

Lambeth Magnetic Structures, LLC v. Seagate Tech. (US) Holdings, Inc.

Decided Jun 24, 2019

Civil Action No. 16-538 Civil Action No. 16-541
06-24-2019

LAMBETH MAGNETIC STRUCTURES, LLC,
Plaintiff, v. SEAGATE TECHNOLOGY (US)
HOLDINGS, INC., et al., Defendants.
LAMBETH MAGNETIC STRUCTURES, LLC,
Plaintiff, v. WESTERN DIGITAL
CORPORATION, et al., Defendants.

Judge Cathy Bissoon

MEMORANDUM ORDER

Pending before the Court are two sets of cross-motions for summary judgment in two related patent infringement cases, Civil Action Nos. 16-538 and 16-541. For the reasons that follow, all four motions will be granted in part and denied in part.

In Civil Action 16-538, Seagate Technology (US) Holdings, Inc. and Seagate Technology LLC (collectively, "Seagate") move for judgment of (1) invalidity of United States Patent No. 7,128,988 (the "'988 patent") due to inadequate written description; (2) non-infringement of the '988 patent by Seagate; and (3) lack of pre-suit damages. (Seagate's Motion for Summary Judgment, Civil Action No. 16-538, Doc. 150.)

2 Plaintiff Lambeth Magnetic Structures, LLC *2 ("Lambeth") moves for partial summary judgment in its favor on several of Seagate's affirmative defenses: (1) invalidity of the '988 patent; (2) Seagate's equitable defenses (equitable estoppel, laches, waiver, and unclean hands); (3) express or implied license, release, exhaustion and double

recovery; and (4) standing. (Lambeth's Motion for Summary Judgment against Seagate, Civil Action No. 16-538, Doc. 157.)

In Civil Action 16-541, Western Digital Corporation, Western Digital Technologies, Inc., Western Digital (Fremont), LLC, Western Digital (Thailand) Company Limited, Western Digital (Malaysia) Sdn.Bhd and HGST, Inc. (collectively, "Western Digital"), move for judgment of (1) non-infringement of the '988 patent by Western Digital; (2) invalidity of the '988 patent based on lack of enablement; and (3) lack of pre-suit damages. (Western Digital's Motion for Summary Judgment, Civil Action 16-541, Doc. 158.) Lambeth moves also for partial summary judgment in its favor on several of Western Digital's affirmative defenses: (1) failure to comply with the requirements of [35 U.S.C. §§ 102 \(novelty\)](#), 103 (obviousness), and 116 (omission of joint inventors) such that the '988 patent is invalid; (2) express or implied license; (3) standing; and (4) Western Digital's equitable defenses (laches and unclean hands). (Lambeth's Motion for Summary Judgment against Western Digital, Civil Action No. 16-541, Doc. 159; Lambeth's Brief in Support of Motion for Summary Judgment against Western Digital, "Lambeth's MSJ Brief Against Western Digital," Civil Action No. 16-541, Doc. 173.) *3

BACKGROUND¹

¹ As the Court writes for the parties, the Court assumes familiarity with the procedural history of this case, and the Court will address only those facts that are

material to resolving the instant motions. The Court draws facts from the following sources: Seagate's Concise Statement of Material Facts in Support of Summary Judgment ("Seagate's SOF," Civil Action No. 16-538, Doc. 164) and the exhibits thereto ("Seagate's SOF Exhibits," Civil Action No. 16-538, Docs. 165-171) as well as Lambeth's Response to Seagate's SOF (Civil Action No. 16-538, Doc. 218) and the exhibits thereto ("Lambeth's Counter-SOF Exhibits against Seagate," Civil Action No. 16-538, Doc. 218); Lambeth's Concise Statement of Material Facts in Support of its Motion for Summary Judgment ("Lambeth's SOF against Seagate," Civil Action No. 16-538, Doc. 173) and the exhibits thereto ("Lambeth's SOF Exhibits against Seagate," Civil Action No. 16-538, Doc. 173) as well as Seagate's Response to Lambeth's SOF (Civil Action No. 16-538, Doc. 202) and the exhibits thereto ("Seagate's Counter-SOF Exhibits," Civil Action No. 16-538, Docs. 202, 203); Western Digital's Statement of Undisputed Facts in Support of Summary Judgment ("Western Digital's SOF," Civil Action No. 16-541, Doc. 166) and the exhibits thereto ("Western Digital's SOF Exhibits," Civil Action No. 16-541, Docs. 163, 168-172) as well as Lambeth's Response to Western Digital's SOF (Civil Action No. 16-541, Doc. 208) and the exhibits thereto ("Lambeth's Counter-SOF Exhibits against Western Digital," Civil Action No. 16-541, Doc. 208); and Lambeth's Concise Statement of Material Facts in Support of its Motion for Summary Judgment ("Lambeth's SOF against Western Digital," Civil Action 16-541, Doc. 174) and the exhibits thereto ("Lambeth's SOF Exhibits against Western Digital," Civil Action 16-541, Doc. 174) as well as Western Digital's Response to Lambeth's SOF (Civil Action No. 16-541, Doc. 206) and the exhibits thereto ("Western Digital's Counter-SOF Exhibits,"

Civil Action No. 16-541, Doc. 206).

Unless otherwise noted, the facts addressed in this section are undisputed.

The '988 patent² concerns an atomic structure for creating thin film magnetic materials with desirable properties (specifically, uniaxial magnetic anisotropy, which the Court will define shortly), and devices containing such materials. Thin film magnetic materials with uniaxial magnetic anisotropy are useful in devices such as hard disk drives ("HDDs") because they facilitate reliably writing and reading data. Lambeth claims that Seagate and Western Digital design and manufacture high performance HDDs that infringe the '988 patent by containing at least one recording head made from the invented structure.

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² The '988 patent, titled "Magnetic Material Structures, Devices and Methods," issued on October 31, 2006 and has an effective filing date of August 29, 2001. (Lambeth's Response to Seagate's SOF at ¶ 1.)

I. Crystalline Materials

Some background on crystalline materials is necessary to understand the parties' dispute as well as the specialized terms and notation the Court will use throughout this Memorandum Order. In crystalline materials, "the atoms are arranged in an ordered three-dimensional pattern that extends over a long range atomic scale." (Lambeth's Response to Seagate's SOF at ¶ 3.)³ A "unit cell" is a three-dimensional repeating unit in a crystalline material. (Id. at ¶¶ 3, 5.)

³ Lambeth's Response to Seagate's SOF and Lambeth's Response to Western Digital's SOF both contain similar expressions of agreement among the parties as to the background on crystalline materials. For brevity, the Court cites Lambeth's Response to Seagate's SOF. Unless otherwise noted, there are no material

differences between Seagate's and Western Digital's statements concerning the nature of crystalline materials.

Crystalline materials can be "single crystal," meaning that if one were to follow a fixed direction from one atom in the crystal, there is a constant, repeating distance between subsequent atoms in the crystal, or "polycrystalline," meaning the material contains multiple crystals that are sometimes called "grains." (Id. at ¶¶ 6-9.)

The three predominant types of unit cells found in nature for metallic crystals are body centered cubic ("bcc"), face centered cubic ("fcc"), and hexagonal close packed ("hcp"), as depicted below:

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bcc

Image materials not available for display.

fcc

Image materials not available for display.

hcp (Lambeth's Response to Western Digital's SOF at ¶¶ 20, 21.) *5

"For a given crystal, the orientation of crystal planes and crystal directions can be described using a coordinate system called the 'Miller Index,'" which "uses x, y, z coordinates to denote directions and planes within a cubic crystal." (Lambeth's Response to Seagate's SOF at ¶¶ 14-15.) Using the notation of this coordinate system, the "(110)" plane of a bcc crystal, and the "[110]" direction of a bcc crystal, which is perpendicular to that plane, are shown below in blue and red, respectively:

Image materials not available for display. (Id. at ¶¶ 19-20.) Also using this notation system, the (111) plane of an fcc crystal and the [111] direction of an fcc crystal, which is perpendicular to that plane, are shown in blue and red respectively:

Image materials not available for display. (Id. at ¶¶ 24-25.)

When describing the orientation of a crystal, a "bcc (110) crystal" means that the bcc crystal's (110) plane is parallel to the substrate and its [110] direction is perpendicular to the *6 substrate. (Id. at ¶ 17.) Likewise, for an "fcc (111) crystal," its (111) plane is parallel to the substrate and its [111] direction is perpendicular to the substrate. (Id. at ¶ 22.)

For hexagonal crystals, such as hcp crystals, crystallographers use a "Miller Bravais" index consisting of four numbers to describe planes of the crystal. (Lambeth's Response to Western Digital's SOF at ¶ 24.)

Taking an imaginary slice through a crystal along a particular plane exposes a set of atoms with a repetitive two-dimensional pattern. (Id.) For example, the (111) plane of an fcc crystal and the (0001) plane of an hcp crystal have two-dimensional hexagonal patterns across unit cells, as shown below:

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fcc (111)

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7 hcp (0001) (Id. at ¶ 25.) *7

II. Lambeth's Claims against Seagate and Western Digital

Lambeth asserts claims 1, 3, 6, 7, 9, 17, 19, 27, 28 and 29 of the '988 patent against Seagate and Western Digital. Specifically, Lambeth asserts that the accused Seagate and Western Digital devices satisfy the elements recited in independent claims 1 and 27, which are incorporated in the remaining dependent claims asserted against Defendants. Claims 1 and 27 recite the following elements.⁴

⁴ Claim 1 begins "A magnetic material structure comprising;" '988 patent at col. 45, l. 1, while claim 27 begins "A magnetic device having incorporated therein a

magnetic material structure comprising;"
 id. at col. 46, ll. 60-61. Otherwise, the
 wording of the two claims is identical.

a substrate;
 at least one bcc-d layer which is magnetic,
 forming a uniaxial symmetry broken
 structure; and
 at least one layer providing a (111)
 textured hexagonal atomic template
 disposed between said substrate and said
 bcc-d layer.

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'988 patent at col. 45, ll. 3-8; id. at col. 46, ll. 62-67.

The Court construed several of these claim terms in its Claim Construction Order (Civil Action No. 16-538, Doc. 78; Civil Action No. 16-541, Doc. 88) as follows:

Undisputed Claim Term	Construction
"bcc-d"	Either a body centered cubic or a bodycentered cubic derivative crystal structure.
Disputed Claim Term	Construction
"Atomic template"	An atomic pattern upon which material isgrown and which is used to direct the growthof an overlying layer
"[Layer] providing a (111) texturedhexagonal atomic template"	Layer that is predominately (111) hexagonaland that provides an atomic template
"Uniaxial"	Having an anisotropy energy density functionwith only a single maximum and a singleminimum as the magnetization angle isrotated by 180 degrees from a physical axis

"Symmetry broken structure" A structure consisting of unequal volumes orunequal amounts of the bcc-d variants of a sixvariant system

"Uniaxial structure" A structure that is uniaxial as a symmetry brokenresult of thestructure being symmetry broken

*8 **ANALYSIS** ⁵

⁵ Summary judgment is appropriate if the moving party establishes "that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." *Fed. R. Civ. P. 56(a)*. A dispute is "genuine" only if there is a sufficient evidentiary basis for a reasonable jury to find for the non-moving party, and a fact is "material" only if it might affect the outcome of the action under the governing law. *See Sovereign Bank v. BJ's Wholesale Club, Inc.*, 533 F.3d 162, 172 (3d Cir. 2008) (citing *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986)). In ruling on each of the pending motions for summary judgment, the Court must view the facts, and any reasonable inferences arising therefrom, in the light most favorable to the non-moving party. *See Moody v. Atlantic City Bd. of Educ.*, 2017 WL 3881957, at *1 n.1 (3d Cir. Sept. 6, 2017) (citing *Hugh v. Butler Cty. Family YMCA*, 418 F.3d 265, 266-67 (3d Cir. 2005)).

I. Validity of the '988 Patent

Seagate argues that the '988 patent is invalid due to inadequate written description, while Western Digital argues that the '988 patent is invalid due to lack of enablement. For the reasons that follow, the Court concludes that there are disputed issues of material fact concerning both written description and enablement, and that summary judgment on those grounds should be denied.

A. Legal standards

35 U.S.C. § 112(a) requires that a patent's specification contain:

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

This language creates "a written description requirement separate from enablement." Ariad Pharms. v. Eli Lilly & Co., 598 F.3d 1336, 1347 (Fed. Cir. 2010).

Pursuant to the written description requirement, the specification must "objectively demonstrate that the applicant actually invented—was in possession of—the claimed subject matter." Id. at 1349. In other words, "the specification must describe the invention in sufficient detail so 'that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought.'" In re Alonso, 545 F.3d 1015, 1019 (Fed. Cir. 2008) (quoting Lockwood v. Am. Airlines, Inc., 107 F.3d 1565, 1572 (Fed. Cir. 1997)). The inquiry into whether a patent complies with the written description requirement is a factual inquiry. Ariad, 598 F.3d 1351; Falkner v. Inglis, 448 F.3d 1357, 1363 (Fed. Cir. 2006). So, to decide whether the written description requirement is satisfied, the factfinder must assess whether the patent discloses the invention based on "an objective inquiry into the four corners of the specification from the perspective of a person or ordinary skill in the art." Ariad, 598 F.3d 1351.⁶

⁶ Of particular relevance to the parties' dispute, a patent may be invalid due to inadequate written description if it claims an entire genus of inventions but describes only one or a few species within that genus; this potential for invalidity is

heightened when a patent claims a genus defined by functional language rather than providing a description of what it takes in practice to achieve a certain functional result. Id. at 1349. A sufficient description of an entire genus "requires the disclosure of either a representative number of species falling within the scope of the genus or structural features common to the members of the genus so that one of skill in the art can 'visualize or recognize' the members of that genus." Id. (internal citation omitted).

Pursuant to the enablement requirement, "the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" Genetech, Inc. v. Novo Nordisk A/S, 108 F.3d 1361, 1365 (Fed. Cir. 1997) (quoting In re Wright, 999 F.2d 1557, 1561 (Fed. Cir. 1993)). "The key word is 'undue,' not 'experimentation.'" In re Wands, 858 F.2d 731, 737 (Fed. Cir. 1988) (internal citation omitted).

Relevant factors for assessing enablement include:

- (1) the quantity of experimentation necessary,
- (2) the amount of direction or guidance presented,
- (3) the presence or absence of working examples,
- (4) the nature of the invention,
- (5) the state of the prior art,
- (6) the relative skill of those in the art,
- (7) the predictability or unpredictability of the art,
- and (8) the breadth of the claims.

^{*10} Id. ("Wands factors"). The Wands factors are illustrative, not mandatory, and defendants bear the burden of proving by clear and convincing evidence that the patent is invalid for lack of enablement. Cephalon, Inc. v. Watson Pharms., Inc., 707 F.3d 1330, 1336 (Fed. Cir. 2013). While enablement is a question of law, resolving enablement depends on resolving underlying questions of fact regarding undue experimentation. Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors. USA, Inc., 617 F.3d 1296, 1305 (Fed. Cir. 2010).

B. Whether the '988 patent is invalid due to inadequate written description

Seagate argues that the '988 patent is invalid due to inadequate written description because the patent claims two categories of atomic templates but describes only one. That is, Seagate argues that the '988 patent claims uniaxial symmetry broken structures grown on both single-crystal and polycrystalline templates, but describes only structures grown on single-crystal templates. (Seagate's Brief in Support of Motion for Summary Judgment, "Seagate's MSJ Brief," at 4-12, Civil Action No. 16-538, Doc. 163.) It maintains that the patent fails the written description test because it fails to describe the full genus of atomic templates covered by the claims. Lambeth responds that the cases on which Seagate relies involve true genus-species claims, which are not at issue here, and that in any event, the '988 patent demonstrates that Lambeth had possession of both single and polycrystalline templates. (Lambeth's Response to Seagate's MSJ at 2-4, Civil Action 16-538, Doc. 217.)

For the reasons that follow, the Court will deny Seagate's motion for summary judgment of invalidity.

Seagate argues that single crystal and polycrystalline atomic templates (for growing the claimed uniaxial symmetry broken structures) comprise a broad "genus" of atomic templates, with single crystal templates serving as a narrow "species" of atomic templates. (Seagate's MSJ *11 Brief at 5.) As a result, Seagate argues that the '988 patent's specification "needs to show that one has truly invented the genus, *i.e.*, that one has conceived and described sufficient representative species encompassing the breadth of the genus." AbbVie Deutschland GmbH v. Janssen Biotech, Inc., 759 F.3d 1285 (Fed. Cir. 2014). Despite the requirement to fully describe the genus, Seagate asserts that Lambeth has failed to provide even a

single example of the invention on a polycrystalline template. (Seagate's MSJ Brief at 1.)

Lambeth responds that the claims at issue are not genus-species claims. (Lambeth's Response to Seagate's MSJ Brief at 2.) The patent discloses that each single crystal grain in a polycrystalline template can be treated as a single crystal template for purposes of the invention, negating any significance to the distinction. E.g., '988 patent at col. 23, ll. 20-23 ("for polycrystalline substrates the epitaxially grown films contain multiple variant sets corresponding to the crystalline orientations of the individual hexagonal template grains").⁷ Seagate's argument that the specification fails to describe the genus is, Lambeth contends, inapt.

⁷ As implied by the specification's discussion of the prior art, a polycrystalline template consists of "a large number of single crystal grains." See '988 patent at col. 11, l. 12. Given this relationship between the "genus" and the "species"—the species of polycrystalline templates is, by definition, a species of adjoining single crystal grains—the Court agrees that the analogy to typical genus-species claims is weak.

Moreover, Lambeth responds that even if single crystal and polycrystalline templates are considered separate species, the patent's specification indicates that polycrystalline templates are within the scope of the invention that Lambeth possessed. The specification both discloses polycrystalline templates as a type of atomic template that can be used to grow the desired magnetic films, e.g., '988 patent at col. 21, ll. 61-67 ("[t]his concept . . . enables the development of nearly linear magnetic response functions even for polycrystalline (110) textured bcc-d films epitaxially grown on polycrystalline, randomly oriented, (111) hexagonal atomic templates"), *12 and shows possession by explaining physical attributes and conditions that yield the desired results on either single crystal or

polycrystalline atomic templates, e.g., '988 patent at col. 33, ll. 54-59 ("[o]ur findings are that a symmetry broken structure can be obtained even for polycrystalline films provided the (111) hexagonal template is highly textured and the deposition angle with respect to the substrate normal is constrained to be within 15 ? Ω ? 75 degrees from the normal").

Given the specification's disclosures concerning polycrystalline templates and their use for creating the desired magnetic structures, the question of whether one skilled in the art would conclude from those disclosures that Lambeth had possession of uniaxial symmetry broken structures grown on polycrystalline templates is a disputed question of material fact with evidence on both sides. (Compare Seagate's SOF Exhibit 14, "Dr. Ross's May 2, 2018 Expert Report - Seagate," at ¶¶ 367-71 (person of skill in the art would conclude that inventor lacked such possession), with Seagate's SOF Exhibit 21, "Dr. Coffey's July 16, 2018 Responsive Expert Report - Seagate," at ¶¶ 197-98 (person of skill in the art would conclude that the patent discloses films grown on polycrystalline atomic templates).) It would be inappropriate for the Court to resolve this question at summary judgment.

C. Whether the '988 patent is invalid due to lack of enablement

For similar reasons, the Court will deny Western Digital's motion for summary judgment of invalidity based on lack of enablement.

Western Digital argues that the '988 patent provides no guidance to a person of ordinary skill in the art as to how to make or use the claimed invention. (Western Digital's Brief in Support of Motion for Summary Judgement, "Western Digital's MSJ Brief," at 24, Civil Action No. 16-541, Doc. 165.) Specifically, considering several of the Wands factors, Western Digital *13 argues that the specification: (1) provides only vague and conclusory statements about the parameters necessary to achieve the desired results, e.g., '988

patent at col. 22, ll. 54-55 (the processing conditions must be "just right" to achieve a uniaxial symmetry broken structure); (2) discloses no working examples (no material samples that are both uniaxial and symmetry broken); (3) provides no information regarding polycrystalline⁸ uniaxial symmetry broken structures; (4) leaves instructional voids regarding necessary processing conditions that would require significant and unreasonable experimentation to fill; and (5) covers less terrain than the breadth of the claims would require. (Western Digital's MSJ Brief at 24-27.)

⁸ Lambeth asserts the '988 patent only against Defendants' devices that allegedly practice the invention on polycrystalline templates.

In response, Lambeth argues that Western Digital's arguments either depend on genuinely disputed facts or lack any factual basis. (Lambeth's Response to Western Digital's MSJ Brief at 19.)

The dispute concerning the level of guidance in the specification as to how to practice the invention is illustrative. Lambeth argues that the specification teaches a person of ordinary skill in the art how to practice the specific parameters yielding a uniaxial symmetry broken structure.⁹

¹⁴ *14 (Id. at 20.) Drawing on language in the preceding footnote, Lambeth's expert, Dr. Kevin Coffey ("Dr. Coffey"), opines that "the patent provides a [Person of Ordinary Skill in the Art ("POSITA")] with specific instructions on the geometry of a sputtering set up, specific instructions on which sputtering parameters should be controlled and how, and detailed discussion of how to apply two symmetry breaking mechanisms in tandem to effectively create a uniaxial symmetry broken bcc-d magnetic layer." (Lambeth's Counter-SOF Exhibit L against Western Digital, "Dr. Coffey's July 16, 2018 Rebuttal Expert Report - Western Digital," at ¶ 108.) Despite Lambeth's evidence, Western Digital

maintains that the directions in the specification are insufficient, and that Dr. Coffey's opinions are based on "cherry-pick[ed] quotes" from the patent that misconstrue its teachings. (Western Digital's MSJ Brief at 24-25.) Yet, as Lambeth argues, Western Digital cites no evidence that a person of ordinary skill in the art would be unable to practice the invention—let alone unable to practice the invention without undue experimentation—based on the level of guidance provided in the specification.¹⁰ The question of whether the level of guidance provided in the specification is sufficient to enable a person of ordinary skill in the art to practice the invention without undue experimentation is, clearly, a disputed question of fact.

⁹ The specification provides, as an example, a roadmap for creating a uniaxial symmetry broken structure by sputtering a material for deposition onto a substrate in the presence of two "symmetry breaking mechanism[s]" (which are the angle of incidence between the sputtered material and the substrate, and the direction of the magnetic field at the surface of the substrate) and several surrounding conditions:

FIG. 13 illustrates a cross-sectional view of a rod shaped sputtering target [15] composed of bcc-d material for deposition on to a disk substrate. A shield [16] and magnets [17] to facilitate a sputtering plasma at low Ar gas pressures surround the target. A disk substrate [18] is held on axis with the sputtering target, but at a distance to cause the sputtered material [27] to arrive at the disk surface along a radial direction and at an angle of incidence. Ar gas is introduced into the vacuum chamber via a pathway between the target and a water cooled shield. This concentrates the sputtering gas [25] in the vicinity of the sputtering target and minimizes it in the vicinity of the disk substrate. . . . A low gas pressure is desired to enable a scattering mean free path of the sputtered material to be comparable to, or longer than, the distance from the target to the disk substrate. This prevents the randomization of the direction of the sputtered material by avoiding gaseous collisions. Sputtering wears the target in a predefined and somewhat conical shape causing a deposition path from the target to the disk at the desired range of incident angles between 15 and 75 degrees. . . . The magnetic fields from the magnets can be so arranged to provide a small, but non-negligible, magnetic field at the disk surface directed around the circumference of the disk. This directionally provides, a second symmetry breaking mechanism, in addition to the deposition at an angle, an energy mechanism of deposition in a magnetic field to

help promote bcc-d orientation of the magnetic material. For magnetic bcc-d material with $K_1 > 0$ the promoted easy axis from both symmetry breaking mechanism coincides.

'988 patent at col. 34, l. 58 - col. 35, l. 45.

¹⁰ As addressed below, Western Digital argues that the inventor himself was unable to create the claimed structure, providing strong evidence that the amount of experimentation would be undue—Lambeth disputes this fact and presents evidence to the contrary.

Likewise, assessing each remaining Wands factor addressed by the parties would require deciding numerous disputed factual issues.

Western Digital claims that the patent fails to disclose any working examples of the invention because it fails to disclose a sample of material that is both uniaxial and symmetry broken. But Lambeth cites evidence that "there are two working examples disclosed in the '988 Patent, namely, the samples 'LS1425_2cx,' which discloses a Ni atomic template and an Fe magnetic bcc-d layer, *see* '988 Patent at [col. 42, l. 44 - col. 44, l. 22], and 'LS0909-6,' which discloses a Cu atomic template and an Fe magnetic bcc-d layer, *see id.* at [col. 41 l. 2 - col. 42, l. 26]." (Dr. Coffey's July 16, 2018 Rebuttal Expert Report - Western Digital at ¶ 161.)¹¹

¹¹ As to the former sample, the specification states "it was determined to be one of the symmetry broken uniaxial sets," '988 patent at col. 42, ll. 63-64, and as to the latter sample, the specification states "even when a hexagonal template of non-magnetic material was employed it was possible to have exchange coupled variants and to obtain the uniaxial symmetry broken behavior," *id.* at col. 42, ll. 27-30.

Western Digital claims that the patent fails to address polycrystalline structures. But Lambeth cites the language of the specification itself, which states that "[t]he technique to obtain[] the same easy and hard magnetic axis behavior across an entire polycrystalline sample is to induce the appropriate (110) textured bcc-[d] coupled uniaxial variant set for each of the randomly oriented hexagonal templates," '988 patent at col. 22, ll. 11-15, and further states that "[t]he method of achieving this is to provide an energetically driven growth process that *¹⁶ preferentially selects that the appropriate coupled variant set for each hexagonal template orientation being use[d]," *id.* at col. 22, ll. 16-19.¹²

¹² In addition, Lambeth presents evidence that one of the samples listed above, LS0909-6, contains a uniaxial symmetry broken structure on a polycrystalline template. (See Lambeth's Response to Seagate's MSJ Brief at 10.)

Western Digital claims that the level of experimentation needed to make use of the full scope of the claims is high because the inventor himself never succeeded in creating a uniaxial symmetry broken structure. But, as just mentioned, Lambeth provides evidence that the patent discloses two examples of such structures.

Finally, Western Digital argues that the patent is not enabled because the claims cover a boundless number of materials and structures of any size, but fail to teach how to make a uniaxial symmetry broken structure from various possible permutations of materials or how to make such a structure of any size. But again, Western Digital fails to provide any evidence to support that conclusion, and Lambeth responds by arguing, correctly, that this lack of evidence cannot meet Western Digital's burden to show lack of enablement by clear and convincing evidence.

As the question of enablement boils down to a series of factual disputes about the inferences a person of skill in the art would draw from the

specification and the amount of experimentation needed to practice the full scope of the claims, Western Digital's motion for summary judgment of invalidity due to lack of enablement will be denied.¹³ *17

¹³ The Court also notes that the parties dispute the experiences and qualifications that a POSITA would have, and the Court agrees with Lambeth that this fact alone would be sufficient to preclude summary judgment on issues resting on the inferences a POSITA would draw from the patent. (See Lambeth's Response to Seagate's MSJ 10-11; Lambeth's Response to Western Digital's MSJ 20 n.13.)

II. Seagate's Motion for Judgment on Non-Infringement of the '988 Patent

Seagate argues that Lambeth's evidence fails to show that Seagate's accused devices contain symmetry broken structures or a layer providing a (111) textured hexagonal template, and so Lambeth cannot establish infringement. Lambeth responds that there are genuinely disputed facts as to each component of Seagate's argument that preclude summary judgment. The Court will address each disputed claim element in turn to determine whether "no reasonable factfinder could find that the accused product contains every claim limitation or its equivalent." Medgraph, Inc. v. Medtronic, Inc., 843 F.3d 942, 949 (Fed. Cir. 2016).

A. Whether the accused Seagate devices contain symmetry broken structures

The Court construed "symmetry broken structure" to mean a "structure consisting of unequal volumes or unequal amounts of the bcc-d variants of a six variant system." Seagate focuses on the meaning of the Court's claim construction—specifically, the meaning of "consisting of"—and on Lambeth's evidence as to unequal volumes or amounts of the relevant variants. (Seagate's MSJ Brief at 12-13.)

I. "Consisting of"

Taking the Court's use of the phrase "consisting of" to imply that a layer satisfying that claim element must contain only crystals within the six variant system and no other crystals, Seagate argues that its accused FeCo layers cannot be symmetry broken because it is undisputed that they contain some crystals that are not variants of the six-variant system. (Id. at 14.) This argument draws support from the use of "consisting of" as a term of art in original claim construction indicating a closed set of components, e.g., Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp., 831 F.3d 1350, 1358 (Fed. Cir. 2016). Yet, as Lambeth argues, *18 Seagate provides no support for the principle that "consisting of" is a term of art in interpreting a Court's construction of a claim term.

The Court now clarifies that nothing in its claim construction requires such a limitation concerning the lack of additional crystals in the relevant layer. The Court also notes that this issue was not raised as a subject of dispute during the claim construction process. Defendants had ample opportunity to raise any arguments concerning claim limitations during claim construction but failed to raise this argument. As the Court's October 18, 2017 Claim Construction Order governs claim construction in this case, the Court will not revisit its constructions at this stage of the litigation.

2. Evidence as to unequal volumes or unequal amounts

Seagate next contends that Lambeth has provided no evidence to show that Seagate's accused layers contain unequal volumes or amounts of the relevant orientational variants, which would be required for those layers to meet the Court's construction of "symmetry broken structure." To the contrary, Lambeth's experts provide such evidence. Specifically, they provide and describe an analysis based on dark field imaging of the accused layers showing that a particular

orientational variant, a member of the relevant six variant system, is present in a greater amount than others. (Seagate's SOF Exhibit 18, "Dr. Clark's May 2, 2018 Initial Expert Report - Seagate," at ¶¶ 116-124 (more crystallites in the sample of the accused layer are oriented with their easy directions perpendicular to the long axis of the write head relative to other directions, and the variants present belong to the six variant system); Seagate's SOF Exhibit 20, "Dr. Coffey's May 2, 2018 Initial Expert Report - Seagate," at ¶¶ 181-188 (interpreting imaging results to show "the presence of unequal amounts of variants in the Kurdjumov-Sachs six-variant system").) Seagate disagrees with this interpretation, but there is *19 no need to belabor the point; Lambeth has proffered sufficient evidence to render the issue genuinely disputed, and summary judgment must be denied.¹⁴

¹⁴ Seagate also argues that Lambeth's evidence would need to show the amount, volume, or relative proportion of each variant in the accused layer in order to conclude that the variants are present in unequal amounts. As a matter of logic, for the reasons stated in Lambeth's responsive brief, those elements are not required to show unequal volumes or amounts.

B. Whether the accused Seagate devices contain a template layer that is (111) textured hexagonal

The asserted claims require a layer that is predominately (111) hexagonal and that provides an atomic template. Seagate argues that Lambeth's testing fails to show any (111) hexagonal crystals in the accused NiFe layers, and that even if Lambeth's tests are deemed sufficient to show the presence of such crystals in the analyzed samples of the NiFe layers, Lambeth has not sampled a sufficient proportion of the NiFe layers to show that the (111) hexagonal crystals predominate. Lambeth, drawing again on its expert materials, argues to the contrary that it has produced evidence establishing that the accused NiFe layers are predominately (111) hexagonal.

Lambeth's evidence is, again, sufficient to withstand summary judgment.

As to the presence of (111) hexagonal crystals in the accused NiFe layers, Dr. Clark's May 2, 2018 Initial Expert Report - Seagate states that the diffraction patterns of the NiFe layers, when visualized through the Fast Fourier Transform ("FFT") procedure, "show that the lower NiFe layer . . . is a template to the FeCo layer growing upon it, at least because they share a predominate common direction normal to the template, and this direction is $\langle 111 \rangle_{\text{FCC}} \parallel \langle 110 \rangle_{\text{BCC}}$, the orientation for epitaxial growth." *Id.* at ¶ 67. According to Dr. Clark's analysis, the NiFe layer in this sample is fcc, oriented in the $\langle 111 \rangle$ ¹⁵ direction, and predominately hexagonal. *Id.* at *20 ¶ 89 ("this FFT indicates the crystal structure of the NiFe layer is FCC"); *id.* at ¶ 66 ("this parallel direction [between the overlying layers] is $\langle 110 \rangle$ in the BCC FeCo, and $\langle 111 \rangle$ in the FCC NiFe layer"); *see id.* at ¶¶ 34-36 (showing how the hexagonal structure of a (111) fcc layer leads to six distinct variants of overlying (110) bcc crystals in the Kurdjumov-Sachs relationship). This is sufficient evidence from which a factfinder could conclude that the NiFe layer contains (111) hexagonal crystals.¹⁶

¹⁵ According to Dr. Clark, these angular brackets denote a family of structurally identical orientational directions in a crystal. *Id.* at ¶ 30. Likewise, curly brackets "{}" indicate a family of structurally identical crystal planes. *Id.* at ¶ 29. As there is no dispute concerning notation, the Court uses whichever bracket style the parties have used in their relevant materials.

¹⁶ The parties dispute whether the orientation depicted in Dr. Clark's report is the (111) orientation relative to the underlying substrate. Lambeth's evidence, viewed in a light most favorable to Lambeth as the

nonmoving party, shows that the (111) orientation is the orientation depicted in Dr. Clark's report.

As to the predominance of (111) hexagonal crystals in the accused NiFe layers, Dr. Clark explains his conclusion that "because we can see [in the high-resolution cross-section images] that the lattice fringes are continuous along the lower NiFe layer, this is indicative of the crystal structure of the extent of the lower NiFe layer." Id. at ¶ 89. Dr. Clark further justifies this conclusion—that the NiFe layer is visibly continuous and that the sample is therefore representative of the whole layer—in his subsequent report. (Seagate's SOF Exhibit 19, "Dr. Clark's August 3, 2018 Reply Expert Report - Seagate," at ¶ 15 ("[A] 1.1% percent sample of the lower NiFe layer . . . represent[s] an adequate sample to determine the lower NiFe layer texture. Given the very fine scale of the microstructure, even limited area FFTs are representative of the full microstructure."); id. at ¶ 43 ("[A] 0.165% sample of the lower NiFe layer represents an adequate sample to determine that lower NiFe layer texture. Given that the microstructure of the FeCo exhibits repetitive columnar growth across the write head, establishing the orientation relationship between the NiFe and the FeCo columns in one part of the sample can reasonably be extrapolated to the remainder.")) While it is true that "conclusory expert assertions do not give rise to a genuine issue of material fact," D Three Enters., LLC v. SunModo Corp., 890 F.3d 1042, 1051 (Fed. Cir. 2018), the Court finds that Dr. Clark's conclusions are supported by his reasons; if the texture appears continuous in images of the microstructure, and multiple samples confirm continuity by revealing the same features, then a factfinder could conclude that the features of the samples can be extrapolated across the layer (even if a reasonable argument could be made that the samples are not representative). Lambeth has provided sufficient evidence from which a factfinder could conclude that (111) hexagonal crystals predominate in the NiFe layer.

To summarize Lambeth's evidence as to the presence of a (111) hexagonal texture in the accused NiFe layers, Plaintiff's expert, Dr. Clark, has analyzed the accused NiFe layers and concluded that they are predominately (111) hexagonal. He has also explained his methodology, and explained how that method has led him to that conclusion. While Seagate is free to challenge Dr. Clark's methods and conclusions, and any of the underlying evidence used to derive those methods and conclusions, the summary judgment stage is not the appropriate time to do so.

III. Western Digital's Motion for Judgment of Non-Infringement of the '988 Patent

Western Digital argues that Lambeth cannot show that Western Digital's accused products infringe the '988 patent because they lack a uniaxial symmetry broken structure and lack a layer providing a (111) textured hexagonal atomic template. (Western Digital's MSJ Brief at 10-22.) Lambeth's response to Western Digital is, in essence, the same as its response to Seagate: Western Digital's arguments rely on genuinely disputed facts that preclude summary judgment. As the Court has done for Seagate's arguments above, the Court will address each of Western Digital's non-infringement arguments in turn and will ultimately conclude that summary judgment must be denied.

A. Whether the accused Western Digital devices contain uniaxial symmetry broken structures

The Court construed "uniaxial symmetry broken structure" to mean "[a] structure that is uniaxial as a result of the structure being symmetry broken."¹⁷ Western Digital argues both that Lambeth's evidence is insufficient to establish that the accused products are uniaxial and that Lambeth's evidence is insufficient to establish that any uniaxiality *results from* the structures being symmetry broken. However, for the reasons

below, Lambeth's evidence as to each claim element is sufficient to withstand summary judgment.

¹⁷ Given the Court's constructions of "symmetry broken" and "uniaxial," the expanded version of the Court's construction would be "a structure that has an anisotropy energy density function with only a single maximum and a single minimum as the magnetization angle is rotated by 180 degrees from a physical axis as a result of the structure consisting of unequal volumes or unequal amounts of the bcc-d variants of a six variant system."

The asserted claims require the presence of "at least one bcc-d layer which is magnetic, forming a uniaxial symmetry broken structure," with "uniaxial symmetry broken structure" having the construction just mentioned. The question before the Court on summary judgment is whether Lambeth's evidence, viewed in a light most favorable to Lambeth, is sufficient for a factfinder to conclude that the relevant claim element is present in the accused devices.

It is. Specifically, Dr. Coffey opines and explains as follows:

[T]he WD [Western Digital] Type 1 Products all contain a layer of FeCoNi high moment material in the write head that includes multiple polycrystalline grains of (110) textured bcc FeCoNi. The grains of (110) bcc FeCoNi in the layer of FeCoNi material in the write head of the WD Type 1 Products are oriented relative to the (111) hexagonal template provided by the Ru template layer directly beneath such that the FeCoNi layer consists of variants from the six-variant Burgers system. . . . [T]he layer of FeCoNi material in the WD Type 1 Products' write poles has unequal amounts of the bcc variants in the Burgers six variant system Furthermore, . . . the result of the symmetry breaking in the layer of FeCoNi in the WD Type 1 Products' write heads is uniaxial anisotropy in the

*23

measured region of that material layer. Specifically, the unequal amounts of variants in the six-variant system observed via dark field image analysis at different angles as a sample was rotated by 180 degrees from a physical axis were measured and the resulting anisotropy energy density function was calculated. As discussed in further detail below, it is my opinion that the layer of FeCoNi in the WD Type 1 Products is uniaxial because the anisotropy energy density function I calculated solely due to the measured broken symmetry in representative samples of the WD Type 1 Products has a single maximum and a single minimum as the magnetization angle is rotated by 180 degrees from a physical axis.

...

[B]ecause these [calculated] uniaxial anisotropy density functions were determined solely by utilizing dark field imaging data that reflects the unequal amounts of the bcc-d variants of a six variant system, it is my opinion that the FeCoNi layer in the WD Type 1 Products is uniaxial as a result of being symmetry broken and, accordingly, meet [sic] the Court's construction of the term "uniaxial symmetry broken."

(Lambeth's Counter-SOF against Western Digital Exhibit B, "Dr. Coffey's May 2, 2018 Initial Expert Report - Western Digital," at ¶¶ 237, 252.)

In the passages quoted above, Dr. Coffey explains how the analyses performed by Dr. Clark show that a layer of the accused Western Digital devices forms a uniaxial symmetry broken structure according to the Court's constructions. To the extent that his conclusions rely on knowledge beyond the testing data, Dr. Coffey cites supporting references and justifies the assumptions that lead him to his conclusions. (Id.

at ¶¶ 252-256.) While Lambeth cites additional evidence supporting its infringement claim against Western Digital, the Court may pause here because, at this stage, Lambeth's evidence suffices to meet its burden at summary judgment to show that this claim element is met.¹⁸*24

¹⁸ At best, Western Digital's arguments that its devices lack the required uniaxial structure raise factual disputes; at worst, its arguments are simply irrelevant.

For example, to support its argument that its devices lack the required uniaxiality, Western Digital performed its own magnetic testing of the accused write poles using magnetic force microscopy ("MFM"). (See Western Digital's MSJ Brief at 12-14.) Yet, as Lambeth argues, the claims plainly require that the uniaxial symmetry broken structure be formed from a magnetic bcc-d layer. As Western Digital's MFM tests were performed at the level of the write poles on its HDD write heads, and not at the level of a crystalline layer, the relevance of these tests is questionable. Regardless, the question before the Court is not whether Western Digital's evidence fully rebuts Lambeth's.

As to the portion of the Court's construction that requires a causal link between symmetry breaking and uniaxiality, Western Digital offers evidence and arguments that Dr. Coffey fails to account for all the relevant factors; that other factors contribute to uniaxiality to a much greater degree than does symmetry breaking; and that the type of analysis that Dr. Coffey draws on to reach his conclusions (dark field imaging) is incapable of revealing the necessary information about crystal orientations or the presence of unequal amounts of the relevant crystal variants. (Id. at 15-20.) None of these arguments are properly considered at summary judgment where Lambeth has offered evidence to the contrary.

B. Whether the accused Western Digital devices contain a layer providing a (111) textured hexagonal atomic template

Next, Western Digital takes the position that Seagate has taken with respect to sampling the accused layer: Lambeth took too few samples to conclude that the whole layer has a (111) hexagonal texture. For the same reasons as before, however, Lambeth's expert has provided a sufficient explanation for why the properties of the samples can be extrapolated to the layer.

Lambeth's evidence can reasonably be taken to show that Western Digital's accused products contain (111) hexagonal textured layers. For example, Lambeth offers evidence that a category of accused devices contains a "lower Ru layer . . . [that] is a template to the FeCo layer growing upon it, at least because they share a predominate common direction normal to the template, and this direction is $\langle -0002 \rangle_{\text{HCP}} \parallel \langle 110 \rangle_{\text{BCC}}$, the orientation for epitaxial growth." (Lambeth's Counter-SOF against Western Digital Exhibit F, "Dr. Clark's May 2, 2018 Initial Expert Report - Western Digital," at ¶ 67.) To show that the accused Ru layer has a hexagonal texture, Dr. Clark again performed FFT analyses of samples along the layer, which "indicate[] that the crystal structure of the Ru layer is HCP." (*Id.* at ¶ 97.) Based on "the high resolution cross-sections [depicted] above, because [Dr. Clark] can see that the lattice fringes are continuous along the Ru layer, [Dr. Clark concludes that] this is indicative of the crystal structure *25 of the extent of the Ru layer." (*Id.*) Dr. Clark performed similar analyses and reached similar conclusions for other accused layers in Western Digital's products. (*Id.* at ¶¶ 98-102, 122-128.) As before, the Court finds that this line of factual reasoning is sufficient—although by no means undisputable—evidence from which a factfinder could conclude that the hexagonal texture persists throughout the relevant layers.

Consequently, Western Digital's motion for summary judgment of non-infringement will be denied.

IV. Availability of Pre-Suit Damages

A. Legal standards

Pursuant to 35 U.S.C. § 287(a), in the event a patentee or licensee fails to mark a patented article for sale with its patent number,

no damages shall be recovered by the patentee in any action for infringement, except on proof that the infringer was notified of the infringement and continued to infringe thereafter, in which event damages may be recovered only for infringement occurring after such notice. Filing of an action for infringement shall constitute such notice.

Id.

The owner of a patent "bears the burden of pleading and proving he complied with § 287(a)'s marking requirement." *Arctic Cat Inc. v. Bombardier Rec. Prods.*, 876 F.3d 1350, 1366 (Fed. Cir. 2017) ("*Arctic Cat I*"). Although licensees are also bound to comply with § 287(a) and can trigger § 287(a)'s damages bar by failing to mark, a patent owner may avoid the damages bar if the owner makes reasonable efforts to ensure the licensee's compliance. *Id.* (citing *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1111-12 (Fed. Cir. 1996)).

Even on summary judgment, "[t]he burden of proving compliance with marking is and at all times remains on the patentee." *Id.* at 1367. So, for example, if the dispute concerns whether an unmarked product practices the invention, once an alleged infringer notifies the patentee of *26 the specific products that it believes practice the invention and have been sold without marking, the burden to prove that those products do not practice the invention rests with the patentee. *Id.* 1368. Underlying this rule is the reality that "the

patentee is in a better position to know whether his goods practice the patents-in-suit." Id.; see also Dunlap v. Schofield, 152 U.S. 244, 248 (1894) ("[w]hether his patented articles have been duly marked or not is a matter peculiarly within his own knowledge").

In the absence of marking, § 287(a) also allows a patent owner to avoid the damages bar by providing actual notice to the infringer. "[T]hat notice must be an affirmative act on the part of the patentee which informs the defendant of his infringement." Amsted Indus. v. Buckeye Steel Castings Co., 24 F.3d 178, 187 (Fed. Cir. 1994) (citing Dunlap, 152 U.S. at 248). For that reason, "[i]t is irrelevant . . . whether the defendant knew of the patent or knew of his own infringement." Id. On summary judgment, where the alleged infringers argue lack of notice, the patentee must adduce some evidence to establish that it provided actual notice to the specific infringers.

Compliance with 35 U.S.C. § 287(a) is a question of fact. Arctic Cat I, 876 F.3d at 1366.

B. Whether Lambeth has met its burden to show marking or notice

Both Seagate and Western Digital argue that Lambeth's alleged licensees, Samsung and Microsoft, sold unmarked products that practice the '988 patent in the United States during the period prior to this lawsuit. Further, they argue that Lambeth provided them no actual notice of their allegedly infringing products before filing the two instant suits. As a result, they argue that § 287(a) cuts off damages during the pre-suit period. Seagate additionally argues that Lambeth has failed to plead compliance with marking, and that

27 Lambeth's failure to disclose information *27 in response to an interrogatory regarding compliance with § 287(a) forecloses Lambeth's subsequent ability to offer evidence of marking under Federal Rule of Civil Procedure 37(c).¹⁹

19 The Court will not address these last two arguments, as the Court concludes that the damages bar applies on alternate grounds.

Lambeth argues that it effectively pleads compliance with marking or could do so through amendment, that its disclosures were sufficient to provide Defendants with notice of the relevant facts concerning marking, that Western Digital's evidence that Samsung and Microsoft were licensees is legally insufficient, and that Seagate's evidence as to Microsoft's status as a licensee is legally insufficient. However, Lambeth admits to both parties that Seagate has proven Samsung was a licensee selling unmarked HDDs from March to November 2011. (Lambeth's Response to Seagate's MSJ at 28-29; Lambeth's Response to Western Digital's MSJ at 28, 28 n.15.)

Lambeth further argues that selling unmarked products should cut off damages only during the period in which the unmarked products were sold, and that, in any event, Seagate and Western Digital received actual notice of infringement on January 9 and 8, 2015, respectively. (Lambeth's Response to Seagate's MSJ at 30-33; Lambeth's Response to Western Digital's MSJ at 29-33.)

As explained below, Seagate and Western Digital have met their burden of producing affirmative evidence that Microsoft was a licensee selling unmarked products practicing the patent. Because Lambeth has failed to carry its burden to offer any evidence to the contrary, the Court finds that Microsoft was a licensee selling unmarked products during the pre-suit period for purposes of the instant motions. This finding is sufficient to start the clock on the damages bar at a date earlier than the alleged Samsung license began, rendering

28 Samsung's status as a *28 licensee immaterial. The Court also rejects Lambeth's argument that the damages bar under § 287(a) lifts during a sales interlude when unmarked products are no longer sold. And, the Court finds that Lambeth has failed to produce evidence that it provided Seagate or Western Digital with actual notice of their infringement. Therefore, the Court will grant

Seagate and Western Digital's motions for summary judgment as to lack of pre-suit damages beginning once Microsoft's license took effect and it began selling products practicing the '988 patent.

1. Microsoft and Samsung's status as licensees for purposes of summary judgment

Seagate and Western Digital offer evidence that Microsoft was licensed to sell products practicing the '988 patent in the pre-suit period. But Lambeth offers no counter-evidence. As Seagate and Western Digital rely on the same evidence to show Microsoft's status, the Court will address Seagate's evidence and then reach the same conclusion as to both Seagate and Western Digital.

Seagate presents an executed license agreement, and other supporting information, showing that Microsoft was licensed to practice the '988 patent. In particular, Seagate provides a copy of a contract between SBS Magnetics, a wholly owned subsidiary of Acacia Research Group LLC, itself a wholly-owned subsidiary of Acacia Research Corporation (collectively "Acacia"), and Microsoft under which Microsoft obtained rights to license any patents Acacia would acquire after September 30, 2010. (Seagate's SOF Exhibit 42, "Microsoft Agreement," at §§ 1.4, A1.2, A2.1, A2.2.) Seagate also presents an assignment agreement showing that Acacia acquired the '988 patent on December 18, 2010 from Lambeth Systems ("LS"). (Seagate's SOF Exhibit 40, "Assignment Agreement.") The Assignment Agreement acknowledges a preexisting agreement between Acacia and Microsoft that would result in Microsoft obtaining a license to the '988 patent or a covenant not to sue, without specifically identifying that agreement. (*Id.* at *29 § 3.3 ("LS acknowledges that because of two preexisting agreements . . . the second between Acacia and Microsoft Corporation . . . [Microsoft] will obtain or will be granted, a license, release and/or covenant not to sue under the Patents upon or after the Effective Date."))

Lambeth disputes that Microsoft qualifies as a licensee for the '988 patent under the Microsoft Agreement. Lambeth argues that the Microsoft Agreement merely grants Microsoft an option to acquire rights to the patent and avers that Seagate has presented no evidence that Microsoft exercised that option. (Lambeth's Response to Seagate's MSJ at 30; Microsoft Agreement at § 2.1 ("prior to Microsoft providing such written notice [of intention to exercise its option], the terms and conditions set forth in Addendum A attached hereto . . . shall have no legal effect").)

Seagate counters that this option was clearly exercised under the terms of the Microsoft Agreement, and presents direct evidence in the text of the Microsoft Agreement that the option was exercised. (*Id.* at § 4.15 ("Microsoft hereby exercises its option pursuant to Section 2.1(a) and the Parties agree that the terms and conditions set forth in Addendum A shall automatically take immediate legal effect").) Seagate also presents indirect evidence via the Assignment Agreement, which mentions the forthcoming license to Microsoft.

In response, Lambeth offers no affidavit or other evidence that Microsoft never received a license. Lambeth rests on Seagate's failure to provide evidence of other documents related to the license, such as an independent notice document or a payment document, and contends that such failure, particularly after Defendants' attempts to discover those documents, can be taken as evidence adverse to Seagate. (Lambeth's Response to Seagate's MSJ at 29 (citing *Lin v. Rohm & Haas Co.*, 685 F. App'x 125, 132 (3d Cir. 2017) (discussing the "missing witness inference," which stems from "the simple proposition that if a party who has evidence which bears on the *30 issues fails to present it, it must be presumed that such evidence would be detrimental to his cause").)

Lambeth's argument misapprehends its burden. Once a moving defendant has presented a properly supported motion for summary judgment, "the

plaintiff must present affirmative evidence in order to defeat [it]." Anderson, 477 U.S. at 257. "This is true even where the evidence is likely to be within the possession of the defendant, as long as the plaintiff has had a full opportunity to conduct discovery." Id. A plaintiff meets its burden in such a scenario by presenting any affirmative "evidence from which a jury might return a verdict in [its] favor." Id. Unlike the scenario contemplated by the Supreme Court, the fact at issue here (whether Microsoft was granted the license) is peculiarly within Lambeth's and its former assignee's knowledge and ability to prove. This provides an even stronger than usual reason, especially in the context of a dispute concerning marking under § 287(a), for Lambeth to shoulder the burden of producing affirmative evidence from which a jury could conclude that the license option was not exercised. As Lambeth has failed to point to any affirmative evidence in the record from which a jury could conclude that Microsoft failed to exercise its option, the Court must conclude that Microsoft was licensed to use the '988 patent for purposes of resolving Defendants' summary judgment motions.²⁰ The Court reaches the same conclusion, for the same reasons, with respect to Western Digital's motion.²¹

²⁰ Seagate also provides the testimony of a Microsoft witness, who testified to seeing a document indicating that the '988 patent was added to the addendum of covered patents under the Microsoft Agreement, as additional evidence that the option was in fact exercised. (Exhibit 12 to Seagate's SOF at 16-17.) Lambeth argues that Seagate's attempt to prove the contents of the document triggering the license, if such a document exists, would violate Federal Rule of Evidence 1002. (Id. ("An original writing . . . is required in order to prove its contents unless these rules or a federal statute provide otherwise.")) This argument misstates the nature of what Seagate is trying to prove. Seagate is trying to prove that Microsoft had a license, not the content of any particular document

used to trigger the license. A witness's testimony that he was personally aware that the '988 patent was licensed to Microsoft is relevant to show that Microsoft had such a license.

²¹ Western Digital's motion relies on the same evidence as Seagate's motion, and Lambeth's response to Western Digital's motion makes the same counterarguments as its response to Seagate's motion.

As for Samsung's license, Lambeth admits that Seagate has proven that Samsung was licensed to use the '988 patent (Lambeth's Response to Western Digital's MSJ at 28 n.15), and Lambeth pleaded in its Complaint against Seagate (Civil Action No. 16-538, Doc. 1) that Seagate's HDDs "may be covered by a license to the '988 patent previously obtained by Samsung Corporation." (Id. at ¶ 21.) Yet, despite these admissions against Seagate, Lambeth argues that Western Digital has provided insufficient evidence that Samsung was a licensee for Western Digital to prevail on summary judgment.

Obviously, Samsung cannot simultaneously have been licensed and unlicensed to practice the '988 patent. Nonetheless, the Court need not resolve the question of whether Western Digital's evidence is sufficient to show that Samsung exercised its option, nor the question of whether Lambeth's admissions to Seagate judicially estop Lambeth from denying the same facts to Western Digital in the parallel proceeding. As Microsoft began selling products under its license during a period predating Samsung's alleged license, and as the Court concludes ³² that § 287(a)'s damages bar runs in favor of Seagate and Western Digital from the date Microsoft began selling such products, the period of available damages is the same regardless of whether Samsung had a license. Specifically, Defendants allege that Microsoft began selling licensed products practicing the invention on or about December 19, 2010 and that Samsung began selling licensed products practicing the invention on or about March 2, 2011. The resolution of

Samsung's license status is thus immaterial to resolving Defendants' summary judgment motions, and the Court need not opine on that matter.²²

²² For purposes of summary judgment, the parties do not dispute that Microsoft and Samsung sold unmarked products practicing the '988 patent during the pre-suit period; the sole areas of factual dispute concerning marking are whether Microsoft and Samsung were licensed and whether Defendants were notified of their infringement.

2. Application of § 287(a)'s damages bar to a sales interlude

Lambeth argues that, after patentees or licensees sell an unmarked product practicing the invention, the damages bar lifts during a period in which they are no longer selling the product. Lambeth notes that there is no opportunity for a patentee or licensee to mark a product during such a sales interlude, suggesting that it would be improper and unfair to bar damages during a sales interlude. As there is no binding authority addressing this situation, the Court will consider the parties' arguments and the persuasive authorities on which they rely.

Lambeth relies on Wine Railway Appliance Co. v. Enterprise Railway Equipment Co., 297 U.S. 387 (1936), and American Medical Systems, Inc. v. Medical Engineering Corp., 6 F.3d 1523 (Fed. Cir. 1993). Those cases differ significantly from the instant suits; neither of Lambeth's cases address a scenario in which a licensed, patented product was sold without marking during the pre-suit period without a subsequent cure during the pre-suit period. Even so, the reasoning in those cases sheds light on the question. ^{*33}

In Wine Railway Appliance Co., neither the patentee "nor another with its consent" had ever manufactured or sold a product under the patent. 297 U.S. at 393. The Court held that a patentee's or assignee's duty to mark or inform an infringer

takes effect only after the patentee or assignee has made or sold a product practicing the patent. Id. at 395. The Court's reasoning relied on the structure of the then-applicable statute, which presented two duties, both contingent on the existence of a product for sale. Under the prior statute, a patentee had a duty to mark, and if the party failed to mark its patented products, then it had duty to notify an infringer or else face a bar to damages. Because it would be impossible to mark a nonexistent product, both the initial duty to mark and the sub-contingent duty to notify did not arise, and the damages bar had no application, in the event a patentee or licensee never sold a product practicing the invention. Id.

That logic fundamentally changes once a patentee or licensee sells a product practicing the invention. In that case, selling the product would trigger the duty to mark or inform, and the seller would have an opportunity to perform and to avoid the bar. While marking under the current statute is an option rather than a duty, Rembrandt Wireless Technologies, LP v. Samsung Electronics Co., Ltd., 853 F.3d 1370, 1383 (Fed. Cir. 2017), a similar logic applies: selling the patented product is the key event that triggers the application of the damages bar and the option to either mark or provide notice in order to avoid the bar, cf. 35 U.S.C. § 287(a) ("Patentees, and persons making, offering for sale, or selling within the United States any patented article for or under them . . . may give notice to the public that the same is patented . . . [by marking.] In the event of failure so to mark, no damages shall be recovered . . . except on proof that the infringer was notified.").

In American Medical Systems, the Court of Appeals for the Federal Circuit held that the damages bar lifts once public compliance with marking begins, even if the product was ^{*34} previously sold unmarked. 6 F.3d at 1537. The court looked to the text of the statute, which does not specify a "time limit by which marking must begin" and also its purpose "of encouraging marking to provide notice to the public." Id. Both

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considerations weighed in favor of finding that the damages bar lifts once compliance with marking begins. *Id.* Here, however, both the text of the statute, which does not provide a mechanism for the bar to lift automatically during a sales interlude, and its purpose—as explained below—weigh against finding that the damages bar lifts.

Lambeth also cites two district court cases that provide some help to its cause, but which are ultimately unavailing.²³ In Refac Electronics Corp. v. A & B Beacon Business Machines Corp., 695 F. Supp. 753 (S.D.N.Y. 1988), the district court employed language suggesting that a damages bar would lift during a sales interlude, *id.* at 755 ("a patentee with an unutilized patent may do nothing before a suit to collect damages for infringement"), but the court had no occasion to delimit the damages period due to disputed facts, *id.* at 756.

²³ Lambeth also cites WiAV Solutions LLC v. Motorola, Inc., 732 F. Supp. 2d 634 (E.D. Va. 2010), which finds that the damages bar does not come into effect before the opportunity to mark under § 287(a) initially arises, *id.* at 639, a situation that engages the reasoning of Wine Railway Appliance Co. because the patentee would have no chance, at any point in time, to comply with marking.

Medical Graphics Corp. v. SensorMedics Corp., 1995 WL 523633 (D. Minn. June 5, 1995), is directly on point. The district court lifted the damages bar during the sales interlude period between 1986 and 1994. *Id.* at *1, *3 (the patented product had been sold unmarked by an assignee from 1983 to 1986, and the suit was initiated in 1994). That court's reasoning, however, is not persuasive. The court relied on the principle, drawn from Wine Railway Appliance Co., that a statute should not be read to impose an impossible duty, such as a duty to mark a product that does

35 not exist. *35

Yet, the statutory duty imposed on the patentee in Medical Graphics Corp., and on Lambeth in this case, is far from impossible to perform. The patentee in the relevant scenario can avoid the damages bar by marking products during the sales period, making reasonable efforts to ensure compliance with marking during the sales period, or by providing actual notice to an infringer either during the sales period or after the sales period ends. Applying the damages bar to a patentee that fails to avail itself of those opportunities is not, as Lambeth contends, unfair.

Moreover, allowing a patentee or licensee to defeat the marking requirement at will by stopping sales of an unmarked product runs contrary to § 287(a)'s purpose of encouraging marking in order to provide public notice of an invention. *See Am. Med. Sys., Inc.*, 6 F.3d at 1537; *see also Rembrandt Wireless Techs., LP*, 853 F.3d at 1383 (the three purposes of the marking statute are: "1) helping to avoid innocent infringement; 2) encouraging patentees to give notice to the public that the article is patented; and 3) aiding the public to identify whether an article is patented" (quoting Nike, Inc. v. Wal-Mart Stores, Inc., 138 F.3d 1437, 1443 (Fed. Cir. 1998))).

Several district courts have reached the same conclusion. *E.g.*, Horatio Washington Depot Techs. LLC v. TOLMAR, Inc., 2018 WL 5669168, at *2 (D. Del. Nov. 1, 2018) ("if a patentee produces or sells an unmarked product—but then later ceases such production/sales—it may still not collect damages thereafter for infringement until it takes active steps to address the failure to mark"); Arctic Cat Inc. v. Bombardier Recreational Prods., Inc., 334 F. Supp. 3d 1238, 1248 (S.D. Fla. 2018) ("Arctic Cat II") (rejecting a reading of § 287(a) that would lift the damages bar during a sales interlude as contrary to the purposes identified in Rembrandt Wireless Technologies, LP, 853 F.3d at 1383); Lambda Optical Solutions, LLC v. Alcatel-

36 Lucent USA Inc., 2015 WL 5470175, at *5 (D. Del. July 29, 2015) ("if a patentee-plaintiff were

able to return to the favorable status of a non-producing patentee simply by halting production of unmarked product, this would not encourage patentees in the first instance to give notice to the public that the article is patented" (internal quotation marks and citation omitted)).

The Court agrees with those district courts that apply the damages bar to a sales interlude, and the Court thus finds that the damages bar under § 287(a) applies to the period after unmarked sales have begun, even if those sales subsequently cease, until the patentee either cures the marking defect or notifies the infringer. If a patentee wishes to have damages accrue during a period of no sales after failing to mark, the patentee may achieve this by providing appropriate notice to the infringer.

3. Actual notice of infringement

Lambeth contends that it provided adequate notice, but submits no evidence that it communicated notice to Seagate or Western Digital in an appropriate form.

According to Lambeth, Seagate and Western Digital had actual notice of their alleged infringement via an indemnification request sent by Toshiba, a defendant in a third patent infringement lawsuit filed by Lambeth that was parallel to the instant suits until it settled prior to claim construction. (Lambeth's Response to Seagate's MSJ at 29; Lambeth's Response to Western Digital's MSJ at 32-33.)

As a matter of law, this method of notice is insufficient. Amsted Indus., 24 F.3d at 187 ("notice must be an affirmative act on the part of the patentee which informs the defendant of his infringement"); see Gart v. Logitech, Inc., 254 F.3d 1334, 1346 (Fed. Cir. 2001) ("as long as the communication from the patentee provides sufficient specificity regarding its belief that the recipient may be an infringer, the statutory requirement of actual notice is met" (emphasis *37 added)). To the extent that Lambeth relies on

Lucent Technologies, Inc. v. Gateway, Inc., 580 F. Supp. 2d 1016, 1059 (S.D. Cal. 2008), aff'd in part and vacated in part on other grounds, 580 F.3d 1301 (Fed. Cir. 2009), for any principle to the contrary, that reliance is misplaced. The district court in Lucent Technologies, Inc. addressed whether, following an in-person meeting between the patentee and the alleged infringer at which the patentee communicated directly with the accused infringer, an indemnification letter sent from the alleged infringer to a third party could be taken as evidence of the alleged infringer's actual notice at the prior meeting. The present situation is entirely distinct, with no form of pre-suit direct communication from the patentee to the alleged infringer regarding infringement.²⁴ As Lambeth presents no evidence that it provided actual notice of infringement to Seagate or Western Digital, Seagate and Western Digital are entitled to summary judgment on lack of pre-suit damages from the period commencing as soon as Microsoft's unmarked, licensed products practicing the invention were offered for sale or imported into the United States. See 35 U.S.C. § 287(a).²⁵ *38

²⁴ Lambeth also cites Wokas v. Dresser Industries, Inc., 978 F. Supp. 839, 844-45 (N.D. Ind. 1997), which deals with an ambiguous communication from the patentee to the alleged infringer and is thus inapplicable for the same reasons.

²⁵ Lambeth argues that there is no requirement to mark when the patented invention is merely a minor component of a larger device, particularly when the seller has myriad products, each of which may be covered by many licensed patents, such that determining which products need marking for which patents is impractical. (Lambeth's Response to Western Digital's MSJ 32 n.18.) The Court sees no reason to adopt such an exception. No impracticality exception exists in the text of 35 U.S.C. § 287, Lambeth has cited no cases identifying such an exception, and an

exception of that nature would provide carte blanche to sellers wishing to evade marking requirements, defeating the public notice functions of marking.

V. Lambeth's Motions for Partial Summary Judgment against Seagate and Western Digital

Lambeth's motions for summary judgment against Seagate and Western Digital cover a wide range of affirmative defenses asserted against Lambeth. The Court will address each category of affirmative defense and will conclude, for the most part, that Lambeth's motions must be denied. However, the Court will grant Lambeth's summary judgment motion against Seagate, in part, as to the affirmative defenses of implied license, equitable estoppel, waiver, and unclean hands, and will grant Lambeth's summary judgment motion against Western Digital, in part, as to implied license and unclean hands.

A. Whether Lambeth is entitled to summary judgment on withdrawn affirmative defenses

As an initial matter, Lambeth moves for partial summary judgment on several of Seagate and Western Digital's defenses that have been withdrawn.²⁶ Seagate and Western Digital respond that it would be improper for the Court to render judgment on their withdrawn, and therefore moot, defenses. The Court agrees with Defendants, and will deny Lambeth's motion for summary judgment on any withdrawn affirmative defenses. See Alcon Research Ltd. v. Barr Labs., Inc., 745 F.3d 1180, 1193 (Fed. Cir. 2014) ("[t]he scope of any judgment should conform to the issues that were actually litigated"); SanDisk Corp. v. Kingston Tech. Co., 695 F.3d 1348, 1353 (Fed. Cir. 2012) (withdrawn claims, regardless of the mechanism used to withdraw them, are no longer at issue in the litigation). *39

²⁶ As to Seagate, these affirmative defenses are: invalidity based on anticipation or obviousness under 35 U.S.C. §§ 102 or 103; invalidity under 35 U.S.C. § 116 (omission of joint inventors); and laches.

(Lambeth's Brief in Support of Motion for Summary Judgment, "Lambeth's MSJ Brief Against Seagate," at 3, Civil Action No. 16-538, Doc. 172.) As to Western Digital, these affirmative defenses are: invalidity under 35 U.S.C. § 116; uncorrectability of inventorship; lack of standing; and laches. (Lambeth's MSJ Brief Against Western Digital at 23.) Summary judgment will be denied as to each of those defenses.

B. Whether Lambeth is entitled to summary judgment on issues concerning ownership of the '988 patent

Several prongs of Lambeth's motions rely on its contention that it owns the '988 patent or that Seagate and Western Digital were not licensed or otherwise authorized to use the '988 patent. Specifically, Lambeth argues that it is entitled to summary judgment on Seagate's affirmative defenses of standing, express license, implied license, equitable estoppel, waiver and release, and on Western Digital's affirmative defense of express license and implied license (collectively, the "ownership-related affirmative defenses").

Seagate and Western Digital dispute ownership, arguing that Carnegie Mellon University ("CMU") owns the '988 patent under the agreements and policies governing Dr. David N. Lambeth's ("Dr. Lambeth's") relationship to CMU and its Data Storage Systems Center ("DSSC"). They also argue that, pursuant to those same agreements and policies, they are licensed to use the '988 patent because they are external sponsors of the DSSC with agreements granting them licenses to DSSC inventions. Seagate further argues, as alternate bases for its license or release concerning the '988 patent, that its agreements with Microsoft, Samsung, Cisco and Oracle grant it rights to use the '988 patent via those entities' agreements with Acacia, which provide authorization to "Authorized Third Parties."

On Lambeth's motions for summary judgment, the question is whether Defendants' evidence, taken in a light most favorable to Defendants, is sufficient

to convince a factfinder of at least one theory supporting each ownership-related affirmative defense. The Court will take each ownership-related affirmative defense in turn.

1. Standing and express license

As to standing and express license, if Defendants have adduced sufficient evidence that CMU owned the patent, then Lambeth's motions for
40 summary judgment must be denied. Under *40 present circumstances, Defendants have provided evidence that the '988 belongs to CMU and is expressly licensed to Seagate and Western Digital through CMU's ownership. Accordingly, Lambeth's motions will be denied as to standing and express license.

Defendants' evidence, taken in a light most
41 favorable to Defendants and drawing all reasonable inferences in Defendants' favor, shows the following. Dr. Lambeth agreed to be "[s]ubject to . . . the 1985 Intellectual Property Policy" (the "CMU IP Policy") in his August 25, 1989 Faculty Appointment with CMU. (Seagate's Counter-SOF Exhibit 44; Western Digital's Counter-SOF Exhibit 145.) The CMU IP Policy states in relevant part that "intellectual property created at the university" is owned by external sponsors if an external sponsorship agreement with CMU says so, specifically using the following language:

In order of precedence, ownership of the intellectual property shall be as follows:

3.1 Externally Sponsored Work

Ownership Provisions: Intellectual property created as a result of work conducted under an agreement between an external sponsor and the university that specifies the ownership of such intellectual property shall be owned as specified in said agreement.

(Seagate's Counter-SOF Exhibit 43 at § 3; Western Digital's Counter-SOF Exhibit 146 at § 3.) Seagate and Western Digital were external sponsors of the

DSSC at CMU at the relevant times, with applicable corporate sponsorship agreements that provide (in mutually identical language) that:

All inventions, whether or not patentable, conceived or first reduced to practice in the course of or under this Agreement by any Center personnel while engaged in the activities of the Center (hereinafter referred to as the "Inventions") shall become the property of the University. The University shall grant to the Corporation [that is, to Seagate or IBM, with Western Digital as the successor in interest to IBM] and all other Associates a worldwide, irrevocable, royalty-free license to make, have made, use, or sell the product of the Inventions.

*41 (Seagate's Counter-SOF Exhibit 40 at § 2.b; Western Digital's Counter SOF Exhibit 135 at § 2.b; *id.* at § 11 ("This Agreement shall bind and inure to the benefit of the Corporation [IBM] and the University, and their successors and assigns.")) Under this language, all inventions conceived or first reduced to practice by Center personnel engaged in Center activities, during the course of the sponsorship agreement, belong to CMU and must be licensed to the applicable external sponsor. The question is whether Defendants have evidence to show that Dr. Lambeth was "Center personnel" "engaged in the activities of the Center" at the time of the invention underlying the '988 patent. They do.

Dr. Lambeth was the Associate Director of the DSSC for ten years until his resignation from the DSSC on August 31, 1999. (Seagate's Counter-SOF Exhibits 38, 45; Western Digital's Counter SOF Exhibit 144.) He took a leave of absence from his faculty position at CMU from September 1999 through August 2001. (Seagate's Response to Lambeth's SOF at ¶ 90; Western Digital's Response to Lambeth's SOF at ¶ 171.) Still, in and around April 2000, the period of invention underlying the '988 patent, Dr. Lambeth was receiving salary support for his five advisees

through the DSSC and CMU. (Seagate's Counter-SOF Exhibit 46; Western Digital's Counter SOF Exhibit 154.) In addition, throughout his leave, he continued to visit campus, use CMU equipment, and discuss topics relevant to the '988 patent—which incorporates prior work owned by the DSSG—with CMU students and staff. (Western Digital's Counter SOF Exhibits 158-160.)

As a result, there is evidence from which a jury could conclude that Dr. Lambeth was DSSG "personnel" engaged in DSSG activities at the time of his invention. Under the terms of the applicable sponsorship agreements and by virtue of Dr. Lambeth's appointment agreement, ⁴² this would mean that CMU became the owner of the '988 patent, and that Seagate and Western Digital were granted rights to the '988 patent.²⁷

²⁷ Lambeth argues that the language of the sponsorship agreements with CMU indicates a future obligation to transfer a license rather than a present assignment of the license, and that no license was ever transferred. However, the Court need not read the language of the sponsorship agreements so narrowly. See Carnegie Mellon Univ. v. Marvell Tech. Grp., LTD., 906 F. Supp. 2d 399, 410-11 (W.D. Pa. 2012) (Fischer, J.) (interpreting the same language in the CMU external sponsorship agreement with Seagate and finding that: "The language in the Agreement granting rights to Seagate and the other licensees is very broad. . . . [C]onsidering the agreement as a whole, and reading the clauses together, § 2.b. can only be read to mean that the licensees *were granted* the unrestrained right to sell products embodying the inventions created at the DSSC." (emphasis added)). In particular, "shall become the property of the University" is a clear grant to CMU, and "[CMU] shall grant to the Corporation," in the context of the agreement specifying how rights are to be apportioned among the relevant entities, both indicate a present assignment of rights. Not one of Lambeth's

cases addresses such clear contractual language. E.g., Bd. of Trs. of Leland Stanford Jr. Univ. v. Roche Molecular Sys., 563 U.S. 776, 786 (2011) (interpreting the Bayh-Dole Act rather than contractual language and recognizing that the Bayh-Dole Act applies "unless there is an agreement to the contrary"); Advanced Video Techs. LLC v. HTC Corp., 879 F.3d 1314, 1317-18 (Fed. Cir. 2018) (contract providing that employee "will hold in trust" her rights to her invention and then "will assign" her rights to her employer did not show immediate assignment).

Standing to sue for patent infringement requires title to the patent. Lans v. Digital Equip. Corp., 252 F.3d 1320, 1328 (Fed. Cir. 2001); Filmtec Corp. v. Allied-Signal, Inc., 939 F.2d 1568, 1571 (Fed. Cir. 1991). As Seagate and Western Digital raise a genuine dispute about ownership, Seagate's argument that Lambeth lacks standing cannot be dismissed on summary judgment.

Likewise, Seagate and Western Digital's defenses of express license are valid to the extent Defendants were expressly licensed to use the '988 patent via their agreements with CMU, and those defenses cannot be dismissed because Defendants' evidence is sufficient to show that they were so licensed.²⁸ ⁴³

²⁸ Seagate also presents direct evidence of its agreements with Microsoft, Samsung, Cisco and Oracle to support alternate express license arguments—the Court will address the parties' arguments concerning those agreements below in its discussion of release as an affirmative defense.

2. Implied license, equitable estoppel and waiver

Nonetheless, three of the ownership-related affirmative defenses fail because Defendants have offered no evidence to establish that they chose to produce the accused devices in reliance on Dr. Lambeth's conduct or representations to them. As reliance is a required element of implied license

(under theories applicable to the instant facts), equitable estoppel and waiver, those defenses will be dismissed.

As to implied license, "[a]ny language used by the owner of the patent, or any conduct on his part exhibited to another from which that other may properly infer that the owner consents to his use of the patent in making or using it, or selling it, *upon which the other acts*, constitutes a license and a defense to an action in tort." De Forest Radio Tel. Co. v. United States, 273 U.S. 236, 241 (1927) (emphasis added). The Court of Appeals for the Federal Circuit has established multiple paths leading to an implied license under the Supreme Court's language in De Forest Radio Telephone Co. The only path relevant to the instant facts is the one comparable to equitable estoppel, in which: (1) the patentee, through statements or conduct, affirmatively grants the infringer permission to make, use or sell the invention; (2) the alleged infringer is aware of that permission; and (3) the alleged infringer acts in reliance on that permission. See Wang Labs., Inc. v. Mitsubishi Elecs. Am., Inc., 103 F.3d 1571, 1581 (Fed. Cir. 1997) ("The primary difference between the estoppel analysis in implied license cases and the analysis in equitable estoppel cases is that implied license looks for an affirmative grant of consent or permission to make, use, or sell: i.e., a license."); Bandag, Inc. v. Al Bolster's Tire Stores, Inc., 750 F.2d 903, 925 (Fed. Cir. 1984) (infringer must "have been aware" of the actions constituting permission for implied license to apply); Stickle v. Heublein, Inc., 716 F.2d 1550, 1559 (Fed. Cir. 1983) *44 (implied license requires that "[o]ne must have been led to take action by the conduct of the other party").

As to equitable estoppel itself, that defense requires that: "(1) the patentee engages in misleading conduct that leads the accused infringer to reasonably infer that the patentee does not intend to assert its patent against the accused infringer; (2) the accused infringer relies on that conduct; and (3) as a result of that reliance, the

accused infringer would be materially prejudiced if the patentee is allowed to proceed with its infringement action." John Bean Techs. Corp. v. Morris & Assocs., 887 F.3d 1322, 1327 (Fed. Cir. 2018); see also A.C. Aukerman Co. v. R.L. Chaides Constr. Co., 960 F.2d 1020, 1041 (Fed. Cir. 1992).

Similarly, waiver requires that the patentee's "conduct was so inconsistent with an intent to enforce its rights *as to induce* a reasonable belief that such right has been relinquished." Hynix Semiconductor v. Rambus, 645 F.3d 1336, 1348 (Fed. Cir. 2011) (emphasis added). Saying that a patentee's conduct induced an alleged infringer by demonstrating the patentee's lack of intent to enforce the patent is, for relevant purposes, another way of saying that the patentee's conduct caused the alleged infringer to rely on the patentee's effective representation that infringement would not be challenged. In other words, reliance is an essential component of waiver just as it is an essential component of implied license and equitable estoppel.

Simply put, Seagate and Western Digital cite no evidence that they relied on Dr. Lambeth's actions when they chose to produce or continue producing the accused devices, or that they relied on any particular communication or lack thereof from Dr. Lambeth.

Seagate responds to Lambeth's arguments on equitable estoppel and waiver by stating that "when Seagate launched hard disk drives ('HDDs') in 2006 with new write heads it had independently developed, there was no reason for Seagate to concern itself with any [intellectual *45 property] (including the '988 patent) invented by Seagate's sponsored researcher." (Seagate's Response to Lambeth's MSJ at 12.) This is a far cry from claiming reliance on "Seagate's sponsored researcher." Yet, immediately following that sentence, Seagate claims that "Seagate's reliance was only reinforced by the passage of time and Dr. Lambeth's silence." (Id.)²⁹

29 Seagate's response concerning implied license cites no evidence bearing on reliance. (Seagate's Response to Lambeth's MSJ at 13-15.)

There is a missing piece in this puzzle: reliance on what? Turning to the portion of Seagate's Counter-SOF cited in its brief, this remains a mystery. (See Seagate's Counter SOF at ¶¶ 95-100.)³⁰ As a result, Seagate's affirmative defenses of implied license, equitable estoppel and waiver must be dismissed at this stage.

30 Paragraphs 95 and 96 concern communications with entities other than Dr. Lambeth regarding the DSSC, which are not relevant to the question of reliance on Dr. Lambeth's statements or actions. Paragraph 97 shows that Dr. Lambeth believed Seagate was infringing "in the 2009/2010 time frame." Paragraph 98 shows that Dr. Lambeth met with a Seagate representative on May 8, 2009 at "the InterMag 2009 conference," and that he discussed Seagate's products but did not mention either an infringement action or the '988 patent. Paragraphs 99 and 100 indicate Lambeth's filing of the instant suit on April 29, 2016 without prior notice of infringement to Seagate. None of these facts, individually or collectively, is evidence from which a factfinder could infer reliance on Dr. Lambeth's actions, communications or silence.

Western Digital responds to Lambeth's argument against implied license by stating that Western Digital relied on the DSSC policies that were circulated to sponsors and faculty. (Western Digital's Response to Lambeth's MSJ at 20-21.) There is no contention, however, that Dr. Lambeth supplied those policies to Western Digital or otherwise communicated anything to Western Digital that could have engendered reliance. As a result, the Court will grant Lambeth's summary judgment motion against Western Digital, in part, as to implied license.

3. Release

Lambeth argues that Seagate's contracts with entities that obtained rights via a prior owner of the '988 patent (Acacia) fail to provide Seagate with release from liability, or its ^{*46} effective equivalent. The Court will examine Seagate's evidence to determine its sufficiency to show release.

As to Microsoft, the Court has already discussed the Microsoft Agreement with Acacia, and Seagate's evidence bearing on Microsoft's license to the '988 patent. The Court concluded that the evidence is sufficient to show that Microsoft had a license to the '988 patent. In addition to the Microsoft Agreement, Seagate presents evidence of Acacia's agreements with Samsung (Seagate's Counter-SOF Exhibit 18, "Samsung Agreement"), Cisco (Seagate's Counter-SOF Exhibit 25, "Cisco Agreement"), and Oracle (Seagate's Counter-SOF Exhibit 28, "Oracle Agreement"). Each of those agreements grants Acacia's counterparty a license, which includes the right for the counterparty to authorize certain third parties (such as suppliers), via a license or release, to make products under the license. (E.g., Microsoft Agreement at §§ A2.5 ("Rights of Authorized Third Parties"), A3.6 (release as to authorized third parties); Samsung Agreement at § A2.5 ("Rights of Authorized Third Parties"); Cisco Agreement at §§ 2.3 (covenant not to sue Cisco's authorized third parties), 3.2 (release as to authorized third parties); Oracle Agreement at §§ A2.5 ("Rights of Authorized Third Parties"), A3.6 (release as to authorized third parties).)

Seagate presents evidence that it supplied HDDs to Microsoft, Samsung,³¹ Cisco, and Oracle and that it satisfied the respective contractual requirements under each agreement for authorized third party status at the relevant times. (See generally Seagate's Counter-SOF at ¶¶ 105-133.) As a result, Seagate presents evidence that it was

authorized, either through a release or an effectively equivalent mechanism, to produce devices practicing the '988 patent. *47

³¹ Seagate also acquired Samsung's HDD business in December 2011. (Seagate's Counter-SOF at ¶ 117.)

Lambeth raises several arguments to contest Seagate's authorization via each contract. Those arguments blend contested contract interpretations with disputes about factual issues, such as, for example, about whether licensing options in the relevant agreements were exercised, whether Seagate's conduct was sufficient for Seagate to qualify under the authorized third party definitions, and whether the transfer of rights when Seagate acquired Samsung's HDD business encompassed the acquisition of releases under the applicable contract language. As resolving these disputes would require resolving disputed questions of fact, and as Seagate's evidence is sufficient to meet its burden on summary judgment, the Court will deny Lambeth's motion as to Seagate's affirmative defense of release.³²

³² Lambeth requests partial summary judgment against Seagate's defense of release stemming from Seagate's agreement with SK Hynix, but Seagate concedes that it made no sales to SK Hynix from 2010 to 2017, (Seagate's Response to Lambeth's MSJ at 18 n.8), rendering that portion of Lambeth's motion moot. Lambeth also requests partial summary judgment against Seagate's defenses of release, patent exhaustion, and double recovery stemming from a settlement agreement between Lambeth and TDK/Toshiba. Concerning the agreement with TDK/Toshiba, Lambeth disputes only the sufficiency of Seagate's evidence as to the quantity of subject devices sold in the United States. Seagate has, however, presented evidence that it sold subject devices in the United States, (Seagate's Counter SOF at ¶ 135), and the

determination of quantity, for purposes of calculating damages, is not appropriate for resolution on summary judgment.

C. Whether Lambeth is entitled to summary judgment on unclean hands

Lambeth argues that Seagate and Western Digital have failed to provide any evidence to support a defense of unclean hands, requiring summary judgment against that defense. Lambeth also argues that Seagate has refused to provide a [Federal Rule of Civil Procedure 30\(b\)\(6\)](#) witness on the topic of unclean hands, precluding that defense.

Seagate and Western Digital present distinct theories. Seagate argues that there is evidence that Lambeth licensed the invention to Seagate and then sued to extract further payment from Seagate. *Cf., e.g., Sun Microsystems, Inc. v. Versata Enter., Inc.*, [630 F. Supp. 2d 395, 410](#) *48 (D. Del. 2009) ("If indeed Sun has sought the Court's relief for infringement . . . after it granted Versata a license . . . , then Sun may be guilty of conduct involving at least bad faith, directly related to its patent infringement claims, injurious to Versata, and affecting the balance of the equities between the parties [thus satisfying the elements of unclean hands]."). However, Seagate's response cites no evidence in the record to support the notion that Lambeth deliberately licensed the patent to Seagate, or any other action on the part of Lambeth that could constitute bad faith when paired with this lawsuit. As a result, Seagate has failed to carry its burden on summary judgment to offer evidence of unclean hands.

Western Digital argues that there is evidence that Dr. Lambeth deliberately failed to disclose material information to the Patent and Trademark Office ("PTO") during the prosecution of his patent, citing [1st Media, LLC v. Electronic Arts, Inc.](#), [694 F.3d 1367, 1372](#) (Fed. Cir. 2012), which discusses the elements of an inequitable conduct defense. While that may be a defense supported by some evidence in the record, Western Digital's

argument conflates the defense of inequitable conduct with the separate defense of unclean hands. Western Digital did not plead inequitable conduct in its Answer (Civil Action No. 16-541, Doc. 48), and cannot now—after discovery has concluded—assert a surprise affirmative defense without leave. See Fed. R. Civ. P. 8(c)(1) ("In responding to a pleading, a party must affirmatively state any avoidance or affirmative defense."); Fed. R. Civ. P. 9(b) ("In alleging fraud or mistake, a party must state with particularity the circumstances constituting fraud or mistake."); cf. Exergen Corp. v. Wal-Mart Stores, Inc., 575 F.3d 1312, 1326-27 (Fed. Cir. 2009) (affirming denial of motion for leave to add inequitable conduct as an affirmative defense because inequitable conduct must be pled with particularity under Federal Rule of Civil Procedure 9(b), and the proposed pleading was deficient). As a result, the Court also will grant Lambeth's motion for summary judgment against Western Digital's unclean hands defense.

*D. Whether Lambeth is entitled to summary judgment on Western Digital's invalidity defenses of anticipation and obviousness*³³

³³ Western Digital has withdrawn its reliance on the Siemens GMR sensor as a prior art reference in this action, rendering Section III.B of Lambeth's motion (concerning invalidity based on that reference) moot. (Western Digital's Response to Lambeth's MSJ at 2.) For the reasons stated above, the Court will deny Lambeth's summary judgment motion as to affirmative defenses that have been withdrawn and are therefore moot.

The Court will address the appropriate legal standards for gauging the invalidity defenses of anticipation and obviousness, and then determine whether Western Digital has adduced sufficient evidence for a jury to conclude that the patent is invalid under either theory by clear and convincing evidence. Eli Lilly & Co. v. Barr Labs., Inc., 251 F.3d 955, 962 (Fed. Cir. 2001) ("a

moving party seeking to have a patent held not invalid at summary judgment must show that the nonmoving party . . . failed to produce clear and convincing evidence on an essential element of a[n invalidity] defense"). The Court will conclude that Lambeth's motion must be denied as to Western Digital's invalidity defenses.

1. Legal standards

Under the applicable version of 35 U.S.C. § 102,³⁴ a patent is invalid if the claimed invention is anticipated by a prior invention. Net MoneyIN, Inc. v. VeriSign, Inc., 545 F.3d 1359, 1369 (Fed. Cir. 2008). Specifically, a patent is invalid if "the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this *50 country, more than one year prior to the date of application for patent in the United States." 35 U.S.C. § 102(b) (2006).

³⁴ The statute has been amended, Leahy-Smith America Invents Act ("AIA"), 125 Stat. 284, 287 (2011), but the claims have an effective filing date in 2001, before the March 16, 2013 trigger date for the amended statute. See AIA, 125 Stat. at 293. The Court's references throughout its analysis refer to the pre-AIA statute. -----

To prove the defense of anticipation, a defendant "must show that the four corners of a single, prior art document describe every element of the claimed invention." Net MoneyIN, Inc., 545 F.3d at 1369 (internal citation and quotation marks omitted). The prior art's description of each claim limitation may be express, but a defendant may also prove anticipation by showing that each limitation "is necessarily present, or inherent, in the single anticipating reference." Schering Corp. v. Geneva Pharms., Inc., 339 F.3d 1373, 1377 (Fed. Cir. 2003). Anticipation is a question of fact. Kennametal, Inc. v. Ingersoll Cutting Tool Co., 780 F.3d 1376, 1381 (Fed. Cir. 2015).

A patent may also be invalid if the claimed invention would have been obvious to a POSITA based on the prior art, pursuant to [35 U.S.C. § 103](#). The relevant inquiry is as follows:

Under [§ 103](#), [1] the scope and content of the prior art are to be determined; [2] differences between the prior art and the claims at issue are to be ascertained; and [3] the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. [4] Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

Graham v. John Deere Co., [383 U.S. 1, 17-18](#) (1966). "[I]t is error to reach a conclusion of obviousness until all those factors are considered." Apple Inc. v. Samsung Elecs. Co., Ltd., [839 F.3d 1034, 1048](#) (Fed. Cir. 2016). As this test reveals, "[o]bviousness is a question of law based on underlying facts." Id. at 1047.

2. Anticipation and obviousness

Lambeth argues that Western Digital has failed to provide evidence that any one of the proffered prior art references meets, or suggests to a POSITA, the claim limitation of uniaxiality. *51 Lambeth reasons that the Court's claim construction defines uniaxial to mean "[h]aving an anisotropy energy density function with only a single maximum and a single minimum as the magnetization angle is rotated by 180 degrees from a physical axis" and Western Digital's expert, Dr. Mark Kryder ("Dr. Kryder"), failed to calculate or otherwise show the energy density function for the prior art references. (Lambeth's MSJ Brief Against Western Digital at 4-7.)

Western Digital responds that, to the contrary, Dr. Kryder explained how each asserted prior art reference disclosed each of the claim limitations, including the limitation of uniaxiality. (Western Digital's Response to Lambeth's MSJ Brief at 9-13.) Ticking through five of the asserted prior art documents, Western Digital traces the portions of its expert testimony that clarify how those documents reveal uniaxiality in one way or another. For example, as to the year 2000 "Sun Articles," Dr. Kryder opined that "Sun discloses a uniaxial structure that will have an anisotropy energy density function with only a single maximum and a single minimum as the magnetization angle is rotated by 180 degrees from a physical axis" because "Sun performed hysteresis loops and found 'excellent in-plane uniaxial anisotropy.'" (Western Digital's Counter-SOF Exhibit 114, "Dr. Kryder's April 28, 2018 Opening Expert Report," at ¶ 602 (quoting Sun II at Fig. 5, F9.2.6; Sun I at Fig. 3(b); Sun III at Fig. 5(b)).)

There is no need for the Court to proceed further through Western Digital's examples. Western Digital has provided expert testimony explaining how a prior art reference discloses the disputed claim limitation of uniaxiality, or at least would suggest that limitation to a POSITA. If a jury were to credit Dr. Kryder's testimony as to the Sun Articles, it could reasonably conclude that the Sun Articles describe a uniaxial structure—or at least suggest such a structure—by clear and convincing evidence, and that the patent is invalid on either anticipation or obviousness grounds. The Court also notes that the parties' respective discussions of these issues do not *52 address all of the Graham factors that the Court would have to consider before rendering judgment on obviousness—however, it is clear from the parties' briefs and the evidence discussed above that each of those factors rests on disputed facts, including the scope of the prior art in comparison to the

present claims, the qualifications of a POSITA, and the circumstances surrounding the origins of the '988 patent.

As a result, Western Digital's affirmative defenses of invalidity based on anticipation and obviousness survive summary judgment.

CONCLUSION

To summarize the Court's analysis above, all four motions for summary judgment will be granted in part and denied in part. Seagate and Western Digital's motions for summary judgment will be granted as to lack of pre-suit damages accruing once Microsoft began publicly utilizing its license without marking, but denied as to all remaining grounds. Lambeth's motions for summary judgment against Seagate and Western Digital will be granted so as to dismiss the affirmative defenses of implied license, equitable estoppel, waiver, and unclean hands, but denied as to all remaining grounds.

Accordingly, for the reasons above, IT IS ORDERED that:

Seagate's Motion for Summary Judgment (Civil Action No. 16-538, Doc. 150) is GRANTED in part as to lack of pre-suit damages accruing after Microsoft began selling products under its license to the '988 patent, and DENIED in part as to inadequate written description and non-infringement.

Lambeth's Motion for Summary Judgment against Seagate (Civil Action No. 16-538, Doc. 157) is GRANTED in part as to implied license, equitable estoppel, waiver, and unclean hands, and DENIED in part as to all remaining grounds. *53

Western Digital's Motion for Summary Judgment (Civil Action No. 16-541, Doc. 158) is GRANTED in part as to lack of pre-suit damages accruing after Microsoft began selling products under its license to the '988 patent, and DENIED in part as to lack of enablement and non-infringement.

Lambeth's Motion for Summary Judgment against Western Digital (Civil Action No. 16-541, Doc. 159) is GRANTED in part as to implied license and unclean hands, and DENIED in part as to all remaining grounds.

The parties' requests for oral argument are DENIED pursuant to the undersigned's Practices and Procedures, Section II.B.

IT IS SO ORDERED. June 24, 2019

s/Cathy Bissoon

Cathy Bissoon

United States District Judge cc (via ECF email notification): All Counsel of Record
