United States District Court,
S.D. Florida.

M SHIP CO., a New Mexico Limited Liability Corporation,
Plaintiff.
v.
ICE MARINE LTD., a United Kingdom company,
Defendant.

No. 06-21886-CIV-GOLD/TURNOFF

July 30, 2007.

Harvey W. Gurland, Jr., Duane Morris, Miami, FL, Nicholas S. Barnhorst, Richard A. Clegg, Seltzer Caplan McMahan Vitek, San Diego, CA, for Plaintiff.

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COURT'S ORDER ON CLAIM CONSTRUCTION FOR U.S. PATENT NO. 6,250,245

ALAN S. GOLD**, District Judge.**

I. INTRODUCTION

In this action, Plaintiff M Ship Co. ("M Ship") filed a complaint against the Defendant, ICE Marine, Ltd. ("ICE Marine") for infringing M Ship's U.S. Patent No. 6,250,245 ("the '245 Patent") **[D.E. 1].** The Defendant's responded by filing an answer and counterclaim **[D.E. # 10]** to which the Plaintiff responded **[D.E. # 14].** A *Markman* hearing was on the claims at issue was held before the Court on Friday, July 13, 2007 and Thursday, July 19, 2007. At the hearing, the Court heard from Plaintiff's expert, Andrew Mund, and Defendant's expert, Louis T. Codega, and from one of the inventors, William F. Burns.

Prior to the hearing, the parties filed various pleadings to assist the Court in resolving the legal issues surrounding the construction of various disputed claim terms in the asserted claims of the '245 Patent **[D.E. # s 27, 30-38, 40-42].** Following the commencement of the *Markman* hearing, each party has filed a supplemental memorandum. I complement the parties on their well-considered presentations.

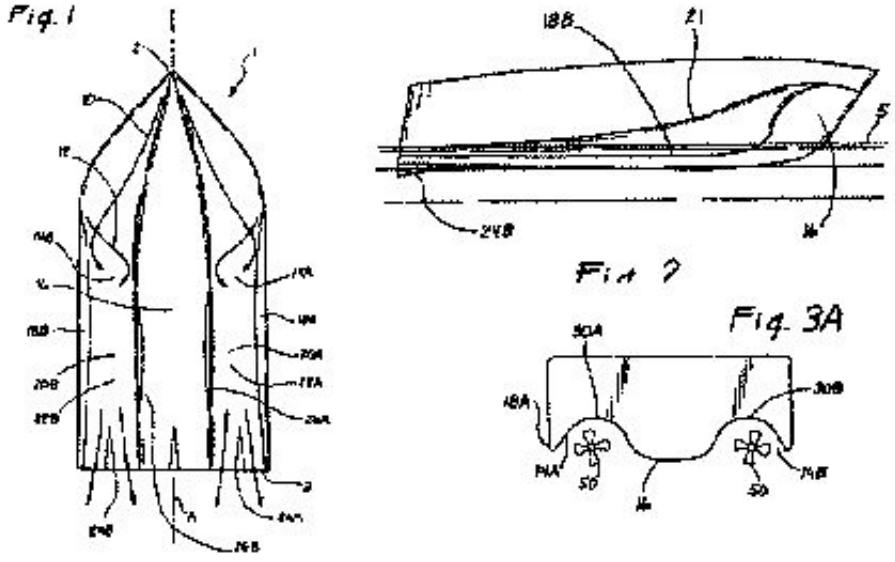
The '245 Patent includes 21 separate claims. M Ship is presently asserting only claims 1, 5, 6, 7, 8, 11 and 21 in this action. The parties have provided the Court with a joint claim chart in which the agreed and disputed claim terms are identified, and the parties' respective positions on the disputed claim terms are set forth. The Court's resolution of the disputed claims is included in a revised "Claims Construction Chart" which is attached to this Order as Appendix "A."

I. AN OVERVIEW OF THE '245 PATENT

The '245 Patent is generally directed to a boat (or "watercraft") with an "M"-shaped hull design. The "Abstract" of the '245 Patent, on the front page of the patent, summarizes the invention as follows:

The present invention relate to a watercraft having a wave suppressing "M-shaped" hull design. The hull comprises a central displacement body flanked by two downwardly extending outer skirts. The outer skirts are attached to the displacement body by planing wings having wing channels. The bow wave is directed into the wing channels, thereby increasing planing efficiency and reducing the effect of such waves on other boats and the shoreline.

Several examples of the "M" shaped hull are described and shown in the '245 Patent. Figure 1 from the patent (reproduced below) shows an example of the patented hull, viewed from the bottom, including a "central displacement body" 16, first and second outer skirts 18A and 18B, and the first and second "planing wings" 20A and 20B. Figure 2 shows an example viewed from the side. Figure 3A shows an example cut side-to-side in cross-section.



The "Summary of the Invention," at Columns 1-2 of the patent, states several "objectives" of the invention, including:

1. minimizing wave pollution, by recapturing boat generated waves;

2. providing a powerboat that will operate efficiently at low speeds in a "displacement" mode and at higher speeds in a "planing" mode; and

3. recovering energy from the boat generated waves by planning on the waves.

The '245 Patent elaborates on basic aspects of the patented hull design, at Col. 3, lines 33-44:

The present invention is predicated on the realization that a boat propelled by motor or sail generates bow waves containing energy. With a conventional hull design, this energy is not only lost, thereby reducing efficiency, but also threatens other boats and damage to structures at the water/land interface. The "M-shaped" hull of the present invention recaptures the bow waves not only to protect other boats and structures at the water/land interface, but also to enhance boat efficiency. In the following detailed description, certain preferred embodiments of the present invention are described structurally first and then the general operation is provided.

The '245 Patent also explains how the disclosed embodiments operate to achieve the stated objectives, at Col. 5, line 42-Col. 6, line 13:

In operation, the bow waves 10, which are moved forward by the boat at its speed, are forced into the wing channels 14A and 14B and given a spiral motion by the concave surface of the wing channels 14A and 14B. The water then spirals back through the wing channels with reduced angularity as its forward speed is slowed by friction. Air near the entrance to the wing channels, increasing in pressure with boat speed, is entrapped in the water spiral which acts as screw conveyor, moving the air with the water in a spiral pattern through approximately the first two-thirds of the length of the wing channels 14A and 14B referred to as the "spiral action." Although its speed is reduced by friction, the air/water mixture continues to move forward in relation to water outside the wing channels. This water action contributes to efficient planing lift of the ceilings of the wing channels, with the air content also providing a benefit in reduced friction drag.

As the air/water mixture leaves the "spiral section" (see reference numeral 14 in FIG. 1), it passes into the final approximately one-third of the wing channel that, in certain preferred embodiments, becomes increasingly rectangular with a flattening (e.g., decreased curvature) of the wing channel ceiling. The wing channel ceilings slope downward to below the static waterline 5, reducing and ultimately eliminating the cross-sectional area, thereby increasing the pressure of the air/water mixture. These changes in what is referred to as the "pressure section" (see reference numeral 22 in FIG. 1) eliminate the spiral flow and force separation of the air which rises towards the wing channel ceiling due to its lower specific gravity. The water, under increasing pressure, compresses the air layer at the wing channel ceiling, thereby providing efficient low-drag planing lift. Finally, the compressed air/water mixture exits under the transom as low energy foam, while the lower solid water layer, from which much of the energy has been extracted in compressing the air, exits the transom below the foam.

The invention of the '245 Patent was distinguishable over prior art hulls with three sections (for example, old fashioned trimarans and tunnel boats) based on this concept of capturing and compressing water and air as they swirl through sloped channels toward the back of the boat, to recapture energy and create lift.

II. LAW OF CLAIM CONSTRUCTION

"A literal patent infringement analysis involves two steps: the proper construction of the asserted claim and a determination as to whether the accused method or product infringes the asserted claim as properly construed." Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1581-82 (Fed.Cir.1996). At this stage, the Court is only construing the patent claims for the purpose of determining "what is and is not covered by the technical terms and other words of the claims." Netwrod, LLC. v. Central Corp., 242 F.3d 1347, 1352 (Fed.Cir.2001). "[I]t is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc., 381 F.3d 1111, 1115 (Fed.Cir.2004). The words in a claim "are generally given their ordinary

meaning." *Vitronics,* 90 F.3d at 1382. "[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." Phillips v. AWH Corp., 415 F.3d 1303, 1313 (Fed.Cir.2005). However, the ordinary meaning of a term as understood by a person skilled in the art is "often not immediately apparent and because patentees frequently use terms idiosyncratically courts should look to 'those sources available to the public that show at a person of skill in the art would have understood disputed claim language to mean.' " Id. at 1314 quoting Innova, 381 F.3d at 1116. These sources include various forms of intrinsic evidence such as "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence." Innova, 381 F.3d at 1116, and extrinsic evidence such as "expert and inventor testimony, dictionaries, and learned treatises." Markman v. Westview Instruments, Inc., 52 F.3d 967, 980 (Fed.Cir.1995).

In construing a patent claim, the court first looks at the "intrinsic evidence of record [which is] the patent itself, including the claims, the specification and, if in evidence the prosecution history." Vitronics, 90 F.3d at 1582. Intrinsic evidence is the primary and most significant source of evidence in construing patent claims. *Id*. The court begins its consideration of intrinsic evidence by considering the claim terms, which are the terms used to define "what it is that is patented." Phillips, 415 F.3d at 1312 quoting Merrill v. Yoemans, 94 U.S. 568, 570, 24 L.Ed. 235 (1876). The court also looks at the context in which the claim term is being used. *Phillips,* 415 at 1314 (stating that: "the context in which a term is used in the asserted claim can be highly instructive."); ACTV, Inc. v. Walt Disney Co., 346 F.3d 1082, 1088 (Fed.Cir.2003)(stating that "the context surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms."). The court also looks at other claim in the patent "[b]ecause claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims." Phillips, 415 F.3d at 1314. The court also considers the specifications of which the claims are a part. The specification is a written description of the invention and the drawings which are submitted to the patent office. The claims previously discussed are the numbered paragraphs which appear at the end of the specification. Thus, the claims must be read in light of the specification and cannot be construed in a manner which is inconsistent with the specification. *Markman,* 517 U.S. at 389 (stating that a "term can be defined only in a way that comports with the instrument as a whole."). Merck & Co. v. Teva Pharms, USA, Inc., 347 F.3d 1367, 1371 (Fed.Cir.2003)(noting that "[a] fundamental rule of claim construction is that terms in a patent document are construed with the meaning with which they are presented in the patent document. Thus claims must be construed so as to be consistent with the specification, of which they are a part .")(intemal citations omitted).

In considering the specification, it is important to note that "the specification may reveal 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 1317. If a patentee does choose to act as his or her own lexicographer it is his or her own meaning which controls. Teleflex, Inc. v. Ficosa North America Corp., 299 F.3d 1313, 1325 (Fed.Cir.2002)("The patentee may demonstrate an intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specifications expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."); Vitronics Corp., 90 F.3d at 1582 ("Although words in a claim are generally to be given their ordinary and customary meaning, a patentee may choose to be his own lexiographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specifications or file history."). [T]he specification is always highly relevant to the claim construction analysis [and is] [u]sually ... dispositive ... [as] it is the single best guide to the meaning of a disputed term." *Id*.

In considering the intrinsic evidence, the prosecution history of the claim is also considered if it is in evidence. Phillips, 415 F.3d at 1317. The prosecution history of the claim is the "complete record of all the proceedings before the Patent and Trademark Office ("PTO"), including any express representations make by the applicant regarding the scope of the claims." Vitronics, 90 F.3d at 1582. "The purpose of consulting the prosecution history in construing a claim is to 'exclude any interpretation that was disclaimed during prosecution.' " Chimie v. PPG Industries, Inc., 402 F.3d 1371, 1384 (Fed.Cir.2005) quoting *AMI* Corp. v. Cardiac Resucitator Corp., 844 F.2d 1576, 1580 (Fed.Cir.1988)). However, the Federal Circuit has cautioned that "because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." Phillips, 415 F.3d at 1317. "The prosecution history may not be used to infer the intentional narrowing of a claim absent the applicant's clear disavowal of claim coverage." Amgen, Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1237 (Fed.Cir.2003). In the contest of claim construction, any disclaimer of claim coverage in the prosecution history must be "clear and unmistakable." Omega Eng'g. Inc. v. Raytek Corp., 334 F.3d 1314, 1325 (Fed.Cir.2003).

Nonetheless, the Federal Circuit has confirmed that the prosecution history, just like the written description, may be used to shed light on the meaning of the words in the claim. ResQNet, Inc. v. Lansa, Inc., 346 F.3d 1374, 1381-82 (Fed.Cir.2003)("The remarks regarding overcoming all problems in the prior art inform the proper claim construction."). When the prosecution history is used for this purpose, I do not need to invoke the requirement that a disclaimer of claim scope be clear and unambiguous, because the prosecution history is not being used to give rise to a disclaimer. Instead, the prosecution history, just like the specification, may be used to provide context for how persons of ordinary skill in the art would understand the words of the claim. Nystrom v. Trex Co., Inc., 424 F.3d 1136 (Fed.Cir.2005)("We need not decide whether this statement reflects clear disavowal of claim scope because the context reflect Nystrom's consistent use of the term board to refer to wood decking material cut from a log.").

In this case, the Court is currently focusing on claim construction, the first step of the "literal infringement" analysis. Infringement under the doctrine of equivalents is not at issue, and, therefore neither is "prosecution history estoppel." *See* Loctite Corp. v. Ultraseal, Inc., 781 F.2d 861, 870-871 (Fed.Cir.1985)("Prosecution history estoppel applies as a limitation to the doctrine of equivalents after the claims have been properly interpreted and no literal infringement is found."). Thus, the concept of "prosecution history estoppel" and the so-called *Festo* presumption" is not appropriate for consideration in the claims construction context. *See* Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd., 535 U.S. 722, 122 S.Ct. 1831, 152 L.Ed.2d 944 (2002).

While the parties have spent considerable time on prosecution history, I have given it limited emphasis in the discussion which follows. Much ado has been made about whether the patent attorney made mistakes, used words that shed light on the meaning of the words in the claim, or has intentionally limited the scope of the claim. The Defendant relies heavily on such interpretations. However, "[a]lthough the prosecution history can and should be used to understand the language used in the claims, it ... cannot 'enlarge, diminish, or vary the limitations of the claims." Markman v. Westview Instruments, 52 F.3d 967, 980 (Fed.Cir.1995)(quoting Goodyear Dental Vulcanite Co. v. Davis, 102 U.S. 222, 227, 26 L.Ed. 149 (1980). While the patent attorney's statements in the prosecution history are not always a model of clarity, the claims, as allowed by the Examiner, is what I have to deal with and it is not for the courts to so say they contain limitations which are not in them. *Intervet America, Inc. v. Kee-Vet Labs., Inc,* 887 F.3d 1050, 1054 (Fed.Cir.1989). To make it clear, I do not conclude that the statements of the patent attorney at issue constitute a "clear and unmistakable" disavowal or disclaimer of claim coverage, and do not "surrender"

claim coverage, as the Defendant has argued.

Finally, after considering the intrinsic evidence, the court may look to extrinsic evidence such as "expert and inventor testimony, dictionaries, and learned treatises." (quoting Markman, 52 F.3d at 980). However, "[i]n most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term and [i]n such circumstances, it is improper to rely on extrinsic evidence." Vitronics, 90 F.3d at 1583. It is best if the court "focuses at the outset on how the patentee used the claim term in the claims, specification, and prosecution history, rather than stating with a broad definition and whittling it down." Phillips, 415 F.3d at 1321.

In the landmark *en banc* decision of Phillips v. AWH Corp., 415 F.3d 1303 (Fed.Cir.2005), the Federal Circuit clarified the law regarding claim construction and affirmed a number of principles that provide district courts with guidance on how they should construe patent claims. *See also On* Demand Machine Corp. v. Ingram Industries, Inc., 442 F.3d 1331, 1337 (Fed.Cir.2006). Because these principles apply to many of the disputed claim terms in this case, the Court summarizes them in the following manner:

1: The Court should construe the claims with the understanding of the terms held by persons of ordinary skill in the relevant art at the time of the invention. Phillips, 415 F.3d. at 1313.

2: The language of the claims is the primary source for defining the invention. *Id*. at 1312.

3: "There is a heavy presumption in favor of the ordinary meaning of claim language." *Id*. at 1312-14.

4: There must be a textual reference in the actual language of the claim with which to associate a proffered claim construction. In other words, the context in which inventors use terms in a claim can be highly instructive. *Id*. at 1314. *Accord,* Johnson Worldwide Associates, Inc. v. Zebco Corp., 175 F.3d 985, 990 (Fed.Cir.1999).

5: If the claim language is clear, then courts will only consider other evidence to determine if there has been a deviation from the plain and ordinary meaning. Phillips, 415 F.3d at 1313-14.

6: Although the Court should read the claims in light of the specification, the Court should not import limitations from the specification into the claims. *Id*. at 1323-24.

7: The Court should not construe claim language to exclude a preferred embodiment or purpose of the invention. *Id*.

8: The goal of claim construction is to clarify only those terms that require further definition, not to alter the scope of the invention or inject unnecessary ambiguity into the claim language. Terlep v. Brinkmann Corp., 418 F.3d 1379, 1382 (Fed.Cir.2005).

9: "The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." Phillips, 415 F.3d at 1316 (quoting *Renishow PLC v. Marposs Societa' per Azioni,* 158 F.3d 1250 (Fed.Cir.1998)).

10: "It is presumed that different words used in different claims result in a difference in meaning and scope for each of the claims ... it prevents the narrowing of broad claims by reading into them the limitations of

narrower claims." Clearstream Wastewater Sys. v. Hydro-Action, Inc., 206 F.3d 1440, 1446 (Fed.Cir.2000).

The Federal Circuit in *Phillips* made clear that, when construing claims, the primary focus remains on the claims, both asserted and unasserted. "Differences among claims can also be a useful guide [also] in understanding the meaning of particular claims terms." *Ibid*. For example, the doctrine of claim differentiation creates a rebuttal presumption that each claim in a patent has different scope, Sunrace Roots Enter., Co. Ltd. v. SRAM Co., 336 F.3d 1298, 1302-03 (Fed.Cir.2003). That presumption, however, "is especially strong when the limitation in dispute is the only meaningful difference between an independent claim and dependent claim, and one party is urging that the limitation in the dependent claim should be read into the independent claim." Id. at 1303.

With these guiding principles in mind, I now turn to the specific language of the claims of the '245 Patent, giving priority to the claim and specification language, and considering the expert testimony where helpful in understanding that language:

III. ANALYSIS OF SPECIFIC CLAIMS

As noted above, M Ship is asserting claims 1, 5, 6, 7, 8, 11 and 21. Claims 1 and 21 are "independent" claims, which stand on their own without referring to any other claim. The remaining claims are "dependent" claims, which refer (directly or indirectly) to one or more previous claims, incorporating by reference the limitations of those previous claims.

A. Claim 1 of the '245 Patent

Claim 1 of the '245 Patent reads as follows, with terms that are discussed below **bolded:**

A. watercraft comprising:

a **hull** having a **fore end,** an **aft end,** and a longitudinal axis extending between the fore end and the aft end:

a **displacement body portion** of the hull that extends between the fore end and the aft end, the displacement body having a static waterline, a port side, and a starboard side:

a **first channel-defining structure portion of the hull** that is located on the port side of the displacement body,

including a first **wing structure** extending laterally from the port side of the displacement body above the static waterline and a first outer skirt structure that extends downwardly from the first wing structure to below the static waterline in spaced apart relationship to the displacement body, said first outer skirt structure having an **outer surface that is substantially perpendicular** with respect to the static waterline and said first channel-defining structure defining a first channel with a cross-sectional surface that is **generally arcuate:** and

a **second channel-defining structure portion of the hull** that is located on the starboard side of the displacement body, FN1

including a second **wing structure** extending laterally from the starboard side of the displacement body

above the static waterline and a second outer skirt structure extending perpendicularly downwardly from the second wing structure to below the static waterline in spaced apart relationship to the displacement body, said second outer skirt structure having an **outer surface that is substantially perpendicular** with respect to the static waterline and said second channel-defining structure defining a second channel with a cross-sectional surface that is **generally arcuate:**

the first and second channels **extending from the fore end to the aft end** and the first and second channels **being adapted to capture a bow wave and to cause air and water to mix and spiral toward the aft end of the hull as compressed aerated water, thereby reducing friction drag, increasing lateral stability, and dampening transmission of bow wave energy at the aft end of the hull.**

1. "fore end" and "aft end"

The first significant dispute is over the meaning of the terms "fore end" and "aft end." Plaintiff's original claim construction chart proposed these terms to mean the portions of the hull lying "between the mid-length of the hull and the front tip" or "between the mid-length of the hull and the back of the hull." Plaintiff no longer advocates that definition with regard to "fore end." Instead, during the testimonial portion of the *Markman* hearing adopted its expert's definition, who defined the term "fore end" to mean "the front leading edge of the boat, and the portions of the hull directly adjacent to the front leading edge." However, there is nothing in the patent claims or specifications to aid the Court, or any one else, to determine what constitutes the "front leading edge." The phrase "front leading edge" is never used in the patent or the claims. At closing argument, Plaintiff has subsequently amended its proposed construction to mean the front end portion of the hull forward of the first and second outer skirts.

At the *Markman* hearing, the parties agreed that the "aft end" means the trailing rear edge of the boat where the central displacement body, the channels and the outer skirts terminate. In Figure 1 of the Patent identifies this area with a number 3. The Defendant does not take the position that the aft end is represented only at the number 3, but agrees that the number 3 identifies the entire line representing the end terminus of the boat. The real dispute, then, concerns the meaning of the term "fore end." Defendant contends that the term "fore end" means the forward-most "extreme" tip of the hull.

However, Defendant's proposed construction is fundamentally at odds with the entire patent. Indeed, *Defendant's proposed construction would result in a claim construction that excludes every embodiment and example disclosed in the patent,* violating a fundamental tenet of patent law. For example, claim 1 expressly requires the first and second channels to "extend from the fore end to the aft end." [Claim 1; col. 7, lines 14-15) Under Defendant's proposed claim construction, the channels would be required to extend all the way to the "extreme" tip of the boat. The '245 Patent, however, does not disclose any embodiment in which the channels (and the channel defining structures) extend all the way to the forward-most "extreme" tip of the boat. Such a claim construction would exclude every embodiment in the '245 Patent.

Rather, a construction is required that is more fully consistent with the entire patent. In every example disclosed and shown in the patent, the outer skirts (one of the "channel defining" structures) extend from the aft end of the boat towards the front of the hull, *laterally from the boat's centerline*. In every embodiment shown and described in the '245 Patent, the wing structure (also part of the channel) starts at or near the front tip of the boat. The channels then flare back and away from the tip of the boat, with the skirt portions starting some distance back from the extreme tip of the boat. The '245 Patent does not, however, disclose any structure in which the skirts (which form part of the channel) extend all the way forward to the very tip

of the hull at the centerline. This supports the notion that the "fore-end" is not restricted to the extreme-most tip of the boat, and that the skirts do not need to extend forward to the extreme-most tip of the boat. To interpret the claim otherwise would result in the preferred embodiment (and every other embodiment) being excluded from the claim. Rather, to accommodate these embodiments, the fore end is to be construed as front end portion of the hull forward of the first and second outer skirts. The claims and specifications, which contain these embodiments, therefore, supersede Defendant's proposed extrinsic dictionary definitions.

While reference arrows "2" in the figures of the '245 Patent points to a spot on the boat that is located in the fore end, there is nothing in the patent to suggest that the fore end is limited to those specific spots or extremities. For example, referring to Figure 1 in the '245 Patent (shown on page 2 above), arrow "3" points to a single spot in the right-rear corner of the boat, far from the centerline. But nobody would understand the term "aft end" to mean that specific spot in the right rear of the boat. Instead, they would understand it to mean the entire trailing edge of the boat and the adjacent portions of the hull. Similarly, the arrow "2" points to a single spot on the forward leading edge of the hull, but persons skilled in the art would understand the fore-end of the boat to include more than just the single spot touched by the arrow. For these reasons, Defendant's proposed construction of the fore end being at the "extreme end" of the bow is too limiting.

2. "Displacement Body Portion"

The term "displacement body portion of the hull" is not used, *per se*, in the specification of the '245 Patent. The patent specification refers to "a displacement body 16" (Co.3, ll, 50) as being part of the hull 1. The hull comprises a "displacement body" and two downwardly extending outer skirts. Col. 2, 53-54. Each of the outer skirts is located outside of the displacement body and is connected thereto by a planning wing having a wing channel. Id., lines 49-51. The patent provides that: "Preferably, the displacement body is approximately centralized, extending substantially along the central longitudinal axis of the hull." Id., lines 54-56. It further describes the displacement body as providing "displacement lift for efficient operation at low speeds." (Id., Co. 3, ll, 54-56).

The parties disagree over the meaning of the phrase "displacement body portion of the hull." Defendant contends that the term "displacement body portion" means "[a] narrow buoyant body supported on the surface of water by the displacement of water which is part of the hull and designed to operate efficiently at low design speed, *and forming a bow wave through its range of operating speeds*." At page 1 of its Opening Brief, the Defendant states that "according to the patent," the invention is a "displacement boat." The patent, however, does not discuss or claim the invention as a "displacement boat," but discloses and claims a "watercraft" with a "hull" that includes a "displacement body portion." Plaintiff, on the other hand, contends that the phrase means simply "a central portion of the hull, which displaces water." Plaintiff's expert, Mr. Andrew Mund, purportedly improved that definition somewhat, by stating it as "a central portion of the hull that supports the majority of the weight of the watercraft by 'displacing' water." *See* Declaration of Andrew Mund Regarding Claims of U.S. Patent No. 6,250,245 ("Mund Dec.").

The primary difference between the parties concerns whether the central displacement body generates a bow wave throughout its entire range of operation, as Defendant's expert, Mr. Codga, suggests. At the *Markman* hearing, the Defendant acknowledges that the invention is a "hybrid craft." I conclude, however, that the Defendant's proposed construction improperly reads new limitations into the claims. In particular, it attempts to re-write the claim to replace the term "hull" with the term "displacement hull" and to replace the term

"displacement body portion" with the phrase "displacement body portion that forms a bow wave through its entire range of operating speeds." In effect, Defendant would limit the entire invention to watercraft that operate in a displacement mode, generating a bow wave *at all times*.

The fact that the hull is described as *including* a "displacement body portion" does not, however, mean that the entire hull is a "displacement hull. There is nothing in the claims, or in the '245 Patent, or of a convincing nature in the prosecution history of the '245 Patent, to suggest that the claimed watercraft (or the displacement body portion) must operate in a displacement mode or generate a bow wave "throughout its entire range of operational speeds" as Defendant suggests. Instead, the specifications recognize that it is the "wing channels" that recapture the bow waves at higher speeds: "In operation, the wing channels 14A and 14B recapture the bow waves, thereby protecting other boats and waterway walls and providing planning surfaces 22A and 22B for efficient operation at high speed." Col. 4, lines 12-16. More specifically, it is an objective in other embodiments that "boat-generated waves" are "recaptured" "... through extension from the central displacement body of planing wings, and parallel tapered outer skirts...." Col. 2, lines 8-11. Nothing in the Patent requires the "central displacement body" to generate or recapture bow waves at all speeds.

Indeed, the '245 Patent makes clear that the claimed "watercraft" is *not* exclusively a displacement craft. There are many references in the '245 Patent to the "planing" action of the hull. There is nothing in the Patent which supports that the claimed watercraft would generate a bow wave in the planning mode. For example, in the "Summary of the Invention" section of the ' 245 Patent, at Column 2, lines 1-7, the patent says the following:

It is a further objective in certain embodiments of the present invention to provide a powerboat having a relatively narrow central displacement body and planing wings to operate efficiently at low speed in the displacement mode, while requiring less power for efficient transfer into the planing mode, thereby providing efficient planing at high speed.

Thus, the '245 Patent makes clear that the claimed watercraft is a hybrid craft with a hull that is capable of operating in a displacement mode *or* in a planing mode. Defendant's proposed construction for the term "displacement body portion" is too limiting, and reads new limitations into the claims. The term "displacement body portion" does not say anything about how the boat operates in any overall sense or at any particular speeds and does not limit the claims in any such respects. It is nothing more than a reference to a central portion of the hull that supports the hull by displacing water to create buoyancy. Therefore, I construe the phrase "displacement body portion" to mean an approximately centralized portion of the hull, located between the planning wings, which displaces water and provides buoyancy. (Col. 2, 4-7).

2. "Wing Structure"

The next term in dispute is the term "wing structure." Defendant contends that the term "wing structure" means simply "a lateral extension or appendage on the side of the displacement body." Defendant argues that "it is [the] channel-defining structures (that include more than just the wings) which provide surfaces against which the captured bow wave works, allegedly to provide lift (apparently from the force of pressurized aerated water in the channels)." Def's Opening Brief at page 21. Plaintiff, on the other hand, contends that the term "wing structure" means "a structure that provides aerodynamic or hydrodynamic *lift*." Plaintiff points out that the '245 Patent describes "planning surfaces 22A and 22B," as being located squarely in the middle of the planing wings. See Fig. 1, elements 22A and 22B. Plaintiff is correct that the planing surfaces are located on the wings which are part of the wing structure.

The '245 Patent never defines or describes the "wing" or "wing structure" as a mere "lateral extension or appendage," as Defendant suggests. Instead, the patent links the "wings" with the " *planing* " action of the boat. The Abstract refers to the outer skirts being attached to the displacement body by " *planning wings* " having " *wing channels*." As noted above, the Summary of the Invention refers to "a powerboat having a relatively narrow central displacement body and *planning* wings to operate efficiently at low speed in the displacement mode, while requiring less power for efficient transfer into the planing mode, thereby providing efficient planning at high speed." Co.2, 1-7. At Co. 4, lines 13-16. The '245 Patent states: "In operation, the wing channels 14A and B recapture the bow waves 10, thereby protecting other boats and waterway walls and providing effective *planing surfaces* 22A and 22B for efficient operation at high speeds. In Figure 1, the *planning surfaces* 22A and 22B are located on the wings, and not on the side skirts.

Thus, the '245 Patent makes clear that the "wing structure" is a structure that provides *lift* for the hull. The planing wings sweep down as they proceed aft to cross the static waterline. See Figure 2. Viewed together, the wing structure is not simply to space the skirts away from the central displacement body, but is designed to provide lift for the purpose of transitioning into a planing mode and consequently a higher speed. To assert, as the Defendant does, that the tops of the channels (planing wings) are not responsible for the generation of dynamic lift contradicts the very nature of the planing surface design evidenced in the claims and specifications.

In short, the term "wing structure" is consistently and uniquely associated with the structure that spans between the "displacement body portion" and the "outer skirts," to provide "planing lift." Persons skilled in the art would understand the term "wing structure" to mean a structure that provides lift, and not just a "lateral extension or appendage" as Defendant asserts. Thus, I construe "wing structure" as a portion of the hull located between the displacement body and the outer skirts that provides hydrodynamic lift.

3. "Outer Skirt Structure"

The next disputed term is the term "outer skirt." Defendant defines the term "skirt structure" to mean "a vertical panel or shield forming the outer surface of the hull along the sides." Plaintiff, on the other hand, contends that the term should be interpreted more broadly to encompass a relatively slender, vertically oriented body that flanks the displacement body.

The Defendant's definition in terms of a vertical panel or shield does not find support in the claims or specifications. It's proposed definition is overly narrow and reads extraneous limitations into the claims. Defendant's proposed interpretation also conflicts with the other claims in the patent, and with the specification and drawings as well.

The claims of the '245 Patent makes clear that the "skirt structure" of claim 1 is not limited to a flat "panel" or "shield." For example, claim 3 depends from claim 1 and specifies that the "first and second skirt structures have inner surfaces that are generally arcuate." Thus, claim 3 is broad enough to encompass a skirt structure that is not a simple flat "panel" or "shield." Accordingly, claim 1 must also be broad enough to encompass a skirt structure that is not a simple flat "panel" or "shield."

Similarly, claims 18-20 depend (directly or indirectly) from claim 1. Claim 18 specifies that the watercraft of claim 18 is a sailboat; claim 19 specifies that each outer skirt structure of claim 18 "has a tip that extends outward relative to the longitudinal axis;" and claim 20 specifies that "each of the first and second outer skirt

structures has a surface with at least a portion that curves outward relative to the longitudinal axis." Thus, claims 18-20 are directed to a boat with skirt structures that are neither vertical nor flat. Again, the fact that claims 18-20 are broad enough to encompass something other than a flat "panel" requires that claim 1 (from which they depend) be similarly broad.

The specification also contradicts the Defendant's proposed construction. The words "panel" and "shield" do not appear anywhere in the '245 Patent, and the embodiments described and shown in the patent do not have a simple "panel" or "shield" for a skirt structure. Instead, the specifications refer to the outer skirts as "downwardly extending", "having curved inboard surfaces" and being located "outside of the displacement body" and as being "connected thereto by a planing wing having a wing channel." Col. 2, lines 10-13, Col. 2, lines 48-51 and Col. 4, lines 34-37.

Mr. Mund testified that a person of ordinary skill in the art would interpret the word "skirt" to mean a relatively slender, vertically oriented body that "flanks" the displacement body. While this construction is correct, a more specific construction consistent with the specifications is a downward extending portion of the hull that is spaced outward from the displacement body and connected thereto by planing wings. Col. 2, lines 10-13, Col. 2, lines 48-51, and Col. 4, lines 34-37. This construction was ultimately agreed to by the parties at the conclusion of the *Markman* hearing.

4. "Substantially Perpendicular With Respect to the Static Waterline"

The next disputed claim language is the phrase "substantially perpendicular with respect to the static waterline." Defendant would limit the term to mean "the skirt structure has an exterior surface which faces away from the displacement body and is flat, parallel to the longitudinal axis of the hull and vertical, i.e., at a 90 (deg.) angle to the static waterline."

By suggesting a 90 degree angle to the static waterline [... "i.e. at a 90 [degree] angle relative to the static waterline"], the Defendant is asking the Court to read extraneous limitations into the claims. Claim 1 does not say or suggest anything about the skirt being "flat" or "parallel to the longitudinal axis of the hull." Defendant is also asking the Court to remove the word "substantially" from the claim, by construing the word "substantially perpendicular" to mean "exactly perpendicular, i.e ., at a 90 (deg.) angle to the static waterline." Saying that the outer surfaces of the skirts are "substantially perpendicular" to the static waterline does not mean that they must also be "flat" or "parallel to the longitudinal axis of the hull." These are separate and distinct concepts.

While the Defendant cites to various statements from the prosecution history, none of them amount to a "clear and unmistakable" disavowal of subject matter, nor do they significantly shed light on the meaning of the word "substantially" that is different from the ordinary meaning. The inventor's argument (at page IM002119) that the claimed invention "is distinguished [from the prior art] in that the outside surface of the skirts must be flat, parallel, and vertical below the static waterline to function effectively," was made in connection with **claim 2,** which is not at issue in this case. Claim 2 differs from claim 1 because claim 2 (unlike claim 1) expressly requires the outer surfaces to be substantially perpendicular above and below the waterline, straight longitudinally, and parallel to the longitudinal axis of the hull. None of that claim language appears in claim 1 (or in any of the other asserted claims).

The '245 Patent does not expressly define the term "substantially perpendicular." However, it clearly does not require the skirts to be "exactly" perpendicular. At Col. 4, lines 5-8, the Patent explains as follows:

The outer (i.e., outboard) surfaces of the outer skirts 18A and 18B are preferably substantially perpendicular with respect to the static waterline 5FIG. 2 *to minimize wave generation*.

Thus, the stated reason for having outer surfaces that are "substantially perpendicular" is to "minimize wave generation." If the outer surfaces of the skirts are tilted too much relative to the water surface, water will be forced away from the sides of the boat as the boat moves up and down in the water, creating lateral waves. As described in Background of the Invention section of the '245 Patent, one object of the invention was to solve the problem of excessive wave pollution.

At the same time, the prosecution history does not require a rigid construction as advocated by the Defendant. Claim 1 of the '245 Patent corresponds to original claim 1 in the application that was filed with the Patent Office. FN2 In an Office Action mailed on August 2, 2000, the Patent Office Examiner rejected claim 1 on the basis of a prior art patent to a Mr. Tatter, U.S. Patent No. 2,989,939 ("the Tatter Patent"). FN3 The Tatter patent disclosed a boat with a hull that had substantially curved outer surfaces, angled about 45 (deg.) relative to the water surface. FN4

To reach any conclusion as to what the applicants meant when they used the term "substantially perpendicular," a person skilled in the art would take into account what the applicants were trying to distinguish when they introduced the term into claim 1. As noted above, the prior art Tatter design had substantially curved outer surfaces, which appear to have been titled about 45 (deg.) relative to the water surface. Thus, the '245 Patent applicants *did not need* to limit their invention to one with outer surface that are "exactly perpendicular," or that "allow little if any variance from perpendicular, i.e., 90 (deg.) to the static waterline," to distinguish itself from the Tatter patent. In view of the very different structure shown in Tatter patent, a person skilled in the art would understand that the addition of the term "substantially perpendicular" did not surrender all claim coverage between a 45 (deg.) orientation and a 90 (deg.) orientation, but only surrendered claim coverage for hulls like the one shown in the Tatter patent.

Therefore, based on the language of the claims and specifications, a person of ordinary skill in the art would understand the term "substantially perpendicular" to mean that the outer surfaces of the skirts are nearly (but not necessarily exactly) perpendicular to the surface plane of the water in order to minimize wave generation.

5. "Generally Arcuate"

The next claim language on which the parties disagree is the term "generally arcuate," as used in the phrase "said first [or second] channel-defining structure defining a first [or second] channel with a cross-sectional surface that is generally arcuate." Plaintiff contends that this term means "when viewed from the front of the boat, portions of the channel have a generally arched shape." Defendant, on the other hand, contends that the term should be construed as follows: "The surfaces of the channel-defining structure forming the channel, i.e., the surfaces of the wing, skirt and adjacent displacement body are uniformly concavely curved like a bow in cross section and open downwardly to cause a spiraling action on the bow wave."

Plaintiff's position, that the curvature varies along the channel-defining structures, is supported by the claim, the specification and the prosecution history of the '245 Patent. The '245 patent identifies a hull design in which the curvature of the channels varies along the length of the channel. The curvature of the channels decreases toward the aft end, become flatter (while still retaining some curvature). The ceilings of the

channels also slope down toward the aft end. Defendant, however, asks for a construction to limit the invention to a boat with level channels that have "uniform" concave curvature along the entire length.

Starting with the claims, claim 1 is not limited to a hull with uniformly curved channels, because several later claims that depend from claim 1 are even broader than that. For example, claims 5-8 read as follows:

5. A watercraft as recited in claim 1, wherein each of the first and second channels has a cross-sectional surface that is concave with respect to the static waterline.

6. A watercraft as recited in claim 5, wherein each of the first and second channels has a cross-sectional surface at the fore end that is generally arcuate.

7. A watercraft as recited in claim 6, wherein the cross-sectional surface of each of the first and second channels has a curvature that is greater at the fore end than at the aft end.

8. A watercraft as recited in claim 1, wherein each of the first and second channels has a cross-sectional surface that is generally arcuate at the fore end and generally linear at the aft end.

Claims 5, 6, 7 and 8 all depend directly or indirectly from claim 1. Claims 6, 7 and 8 are all broad enough to encompass a hull in which the channels are not uniformly arcuate along their entire length. Claims 7 and 8, for example, are specifically directed to hulls in which the channel flattens out toward the aft end, becoming less curved or "generally linear." Because these dependent claims are broad enough to encompass such a design, the independent claim from which they depend (claim 1) must be at least as broad.

Plaintiff's construction is also fully consistent with the specification and drawings of the '245 Patent. The '245 Patent consistently discloses and describes the embodiments as having a channel that is "generally arcuate," including when the curvature of the channel decreases toward the aft end to become "generally linear" at the aft end. This is a constant feature of the disclosed embodiments, which Defendant dismisses.

Defendant's proposed construction, on the other hand, is inconsistent with the claims and the specification. Again, Defendant asks for a construction that adds new limitations, including (1) a requirement that the channels have "uniform" curvature along their entire length; (2) a requirement that they be "concave"; and (3) a requirement that they "cause a spiraling action on the bow wave."

None of these "new" limitations appear anywhere in the claim as issued by the Patent Office. The "concave" requirement first appears in claim 5, which covers "[a] watercraft as recited in claim 1, wherein each of the first and second channels has a cross-sectional surface that is concave with respect to the static waterline." Claim 5 depends directly from claim 1. This makes clear that claim 1 is not limited to a hull in which the channels are "concave." If it were so limited, claim 5 would be superfluous.

Claim 1 also does not say anything about "uniform" curvature along the entire length of the channel. Nonetheless, Defendant suggests that the claims should be construed to require such uniform curvature. This ignores the word "generally" in the phrase "generally arcuate." To say that a channel is "generally arcuate" does not mean that it must be uniformly arcuate along its entire length. These added limitations do not appear anywhere in the claims or the patent. As noted above, the word "generally" provides a broader meaning and application than the word "substantially."

The legal doctrine of "claim differentiation" applies to this issue. Claim 8 depends from claim 1 and narrows the invention of claim 1 by further requiring the first and second channels to be "generally arcuate" at one end and "generally linear" at the other. This makes clear that claim 1 is not limited to a channel that is uniformly arcuate along its entire length. Therefore, I construe that phrase "generally arcutate" as meaning a hull design wherein the curvature of the channels varies along the length of the channels. Col. 4, 17-31; Claims 2-9. More specifically, it means the generally arched shape of the channel-defining structures which varies in curvature along the length of the channel.

5. "The First and Second Channels ... Being Adapted To ..."

Finally, the parties disagree on the proper interpretation of the language at the end of claim 1, beginning with "the first and second channels being adapted to," as follows:

the first and second channels ... being adapted to capture a bow wave and to cause air and water to mix and spiral toward the aft end of the hull as compressed aerated water,

Defendant suggests that this entire portion of the claim is superfluous and does not limit the claims in any meaningful respect. I respectfully disagree. This portion of the claim further limits the structures that are covered by the patent, by limiting the claim to structures that are adapted to capture a bow wave and to cause air and water to mix and spiral toward the aft end of the hull as compressed aerated water. This portion of the claim does not state anything about generating or capturing a bow wave throughout the "entire range of operating speeds." The invention was not disclosed or claimed in such narrow terms, and the inventors did not "clearly and unmistakably" disclaim or disavow broader coverage.

Moreover, the specification describes specific structures that are adapted to serve these functions. For example, at Col. 5, line 62-Col. 6, line 13, the ' 245 Patent states:

As the air/water mixture leaves the "spiral section" (see reference numeral 14 in FIG. 1), it passes into the final approximately **one-third of the wing channel that, in certain preferred embodiments, becomes increasingly rectangular with a flattening (e.g., decreased curvature) of the wing channel ceiling. The wing channel ceilings slope downward to below the static waterline 5, reducing and ultimately eliminating the cross-sectional area, thereby increasing the pressure of the air/water mixture.** These changes in what is referred to as the "pressure section" (see reference numeral 22 in FIG. 1) eliminate the spiral flow and force separation of the air which rises towards the wing channel ceiling due to its lower specific gravity. The water, under increasing pressure, compresses the air layer at the wing channel ceiling, thereby providing efficient low-drag planing lift. Finally, the compressed air/water mixture exits under the transom as low energy foam, while the lower solid water layer, from which much of the energy has been extracted in compressing the air, exits the transom below the foam.

This language in the specification of the '245 Patent further informs persons skilled in the art of the specific structures that are "adapted" to perform the functions set forth at the end of claim 1.

B. Claims 5, 6, 7 and 8 of the '245 Patent

Claims 5, 6, 7 and 8 read as follows:

5. A watercraft as recited in claim 1, wherein each of the first and second channels has a cross-sectional surface that is concave with respect to the static waterline.

6. A watercraft as recited in claim 5, wherein each of the first and second channels has a cross-sectional surface at the fore end that is generally arcuate.

7. A watercraft as recited in claim 6, wherein the cross-sectional surface of each of the first and second channels has a curvature that is greater at the fore end than at the aft end.

8. A watercraft as recited in claim 1, wherein each of the first and second channels has a cross-sectional surface that is generally arcuate at the fore end and generally linear at the aft end.

Plaintiff's position is that these claims do not need to be further construed, as their language is clear and unambiguous.

Defendant, on the other hand, contends that these claims are somehow in conflict with claim 1, and that claim 1 and these claims are somehow "indefinite" in light of one another. Defendant's contention is incorrect, and flows from its erroneous position that the term "generally arcuate" in claim 1 requires the channels to be "uniformly concavely arcuate" along their entire length.

Claims 5, 6, 7 and 8 unambiguously specify a boat in which the channels are not uniformly arcuate along their entire length. This makes clear that claim 1 is broad enough to cover such a hull and is *not* limited to a boat in which the channels are uniformly arcuate along their entire length, as Defendant suggests. Claims 5, 6, 7 and 8 (but not claim 1) are more narrowly limited than claim 1, and claim 1 is broad enough to encompass all those claims.

This harmonizing view of claims 1, 5, 6, 7 and 8 supports, rather than assaults, their validity. Moreover, it is fully consistent with the specification and the drawings, which describe and show multiple embodiments in which the curvature of each channel varies over the length of the channel, and flattens out toward the aft end of the channel. A person of ordinary skill in the art would understand, from these examples in the '245 Patent and from the language of claim 1 and claims 5-8, that a channel with a "generally arcuate" cross-section is not necessarily arcuate along its entire length, and does not necessarily have a constant curvature along its entire length.

A person of ordinary skill in the art would further understand that claims 5, 6, 7 and 8 are subsets of claim 1, and that each of claims 5, 6, 7 and 8 specifies a boat with channels that are generally arcuate, but that have certain variations along their length. The language of claims 5, 6, 7 and 8 is unambiguous and wholly consistent with claim 1 and the remainder of the '245 Patent.

C. Claim 11 of the '245 Patent

Claim 11 of the '245 Patent reads as follows:

11. A watercraft as recited in claim 1, wherein the first and second channels are so adapted that upon forward movement of the watercraft through a body of water the waves generated by the displacement body and the first and second outer skirt structures are substantially directed into the first and second channels, resulting in substantial wave suppression.

Thus, claim 11 depends from claim 1, and further narrows the structures that are covered by claim 1. In

particular, it requires that the channels of claim 1 be adapted such that "upon forward movement of the watercraft through a body of water the waves generated by the displacement body and the first and second outer skirt structures are substantially directed into the first and second channels, resulting in substantial wave suppression."

Plaintiff's position, and I concur, is that claim 11 does not need to be further construed, as its language is clear and unambiguous. A jury would readily understand what it means for a boat to "move forward through a body of water" and what it means for "waves generated by the displacement body and the first and second outer skirt structures" to be "substantially directed into the first and second channels." The phrase "resulting in substantial wave suppression" is a statement of a desired result, which does not define or limit the structure of the boat.

D. Claim 21 of the '245 Patent

Claim 21 includes several of the disputed claim terms found in claim 1, and the Court's position regarding those terms is the same for claims 1 and 21.

The primary dispute for claim 21 focuses on the "adapted to" language at the end of the claim. As it did with claim 1, Defendant argues that this entire section of the claim is nothing more than a "statement of functionality and intended use, not a claim limitation." Plaintiff's position, as with claim 1, is that this language further limits the structures that are covered by the claims, and cannot be ignored.

The specific language at issue reads as follows:

21. A watercraft, comprising:

* * *

a first channel defining structure and ...
a second channel defining structure ...

the first and second channels being **adapted to function** as (i) *means for directing waves generated by the bow into the first and second channels,* so as to reduce lateral wave pollution from the watercraft, (ii) *planing means for providing surfaces on which the watercraft is capable of planing on the waves generated by the bow,* so as to recapture energy from said bow waves, and (iii) *means for aerating water along the hull* to reduce frictional drag and to reduce wave generation from an aft end of the watercraft.

The applicants specifically relied upon the "adapted to function" language to distinguish over the prior art. I do not find the disputed "adapted to" language as superfluous and do not ignore it in construing the scope and meaning of the claim. I construe it as set forth in Appendix "A" hereto.

WHEREFORE, The Claims are construed as set forth above and in the accompanying Appendix "A".

DONE AND ORDERED.

COURT'S CLAIM CONSTRUCTION CHART ["APPENDIX A"]

CLAIM 1	M SHIP	ICE MARINE	COURT

			CONSTRUCTION
1. A watercraft	A vessel for riding on or in water ['245 Patent generally]	A powerboat or a sailboat for use on the surface of a body of water that creates a bow wave. ['245 Patent Col. 5, ll. 1-2]	A powerboat or a sailboat for use on the surface of a body of water [Agreed to by both parties].
comprising	AGREED	AGREED	An open ended transitional sentence that does not limit the scope of the claim to only the elements listed, i .e., including but not limited to.
a hull having	The overall structural body of a vessel. [Introduction to Naval Architecture, Thomas C. Gillmer and Bruce Johnson, Naval Institute Press, Anappolis, Maryland, 1982, ISBN 0-87021-318-0 (Glossary)]	The hull is the body or shell of the powerboat, sailboat or ship. [McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, p. 959][Webster's Seventh New Collegiate Dictionary 1963, p. 404]	The hull is the overall body or shell of the powerboat or sailboat being comprised of the central displacement body 16, the planning wings having wing channels 20A and B, and the skirts 18A and B. ['245 Patent, II, 43-55]
a fore end, an aft end and	Fore end: the portion or portions of the hull lying between the mid-length of the hull and the front tip of the hull. [Introduction to Naval Architecture] [Webster's Ninth New Collegiate Dictionary] ['245 Patent, e.g., Col. 2, lines 43-58, Fig. 1] Aft end: the portion or portions of the hull lying between the mid-length of the hull and the back of the hull. [Introduction to Naval Architecture] [Webster's Ninth New Collegiate Dictionary] ['245 Patent, e.g., Col. 2, lines 43-58, Fig. 1]	Fore end is the forward or front end, i.e, extreme, last forward part of the hull, aft end is the rearward most or stern end, i.e., extreme last rear part, of the hull. [McGraw-Hill Dictionary, *Id*. pp. 790, 44.] [Webster's, *Id*. p. 273]	Aft end is the trailing rear edge of the hull where the central displacement body, the channels and the outer skirts terminate. Fore end is the front end portion of the hull forward of the first and second outer skirts.
a longitudinal axis extending between the fore end and the aft end	Longitudinal axis: an imaginary line extending the length of the hull, parallel to the centerline of the hull, through the fore end and the aft end.	An axis extending along the centerline of the hull from the fore end to the aft end.	An axis extending along the centerline of the hull from the aft end to the tip of the fore end as shown in Figure 1, arrow reference 2.

	CLAIM 1M SHIP	ICE MARINE	COURT CONSTRUCTION
a	a central portion of the	A buoyant body supported on the surface	An approximately

displacement body portion of the hull that extends between the fore end and the aft end	hull, which displaces water. [Webster's Ninth New Collegiate Dictionary (displacement)]	of water by the displacement of water which is part of the hull and designed to operate efficiently at low design speed, and forming a bow wave throughout its range of operating speeds. ['245 Patent Col. 3, ll. 49-57; Col. 1, ll. 13-15 and 34-42; Col. 4, ll. 16-16 and 24-31; Figures 1-7] [Webster's, *Id*. p. 240] [McGraw-Hill, *Id*. p. 593]	centralized portion of the hull, located between the planning wings, which displaces water and provides buoyancy. (Col. 2, 4-7).
the displacement body having a static waterline	A line on the surface of a body immersed in water, indicating where the surface plane of the water intersects the surface of the body. [Introduction to Naval Architecture]	The level of the water relative to a floating hull when the watercraft is trimmed properly and at rest. [McGraw-Hill, *Id*. p. 1909]	A line on the surface of a body immersed in water, indicating where the surface plane of the water intersects the surface of the body.
a port side	Same	Same	The side of the watercraft on the left of a person facing forward.
and a starboard side	Same	Same	The side of the watercraft on the right side of a person facing forward.
a first channel defining structure portion of the hull located on the port side of the displacement body, including	Channel defining structure: structure, as further defined in the claim, that defines a passage.	A structure which is part of the hull and connected to the port side of the displacement body defining a waterway or passage on the port side of the displacement body open to the surface of the water. ['245 Patent Col. 3. ll. 60-Col. 4, l. 4] [McGraw-Hill, *Id*. p. 347]	A structure which is part of the hull and connected to the port side of the displacement body defining a waterway or passage on the port side of the displacement body open to the surface of the water.
a first wing structure	A structure that provides aerodynamic or hydrodynamic lift. ['245 Patent, e.g., Col. 5, ll. 15-20, 55-60; Col. 6, ll. 7-10] [The American Heritage Dictionary of the English Language: Fourth Edition, 2000]	A lateral extension of appendage on the side of the displacement body. [McGraw-Hill, *Id*. p. 2171] ['245 Patent Col. 3, ll. 60-63]	A portion of the hull located between the displacement body and the outer skirts that provides hydrodynamic lift.

CLAIM 1	M SHIP	ICE MARINE	COURT CONSTRUCTION
extending laterally	Same	Same	Sideways of the

from the port side of the displacement body above the static water line and			displacement body.
a first outer skirt structure that	A part or attachment serving as a rim, border or edging. [Merriam Webster online] [Webster's Ninth New Collegiate Dictionary]	A vertical panel or shield forming the outermost surface of the hull along the sides. ['245 Patent Col. 3 .11. 51-53] [McGraw-Hill, *Id*. p. 1839, 119]	A downward extending portion of the hull that is spaced outward from the displacement body and connected thereto by a planning wings. Col. 2, lines 10-13, Col. 2, lines 48-51; Col 4, lines 34-37.
extends downwardly from the first wing structure to below the static waterline	Downwardly: toward the water surface.	The skirt extends from the higher level of the wing structure to a lower place below the static waterline. [Webster's, *Id*. p. 251]	The skirt extends from the higher level of the wing structure to a lower place below the static waterline.
in spaced apart relationship to the displacement body	Same	Same	With an open space between.
said first outer skirt structure having an outer surface that is substantially perpendicular with respect to the static waterline and	Substantially perpendicular: generally perpendicular to the surface plane of the water. ['245 Patent e.g., at Col. 4, ll. 5-8]	The skirt structure has an exterior face which faces away from the displacement body and is flat, parallel to the longitudinal axis of the hull and vertical, i.e., at a 90 (deg.) angle relative to the static waterline. [Amendment filed Dec. 19, 2000 during prosecution of the '245 Patent, pages 20, 21, and 24]	Substantially perpendicular: nearly (but not necessarily exactly) perpendicular to the surface plane of the water in order to minimize wave generation.
said first channel defining structure defining a first channel with a cross-sectional surface that is	Channel: a passage. [Webster's Ninth New Collegiate Dictionary] ['245 Patent generally]	An artificial waterway or course that water moves through, a long gutter, groove or furrow, formed by adjacent structure. [Webster's, *Id*. p. 139] [McGraw-Hill, *Id*. p. 347] ['245 Patent Col. 3, l. 64-Col. 4, l. 4]	A passage that water moves through.

CLAIM 1	M SHIP	ICE MARINE	COURT CONSTRUCTION
generally arcuate	Generally arcuate: when viewed from the front of the boat, portions of the channel have a generally arched shape. [Webster's Ninth New Collegiate Dictionary] ['245 Patent,	The surfaces of the channel-defining structure forming the channel, i.e., the surfaces of the wing, skirt and adjacent displacement body are uniformly concavely curved like a bow in cross section and open downwardly to cause a spiraling action on the bow wave. ['245 Patent Col. 4, l. 9; Col.	The generally arched shape of the channel-defining structures which varies in curvature along the length of the channel. Col. 4,

	e.g., at Col. 4, ll. 9, 17-31; claims 2-9]	4, l. 19; Col. 4, ll. 1-3] [McGraw-Hill, *Id*. pp. 122, 125] [Webster's, *Id*. p. 46]	lines 17-31; Claims 2-9
a second channel defining structure portion of the hull that is located on the starboard side of the displacement body, including	See above	A channel defining structure as construed above connected to the starboard side of the displacement body. ['245 Patent Col. 3, l. 60 Col. 4, l. 4]	See above
a second wing structure	See above	See above	See above
extending laterally from the starboard side of the displacement body above the static water line and	See above	See above	See above
a second outer skirt extending perpendicularly downwardly from the second wing structure to below the static waterline	See above	An outer skirt structure as defined above on the starboard side of the displacement body	See above
in spaced apart relationship to the displacement body	See above	See above	See above
said second outer skirt structure having an outer surface that is substantially perpendicular with respect to the static waterline	See above	See above	See above

CLAIM 1	M SHIP	ICE MARINE	COURT CONSTRUCTION
said second channel defining structure	See above	See above	See above

defining a second channel with a cross-sectional surface that is			
generally arcuate	See above	See above	See above
the first and second channels extending from the fore end to the aft end	See above	The arcuate concave channels begin at the forward end of the hull and extend aft to the rearward or stern end and are arcuate throughout their entire length. ['245 Patent Col. 3, ll. 46-48 Col. 4, ll. 19-24] [Amendment dated Dec. 19, 2000, pp. 20, 21]	See above
and the first and second channels being adapted to capture a bow wave and to cause air and water to mix and spiral toward the aft end of the hull as compressed aerated water	The channel defining structures are shaped such that water from the displacement body is captured within the channel and mixed with air within the channel, with air and water moving toward the aft end of the channel in a spiral fashion, and the top of the channel slopes downward toward the waterline moving toward the aft end of the channel, to compress the air water mixture within the channel. ['245 Patent at Col. 2, ll. 43-58; Col. 4, ll. 28-31; Col. 5, l. 62-Col. 6, l. 13].	This is a statement of intended use and not a structural limitation. If it is construed as limiting the claim, it should be construed to mean the channels are arcuately shaped to capture the bow [wave] at all design operating speeds and cause the bow wave to swirl and mix with air to form a stream of compressed aerated water.	The channel defining structures are shaped such that water from the displacement body is captured within the channel and mixed with air within the channel, with air and water moving toward the aft end of the channel in a spiral fashion, and the tip of the channel slopes downward toward the waterline moving toward the aft end of the channel, to compress the air water mixture within the channel, to compress the air water mixture within the channel.
thereby reducing friction drag, increasing lateral stability, and dampening transmission of bow wave energy at	Same	Same	This is a statement of intended use and not a structural limitation of the claim.

the aft end
of the hull

CLAIM 5	M SHIP	ICE MARINE	COURT CONSTRUCTION
5. A watercraft as recited in Claim 1	See above.	See above.	See above
wherein each of the first and second channels	See above.	See above.	See above
has a cross-sectional surface that is concave with respect to the static waterline	Concave: curved inward. [Webster's Ninth New Collegiate Dictionary]	Concave: curved inward.	Concave: curved inward.

CLAIM 6	M SHIP	ICE MARINE	COURT CONSTRUCTION
6. A watercraft as recited in Claim 5	See above.	See above.	See above
wherein each of the first and second channels	See above.	See above.	See above
has a cross-sectional surface at the fore end that is generally arcuate	See above.	See above.	See above

CLAIM 7	M SHIP	ICE MARINE	COURT CONSTRUCTION
7. A watercraft as recited in Claim 6	See above.	See above.	See above
wherein the cross-sectional surface area of each of the first and second channels	See above.	The radius of curvature of the concave channel-defining structure decreases toward the rear of the channels	See above
has a curvature that is greater at the fore end than at the aft end	See above.		See above

CLAIM 8	M SHIP	ICE MARINE	COURT CONSTRUCTION
8. A watercraft as recited in claim 1	See above	See above	See abov e
Wherein each of the first and second channels has a cross-sectional surface that is	See above	Channels do not have surfaces. They are defined according to claim 1 by the channel-defining structures which have surfaces provided by the skirt, wing structure and adjacent portions of the displacement body.	See above
Generally arcuate at the fore end and	See above	The surfaces that define the channels are arcuate	See above
Generally linear at the aft end	The curvature of the channel decreases toward the aft end of the channel, so the channel is	The intended meaning of the clause is that the channels have flat surfaces at the aft end but	The curvature of the of the channel decreases toward the aft end of

	more flat at the aft end than at the fore end. ['245 Patent, e.g., at Col. 2, ll. 43-58; Col. 4, ll. 28-31; Col. 5, l. 62-Col. 6, l. 13]	this renders the claim indefinite in view of the construction of claim 1	the channel, so the channel is more flat at the aft end than at the fore end.

CLAIM 11	M SHIP	ICE MARINE	COURT CONSTRUCTION
11. A watercraft as recited in Claim 1	See above, [see '245 Patent generally]	See above.	See above
Wherein the first and second channels are so adapted	See above.	This is a statement of functionality and intended use, not a claim limitation. However, the asserted functionality is intrinsic evidence of how certain terms of the claim should be construed.	See above
that upon forward movement of the watercraft through a body of water	See above.		See above

CLAIM 11	M SHIP	ICE MARINE	I COURT CONSTRUCTION
the waves generated by the displacement body and the first and second outer skirt structures	See above.	The waves are the bow waves and the wave the skirt forms on the inside of the tunnel	See above
are substantially directed into the first and second channels	See above.		See above
resulting in substantial wave suppression.	See above. [see '245 Patent generally]		See above

CLAIM 21	M SHIP	ICE MARINE	COURT CONSTRUCTION
21. A watercraft,	See above	See above	See above
comprising:	See above	See above6See above	
a hull having	See above	See above	See above
a displacement body with	See above	See above	See above
a bow,	Same	Same	The forward part of the watercraft
a port side, and a starboard side	See above	See above	See above
a first channel-defining structure portion of the hull that is	See	See above	See above

located on the port side of the displacement body, including	above		
a first wing structure extending	See above	See above	See above
laterally from the port side of the displacement body above the static waterline and	See above	See above	See above

CLAIM 21	M SHIP	ICE MARINE	COURT CONSTRUCTION
a first outer skirt structure extending perpendicularly downwardly from the first wing structure to below the static waterline	The skirt extends toward the water surface, generally perpendicular to the water surface.	The skirt extends downwardly at 90 (deg.) from the wing structure. [Amendment dated Dec. 19, 2000, pp. 20, 21 and 24] [Figures 1-7]	
in spaced apart relationship to the displacement body,	See above	See above	See above
said first outer skirt structure having an outer surface that is substantially perpendicular with respect to the static waterline and	See above	See above	See above
said first channel-defining structure defining a first channel with a cross-sectional surface that	See above	See above	See above
is generally arcuate; and	See above	See above	See above
a second channel-defining structure portion of the hull that is located on the starboard side of the displacement body, including	See above	See above	See above
a second wing structure	See above	See above	See above
extending laterally from the starboard side of the displacement body above the static waterline and	See above	See above	See above
a second outer skirt structure extending perpendicularly downwardly from the second wing structure to below the static waterline	See above	The skirt extends downwardly at 90 (deg.) from the wing structure. [Amendment dated Dec. 19, 2000, pp. 20, 21 and 24]	See above
in spaced apart relationship to the displacement body,	See above	See above	See above

CLAIM 21	M SHIP	ICE MARINE	COURT CONSTRUCTION
said second outer skirt structure	See above	See above	See above

having an outer surface that is substantially perpendicular with respect to the static waterline and			
said second channel-defining structure defining a second channel with a cross-sectional surface that is	See above	See above	See above
generally arcuate;	See above	See above	See above
the first and second channels being adapted to function as	See above	This is a statement of functionality and intended use, not a claim limitation. However, the asserted function is intrinsic evidence of how certain claim term should be construed.	See above
(i) means for directing waves generated by the bow into the first and second channels, so as to reduce lateral wave pollution from the watercraft,	The channel defining structures (1) direct waves generated by the bow into the channels and (2) provide surfaces that enable the watercraft to plane on water generated by the bow; and (3) aerate water along the hull.	If this clause is construed as a claim limitation it should be construed to mean that the channels extend from the fore end of the watercraft rearwardly to the aft end to capture bow waves throughout the watercraft's range of design speeds. However, since it is the surfaces of the skirt, wing structure and displacement body which define the channels and deflect the bow wave into the channel, not the channel itself, this clause is vague and indefinite under 35 U.S.C. s. 112 or recites a double inclusion. ['245 Patent Col. 4, ll. 12-16]	The channel defining structures (1) direct waves generated by the bow into the channels and (2) provide surfaces to plane on water generated by the bow. The "so as' clauses are not construed. They are statements of intended use.

CLAIM 21	M SHIP	ICE MARINE	COURT CONSTRUCTION
(ii) planing means for providing surfaces on which the watercraft is capable of planing on the waves	The channel defining structures (1) direct waves generated by the bow into the channels and (2) provide surfaces that enable the watercraft	If this clause is construed as a claim limitation it should be construed to mean that the channel defining structure (but not the displacement body) is formed to plane on the captured bow waves. Since it is the surfaces of the channel structures	Same as immediately above

generated by the bow, so as to recapture energy from said bow waves, and	to plane on water generated by the bow; and (3) aerate water along the hull.	which provide the planning surfaces, not the channels, this clause also is vague and indefinite or a double inclusion. ['245 Patent Col. 4, ll. 12-16]	
(iii) means for aerating water along the hull to reduce frictional drag and to reduce wave generation from an aft end of the watercraft .	The channel defining structures (1) direct waves generated by the bow into the channels and (2) provide surfaces that enable the watercraft to plane on water generated by the bow; and (3) aerate water along the hull.	If this clause is construed as a claim limitation it should be construed to mean that the channels are arcuate throughout their entire length to aerate water. However, since it is the surfaces of the channel defining structure which cause the water to swirl and mix with air, not the channel itself, this clause is vague and indefinite or a double inclusion. ['245 Patent Col. 5, ll. 56-61]	Same as immediately above.

FN1. The "first channel defining structure" and the "second channel defining structure" are described similarly in claim 1, for opposite sides of the hull. Thus, they involve the same claim construction issues.

FN2. The original patent application is found in Exhibit B to the Clegg Declaration, at pages 20-40 of 257 pages. The original claims (before they were amended during prosecution) are found at pages 30-31 of 257.

FN3. The Office Action is found at pp. 48-53 (of 257) of Ex. B. The rejection of claim 1 is set forth at pg. 50 of 257.

FN4. The Tatter Patent is found at pg. 118 of 257 in Ex. B.

S.D.Fla.,2007.
M Ship Co. v. ICE Marine Ltd.