the record, including depositions, documents, electronically stored information, affidavits or declarations, stipulations (including those made for purposes of the motion only), admissions, interrogatory answers, or other materials.” RCFC 56(c)(1)(A).

ANALYSIS

The salient elements required for a vessel subject to the claimed invention include: (1) “a hull,” (2) “at least one inlet,” (3) “at least one waterjet coupled to the at least one inlet,” and (4) “a power source coupled to the at least one waterjet.” *See, e.g.*, ’032 patent, col. 14, lines 1-18 (Claim 1); *see also* Def.’s Reply at 8-9. The dispositive issue before the court on the government’s motion is whether these allegedly infringing elements of LCS-3 were “manufactured” during the term of the ’032 and ’946 patents. *See* Hr’g Tr. 12:12-17; *see also* 28 U.S.C. § 1498(a).¹⁸ “[Because] the failure to meet a single limitation is sufficient to negate infringement of the claim,” *Laitram Corp.*, 939 F.2d at 1535, the incomplete manufacture of even one element will preclude recovery against the government under 28 U.S.C. § 1498(a), *see TDM Am.*, 92 Fed. Cl. at 768; *see also Hughes Aircraft*, 29 Fed. Cl. at 219 (“Conduct falling short of manufacture, even if it capitalizes on the patent in some sense, does not constitute infringement.”) (citing *Tektronix, Inc. v. United States*, 575 F.2d 832, 837 (Ct. Cl. 1978)); *Interdent Corp. v. United States*, 531 F.2d 547, 552 (Ct. Cl. 1976) (“[T]he omission of any one of the elements of the claimed combination avoids infringement.”).

¹⁸Neither party has argued that the term “manufacture” set forth in Section 1498 should have a different meaning than the word “make” that is found in the related provision of 35 U.S.C. § 271. *See, e.g.*, Hr’g Tr. 7:25 to 8:4, 14-16. Consequently, cases interpreting the term “make” in Section 271 will have a bearing on the court’s application of “manufacture” in Section 1498 and will be relied upon in the court’s analysis. *See, e.g., Hughes Aircraft*, 29 Fed. Cl. at 218 (looking to cases applying 35 U.S.C. § 271 for guidance on the issue of whether allegedly infringing spacecraft were “manufactured” for purposes of Section 1498).

A. Judicial Interpretation of “Make” and “Manufacture”

The term “manufacture” has not been defined in patent law; instead, its meaning has been developed by courts based on the circumstances at hand. *See Hughes Aircraft*, 29 Fed. Cl. at 226 (“We glean from [case] precedents that the question of what constitutes ‘use’ [and ‘manufacture’] is a *mixed question of fact and law to be determined on a case-by-case basis.*”) (emphasis added).¹⁹

In 1972, “the question of manufacture” under 35 U.S.C. § 271 was considered by the Supreme Court in *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 527 (1972). At issue in *Deepsouth* was whether the sale to foreign customers of subassemblies of a patented shrimp deveiner with the intent that the recipients would assemble the components abroad constituted infringement of two combination patents under 35 U.S.C. § 271. *See id.* at 523-24 (explaining that *Deepsouth Packing Co.* was “shipping deveining equipment to foreign customers in three separate boxes, each containing only parts of the 1 3/4-ton machines,” that could be fully assembled “in less than one hour”). The majority opinion by Justice White answered that question in the negative. *Id.* at 532. In finding non-infringement, Justice White relied on general principles of patent law:

We cannot endorse the view that the ‘substantial manufacture of the constituent parts of (a) machine’ constitutes direct infringement when we have so often held that a combination patent protects only against the *operable assembly of the whole* and not the manufacture of its parts. ‘For as we pointed out . . . a patent on a combination is a patent on the assembled or functioning whole, not on the separate parts.’

Id. at 528 (emphasis added) (quoting *Mercoid Corp. v. Minneapolis-Honeywell Regulator Co.*, 320 U.S. 680, 684 (1944)); *see also Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 344 (1961) (“For if anything is settled in the patent law, it is that the combination patent covers only the totality of the elements in the claim and that no element, separately viewed, is within the grant.”); *Leeds & Catlin Co. v. Victor Talking Mach. Co.*, 213 U.S. 301, 320 (1909) (“To be that,—to be identical with the invention of the combination,—they must be united by the same operative law.”). In *Deepsouth*, Justice Blackmun, joined by Chief Justice Burger and Justices Powell and Rehnquist, dissented on the ground that the majority had taken “too narrow a

¹⁹The court has found no precedents that suggest “percentage of completion” is the proper benchmark for determining whether a device has been “manufactured,” and the government “did not and does not” suggest otherwise. *See* Def.’s Reply at 1. As a result, any “disputed issue of fact regarding the percentage of completeness of the LCS-3 at the time of expiration of the patents-in-suit,” Pl.’s Opp’n at 16, *see supra*, at 8 n.16, is immaterial and irrelevant to the court’s analysis.

reading of 35 U.S.C. § . . . 271(a).” 406 U.S. at 532.²⁰

Twelve years later, the Federal Circuit also addressed the meaning of the term “make” for purposes of 35 U.S.C. § 271 in *Paper Converting Mach. Co. v. Magna-Graphics Corp.*, 745 F.2d 11 (Fed. Cir. 1984). At issue in that case was “the extent to which a competitor of a patentee can *manufacture* and test during the life of a patent a machine intended solely for post-patent use.” *Id.* at 16 (emphasis in original). The patent-in-suit was for an automatic rewinder used to make rolls of toilet tissue and paper towels, and the machine at issue operated as follows:

First, from within a 72-inch long “cutoff” roll, a 72-inch blade ejects to sever the continuous web of paper which is wound around the bedroll. Then, pins attached to the bedroll hold the severed edge of the web while pushers, also attached to the bedroll, transfer the edge of the web towards the mandrel (the roll on which the paperboard core is mounted).

Id. at 15.

²⁰At the time of the decision in *Deepsouth*, 35 U.S.C. § 271 proscribed the unauthorized “mak[ing], us[ing] or sell[ing of] any patented invention, *within the United States* during the term of the patent therefor” 35 U.S.C. § 271(a) (1970) (emphasis added). In response to the Court’s decision in *Deepsouth*, Congress sought to “amend[] the patent law so that when components are supplied for assembly abroad to circumvent a patent, the situation will be treated the same as when the invention is ‘made’ or ‘sold’ in the United States.” *Patent Law Amendments of 1984*, S. Rep. No. 98-663, at 3 (Sept. 24, 1984); *see also Microsoft Corp. v. AT & T Corp.*, 550 U.S. 437, 445 n.3 (citing *Section-by-Section Analysis of H.R. 6286*, 130 Cong. Rec. 28,069 (1984) (“This proposal responds to the United States Supreme Court decision in *Deepsouth* . . . concerning the need for a legislative solution to close a loophole in [the] patent law.”)). Accordingly, 35 U.S.C. § 271 was amended in 1984, *see* Pub. L. No. 98-622, § 101, 98 Stat. 3383, and now provides that:

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.

35 U.S.C. § 271(f)(1). While the amendment countermanded the Supreme Court’s decision “not to make it infringement where the final assembly and sale is abroad,” S. Rep. No. 98-663, the statute “neither defined the terms ‘make,’ ‘use’ or ‘sell’ nor overruled *Deepsouth*’s interpretation of those terms,” *Hughes Aircraft*, 29 Fed. Cl. at 218 n.22.

Although the accused infringer, Magna-Graphics, “normally *fully* tested machines at its plant before shipment,” the company engaged in a “scheme to avoid patent infringement” by conducting its tests in two noninfringing stages. *Paper Converting*, 745 F.2d at 15 (emphasis in original). In the first stage of testing, Magna-Graphics “checked the bedroll to determine whether the pushers actuated properly . . . [, but] no cutoff blades or pins were installed.” *Id.* In the second stage of testing, Magna-Graphics “checked the cutoff roll to determine whether the cutting blade actuated as intended . . . [, but no] pins, pushers, and blade [were] installed.” *Id.* Then, after negotiating a shipment agreement with the purchaser, Magna-Graphics shipped “the basic rewinder machine . . . and cutoff roll and bedroll” in separate packages on different dates. *Id.* at 15-16. The purchaser had agreed not to fully assemble the machine until two days after the patent had expired. *Id.* “Given the amount of testing performed [t]here, coupled with the sale and delivery during the patent-term of a ‘completed’ machine (completed by being ready for assembly and with no useful noninfringing purpose),” the Federal Circuit found Magna-Graphics’ machine to be infringing. *Id.* at 19. The court of appeals reasoned that “a contrary result would emasculate the congressional intent [of] prevent[ing] the making of a patented item during the patent’s full term” and would allow an “unscrupulous competitor [to] aggressively market[] its own product and construct[] it to all but the final screws and bolts.” *Id.*²¹ Judge Nies dissented in part, arguing that “[t]he majority’s conclusion necessitates giving a meaning to ‘patented invention’ contrary to the definition set forth by the Supreme Court in *Deepsouth*.” *Id.* at 24.

Several judges of this court have sought to limn “the boundaries of the problem” posed in deciding when “a device has been ‘manufactured’ for purposes of [28 U.S.C. § 1498].” *Hughes Aircraft*, 29 Fed. Cl. at 219. In *Hughes Aircraft*, the government was accused of infringing a patent “for controlling the attitude of a spin-stabilized spacecraft.” *Id.* at 201. The government disputed liability, arguing that some of the spacecraft at issue had not been manufactured before the patent expired because they contained inoperable test parts (or “dummy parts”). *Id.* at 220. “The test parts would not have been used when the spacecraft was launched and, in many cases, were . . . included only to give the spacecraft the appropriate mass and balance during the testing process.” *Id.* Since the “dummy parts [were] not intended to be launched into space, the government reason[ed], their inclusion on the spacecraft render[ed] the spacecraft inoperable” under *Deepsouth*. *Id.* The court disagreed with the government, holding:

Even though test parts were not intended to be launched with the spacecraft, the fact remains that the spacecraft, including the

²¹The majority opinion in *Paper Converting* began an examination of the Supreme Court’s decision in *Deepsouth* with the warning that “[w]e must be cautious in extending five to four decisions[, such as the one in *Deepsouth*,] by analogy.” *Paper Converting*, 745 F.2d at 17. It then distinguished *Deepsouth* on the facts, asserting that the Supreme Court’s decision was primarily driven by the issue of the extraterritorial impact of United States patent law. *See id.* at 17-18 (“While there is . . . a horror of giving extraterritorial effect to United States patent protection, there is no corresponding horror of a valid United States patent giving economic benefits not cut off entirely on patent expiration.”). Nevertheless, “because no other precedent control[led] [the court’s] decision . . . [, the Federal Circuit] look[ed] to *Deepsouth* and elsewhere for guidance” *Id.* at 18.

attitude control system, had been entirely assembled to the extent feasible at the time. In our view, that *complete physical assembly* readily satisfies *Deepsouth*'s requirement of an "operable assembly of the whole," 406 U.S. at 528.

Id. (emphasis added).

Alternatively, the government in *Hughes Aircraft* averred that the spacecraft had not been "manufactured" based "on the fact that the full testing process . . . was not complete on any of the spacecraft in issue by the expiration date." 29 Fed. Cl. at 221. The court also rejected that argument. It concluded that testing, while important, *see id.* ("The importance of testing to these spacecraft cannot be overstated."), was not part of the manufacturing process, *id.* at 221-22. Rather, it was "part of a later process for perfecting the ability of the object to perform its intended use . . . , [which] simply d[id] not fall within any fair usage of the term 'manufacture.'" *Id.* at 222. To hold otherwise, as the court observed, would "obliterate[] the distinction in § 1498 between 'use' and 'manufacture.'" *Id.*

Although there are factual differences between the status and condition of LCS-3 at issue in this case and the accused products in *Deepsouth*, *Paper Converting*, and *Hughes Aircraft*, the legal principles pertinent to those prior decisions still apply. *See, e.g., East Coast Sheet Metal Fabricating Corp. v. Autodesk, Inc.*, No. 12-CV-517-LM, 2015 WL 226084, at *15 (D.N.H. Jan. 15, 2015), *amended in part*, No. 12-CV-517-LM, 2015 WL 925614 (D.N.H. Mar. 3, 2015), *appeal pending*, No. 15-1717 (Fed. Cir.) (recognizing the distinct factual situation in *Deepsouth* but relying on the general principles of patent law applied by the Supreme Court in that decision). Accordingly, the court finds it appropriate to draw on these cases for guidance when analyzing the government's motion for partial summary judgment.

B. "Manufacture" of LCS-3

The government focuses on two key elements of LCS-3, the waterjet impeller assemblies and the hull, which it contends were incompletely fabricated or assembled by the expiration of the FastShip patents.

1. "Waterjet" limitation.

The patents at issue required "at least one waterjet coupled to the at least one inlet" and "a power source coupled to the at least one waterjet." *See, e.g., '032 patent*, col. 14, lines 15-18. Because the waterjet impeller assemblies were not installed in the waterjet tunnels before the patents-in-suit expired, the government maintains "that the waterjet element has not been 'coupled' to the inlet [or the power source] as required by the claims." Def.'s Reply at 9. FastShip concedes that the waterjet impeller assemblies were not installed before the patents expired, Pl.'s Opp'n at 6, but points out that at least one waterjet impeller assembly was available on-site waiting to be bolted to a waterjet power shaft, *see id.* Ex. H, at 13. According to FastShip, "[t]he actual bolting on of the available [waterjet] impeller assembly was not a significant event in the completion of the patented assembly," *id.* at 12, and therefore, "the letter and spirit of the claimed inventions had been manufactured by [the government] by the

expiration date,” *id.* at 13, of the patents.

FastShip’s argument would sidestep the requirement of an “operable assembly of the whole.” *Deepsouth*, 406 U.S. at 528. Bolting may have been a relatively straightforward and quick process, but the fact remains that this final installation step for any of the four waterjet impeller assemblies did not occur until after the expiration date of the ’032 and ’946 patents. As of May 18, 2010, no “waterjet” was “coupled” to an “inlet” or a “power source,” *see* ’032 patent, col. 14, lines 15-18, and instead, each of the four waterjet impeller assemblies remained uninstalled and incapable of propulsion, *see* Def.’s Mot. at 19. On these facts, *Deepsouth*’s legal principle of an “operable assembly of the whole” has not been met. 406 U.S. at 528; *cf. Hughes Aircraft*, 29 Fed. Cl. at 220 (finding spacecraft at issue to be an operable assembly where the spacecraft “had *completed systems installation* as of the expiration date [of the patent]”) (emphasis added).

FastShip endorses the rationale of *Paper Converting* because it considers the factual circumstances of *Paper Converting* to be analogous to the present situation. *See* Pl.’s Opp’n at 25. According to FastShip, the court should be guided by the Federal Circuit’s decision in *Paper Converting* because “[the Navy] knew of the existence of [p]laintiff’s patents and [p]laintiff’s claims of infringement of those patents years before those patents expired. Nevertheless, by the time the patents expired, [the Navy had] engaged in substantial manufacture of the LCS-3, a long leadtime article, to the point of assembly of all parts that are alleged to correspond to the claimed invention.” *Id.* In essence, FastShip inferentially suggests that the Navy did not move with alacrity to fully assemble LCS-3 because it was aware that FastShip’s patents were expiring.²² FastShip also argues that the decision in *Deepsouth* is of very limited utility in the circumstance of this case.²³

²²Among other things, FastShip asserts that “[it] was intentionally left off of the [Navy’s] design and build team for this entire fleet of ships.” Hr’g Tr. 38:11-14. FastShip also emphasizes that patent counsel for the Navy received an administrative claim from FastShip in April 2008 demanding compensation for infringement and waited two years before denying FastShip’s demand while the Navy continued to proceed with construction of LCS-3. *See* Pl.’s Opp’n at 24-25; *see also* Hr’g Tr. 38:10-11. Finally, FastShip notes that the Navy “persisted with construction” of LCS-3 even after receiving a follow-up letter in June 2010. Pl.’s Opp’n at 25.

²³At the hearing, FastShip argued that the Supreme Court’s decision in *Deepsouth* reflected “overruled . . . dicta,” which “Congress specifically went after” on the basis of extraterritoriality. Hr’g Tr. 41:16-21. The Federal Circuit has not accepted this position, however. Approximately fifteen years after its decision in *Paper Converting* and the amendment to 35 U.S.C. § 271 to address the extraterritoriality aspects of *Deepsouth*, the Federal Circuit noted that *Deepsouth* continues to be a viable statement of applicable law insofar as “making” is concerned. *See Rotec Indus., Inc. v. Mitsubishi Corp.*, 215 F.3d 1246, 1252 n.2 (Fed. Cir. 2000) (acknowledging that for “claims brought under § 271(a), *Deepsouth* remains good law: one may not be held liable under § 271(a) for ‘making’ or ‘selling’ *less than a complete invention*”) (emphasis added); *see also The Massachusetts Inst. of Tech. v. Abacus Software, Inc.*, No. 5:01 CV 344, 2004 WL 5268128, at *24 (E.D. Tex. Aug. 24, 2004), *report and recommendation*

The court is not persuaded by FastShip's arguments. Unlike in *Paper Converting*, where Magna-Graphics intended to manufacture a patented machine and attempted to circumvent infringement by purposefully selling the machine in non-infringing components to be combined after the patent had expired, 745 F.2d at 15-16, FastShip has offered no sound evidence to show that the Navy intentionally delayed installation of waterjet impeller assemblies on LCS-3 for the similar purpose of avoiding infringement.²⁴ Although FastShip contends that there was not "any reason why [a waterjet impeller assembly] wasn't bolted on" when it was "shipped right back from San Diego," Hr'g Tr. 37:25 to 38:1, the Navy's contractor and subcontractor were progressing steadily in construction of LCS-3. Where Magna-Graphics in *Paper Converting* duplicitously tested the infringing machine in "unpatented assemblies of elements," 745 F.2d at 19-20, the Navy's actions in disassembling, inspecting, repairing, testing, and reassembling the waterjet impeller assemblies were not attempts to avoid fully testing the claimed elements, *see supra*, at 6-7. In short, the events involving FastShip's administrative claim and the government's actions thereafter do not provide this court with justification for adopting the rationale in *Paper Converting*, even though LCS-3 is a long-leadtime item. *See de Graffenried*, 25 Cl. Ct. at 215 (ruling where plaintiff also "ha[d] not demonstrated any analogous 'scheme to avoid infringement'").

2. "Hull" Limitation.

Portions of the bow of the vessel had also not been installed prior to the expiration date of the patents-in-suit. FastShip argues that it is not appropriate for the court to consider the status of the bow because that portion of the vessel is "not specifically claimed in the asserted patent claims and is not a material limitation." Pl.'s Opp'n at 12. The patents-in-suit claim "a vessel comprising . . . a hull . . . having a length in excess of 200 feet [and] a displacement in excess of 2000 tons" that generates "high pressure" in the stern area. *See, e.g.*, '032 patent, col. 13, line 68

adopted sub nom., 2004 WL 5268127 (E.D. Tex. Sept. 29, 2004) ("[I]t seems clear that the panel majority [in *Paper Converting*] was not intending to articulate a new standard for deciding direct infringement."). In sum, notwithstanding *Paper Converting*, *Deepsouth* has been applied when "make[]" for purposes of 35 U.S.C. § 271(a) and "manufacture[]" for purposes of 28 U.S.C. § 1498 have been at issue. *See East Coast Sheet Metal Fabricating*, 2015 WL 226084, at *16 (concluding that *Deepsouth* was not inapposite to the case because "[r]esolution of the question presented in *Deepsouth* required the [C]ourt to determine what constituted the manufacture of an infringing apparatus, which [wa]s very much at issue [t]here"); *see also de Graffenried*, 25 Cl. Ct. at 214 (citing *Deepsouth* in an action brought under 28 U.S.C. § 1498 for the "general rule . . . that until a device covered by a patent is actually assembled, the device has not been 'manufactured'").

²⁴According to the government, the waterjet impeller assemblies "weren't scheduled to be installed until July," after the patents expired. Hr'g Tr. 35:14-15; *see also* Def.'s Mot. Ex. E, at 12 (showing "July 2010 [a]ccomplishments"). In response, FastShip contends that "[t]here is no fixed schedule for construction. . . . These things aren't cast in stone. . . . This ship was supposed to be done before the patents expired and it just wasn't." Hr'g Tr. 39:11-17.

to col. 14, line 9 (emphasis added).²⁵ Although the patent claims do not specify a bow section with particularity, “an operably assembled hull inherently has a stern section, [a midships section,] *a bow section*, a port section and a starboard section.” Def.’s Reply at 6 (emphasis added); *see also* Hr’g Tr. 31:11-19. A semi-planing monohull design would not be able to “displace[] in excess of 2000 tons [of water],” *see* ’032 patent, col. 14, line 9, without a bow that is watertight, and FastShip has adduced no cogent evidence to demonstrate otherwise, although it did argue to the contrary, *see* Hr’g Tr. 40:4-9 (“And at the time, you know, we have a front of the ship. . . . [I]t’s not their bow, but it is the front of the ship. Does it displace 2,000 [tons of water]? I think so, I mean . . . these ships are quite a bit bigger than the claimed limitation of 2,000 ton displacement.”). Accordingly, the status of the bow, as part of the hull, shall be considered by the court.

The Grand Bow Module was transported for erection to the rest of the hull in mid-August of 2010. Prior to that time, the modules of the bow were under construction, waiting to be combined into the Grand Bow Module and then to be welded to the rest of the vessel, *see* Moton Dep. 102:7 to 105:11; *see also* Def.’s Mot. Ex. H, as seen in the photographs below:



Def.’s Mot. Ex. I, at 2 (LCS-3 Photographs (May 19, 2010)) (showing status of Module 803, a component of the bow, the day after the patents-in-suit had expired).

²⁵The “high pressure” results largely from hydrodynamic forces, with hydrostatic forces playing a minor role, when the vessel is operating in semi-planing mode. *See FastShip*, 114 Fed. Cl. at 505-06. Hydrodynamic forces acting on a moving vessel produce both drag and lift and are a function of the configuration of the hull and the inlets of the waterjets, the outlets of the waterjets, and the speed of the vessel. *See id.* Relatedly, hydrostatic forces apply both when a ship is at rest and when it traverses the water. *See id.* For further discussion of the pressures experienced on a semi-planing hull, *see id.*



Id. Ex. I, at 3 (depicting status of Modules 801 and 802, parts of the bow, one day after the '032 and '946 patents had expired).

Even after completing the “construction” stage of assembly, the modules for the bow still needed to go through the process of “pre-outfitting” before being “erected” to the rest of the hull. *See* Def.’s Reply at 10 (citing Moton Decl. at ¶ 14); *see also* Def.’s Mot. Ex. J, at 2. Based on these facts, those modules were not ready to be assembled into the Grand Bow Module or installed to the other portions of the hull on the date when the patents-in-suit expired. *Cf. Paper Converting*, 745 F.2d at 19 (defining “completed machine” as “being *ready for assembly* and with no useful noninfringing purpose”) (emphasis added); *Hughes Aircraft*, 29 Fed. Cl. at 220 (ruling where the spacecraft at issue had completed a systems installation stage that was “the *final assembly stage* during which all of the components, subsystems[,] and systems ordinarily would be installed”) (emphasis added). Instead, “[t]he photographs of the state of assembly on or shortly after that date [*i.e.*, the patent expiration date,] show that LCS-3 could not possibly float by May 18, 2010,” Def.’s Reply at 7, and the “hull” element of the claims remained incomplete and inoperable, *see Deepsouth*, 406 U.S. at 528.

In sum, based on general tenets of patent law and in light of the distinct facts presented in this case, the court finds that the allegedly infringing LCS-3 was not “manufactured” for purposes of Section 1498(a) by the date the pertinent patents expired.

CONCLUSION

For the reasons provided, the government’s motion for partial summary judgment is GRANTED because there are no genuine issues of material fact with regard to manufacture of LCS-3. The pertinent vessel, *USS Fort Worth*, and the later constructed LCS-5, -7, -9, and -11 shall be dismissed from, and not given further consideration in, this action.

The parties are requested to provide by July 22, 2015, a plan and schedule for completing preparations of this case for trial.

It is so ORDERED.

s/ Charles F. Lettow
Charles F. Lettow
Judge