IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

NOMOS CORPORATION,	:	
	:	
Plaintiff,	:	
	:	
v.	:	Civil Action No. 98-788-JJF
	:	
BRAINLAB, INC. and BRAINLAB USA, INC.,	:	
	:	
Defendants.	:	

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MEMORANDUM OPINION

March 28, 2002

Wilmington, Delaware

Farnan, District Judge.

This action was brought by Plaintiff, NOMOS Corporation ("NOMOS") against Defendants BrainLAB, Inc. and BrainLAB USA, Inc. (collectively "BrainLAB") alleging infringement of United States Patent No. 5,411,026 (the "'026 Patent"). The parties briefed their respective positions on claim construction, and the Court conducted a Markman hearing on the disputed terms in the '026 Patent. This Memorandum Opinion presents the Court's construction of the disputed terms in the '026 Patent.

BACKGROUND

I. Introduction to the Technology Generally

The '026 Patent describes a method and apparatus for verifying the position of a cancerous lesion on a patient's body which is to be treated by a radiation therapy device operating in accordance with a radiation therapy plan. ('026 Patent, col. 1, l. 7-10). A frequent problem in treating patients with these lesions is identifying where the lesion is located at the time the radiation therapy treatment is occurring. Conventionally, the location of the lesion is determined with a CT scan of the patient. From this CT scan, the surgeon develops a radiation treatment plan to highlight the areas he or she wants treated with radiation. As a result of the positioning of the patient on the treatment table and the lapse of time between the CT scan and the radiation therapy treatment, the location of the lesion may

change. In the past, radiation therapy plans targeted a larger area of the patient than was necessary to account for the possible change in location of the lesion. By targeting a larger area than the lesion actually occupied, however, a patient's healthy tissue and organs could be exposed to damaging radiation. To avoid this problem, physicians would often decrease the dose of radiation administered to the patient. However, the decreased dose of radiation was often insufficient to properly treat the target area. The technology of the '026 Patent is meant to avoid these problems with conventional radiation therapy treatment, and provide a means by which the location of the lesion to be treated by the radiation therapy device can be verified within the body of the patient for use in a radiation treatment plan for the patient.

II. The '026 Patent

The '026 Patent discloses a method and apparatus for verifying the position of a lesion in a patient's body by comparing the location of the lesion as depicted in a CT scan with the position of the lesion as depicted in an ultrasound images. ('026 Patent, Abstract). The invention includes the steps of (1) disposing the patient on a treatment table of a radiation therapy device, (2) disposing on the treatment table a means for generating an ultrasound image, (3) generating at least one two-dimensional ultrasound image of the lesion in the

patient's body, (4) outlining the outer surface of the lesion in the ultrasound image and (5) comparing the outlines of the lesion in the ultrasound image to the outline of the lesion generated by one of the diagnostic images. ('026 Patent, col. 2, l. 45-62).

The specification of the '026 Patent discloses a system used with a radiation therapy device such as a linear accelerator that delivers precise amounts of radiation to the lesion. According to the specification the claimed invention uses an ultrasound probe mounted to the treatment table so that it is maintained perpendicular to the treatment table. ('026 Patent, col. 1, ll. 17-22). The ultrasound probe is also located above the lesion to be treated, and is moved downward to contact the patient. ('026 Patent, col. 1, ll. 17-22 & Fig. 5).

The ultrasound probe then may be rotated or moved along the long axis of the treatment table to generate a series of ultrasound images of the lesion. ('026 Patent, col. 7, ll. 27-31). These ultrasound images need to be compared with the diagnostic images taken by the CT scan in order to determine the precise location of the lesion. To effectuate this comparison, the position of the ultrasound probe must be determined for each ultrasound image generated. The specification of the '026 Patent describes the use of a position sensing system consisting of light emitting diodes (LEDs) or ultrasonic emitters mounted to the ultrasound probe and a sensor to identify the location of the

ultrasound probe with respect to the linear accelerator so that the images generated by the ultrasound probe can be accurately compared to the original images generated by the CT scan of the patient and a more precise treatment area can be determined. ('026 Patent, col. 8, ll. 1-38).

DISCUSSION

I. The Legal Principles of Claim Construction

Claim construction is a question of law. Markman v. Westview Instruments, Inc., 52 F.3d 967, 977-78 (Fed. Cir. 1995), aff'd, 517 U.S. 370, 388-90 (1996). When construing the claims of a patent, a court considers the literal language of the claim, the patent specification and the prosecution history. Markman, 52 F.3d at 979. A court may consider extrinsic evidence, including expert and inventor testimony, dictionaries, and learned treatises, in order to assist it in construing the true meaning of the language used in the patent. Id. at 979-80 (citations omitted). A court should interpret the language in a claim by applying the ordinary and accustomed meaning of the words in the claim. Envirotech Corp. v. Al George, Inc., 730 F.2d 753, 759 (Fed. Cir. 1984). However, if the patent inventor clearly supplies a different meaning, the claim should be interpreted accordingly. Markman, 52 F.3d at 980 (noting that patentee is free to be his own lexicographer, but emphasizing that any special definitions given to words must be clearly set

forth in patent). If possible, claims should be construed to uphold validity. In re Yamamoto, 740 F.2d 1569, 1571 & n.* (Fed. Cir. 1984) (citations omitted).

II. The Meaning Of The Disputed Terms of the '026 Patent

NOMOS asserts that BrainLAB's ExacTrac device infringes Claims 1, 5, 6, 7, 8, 14 and 15 of the '026 Patent. Claim 5 of the '026 Patent is dependant on Claim 1 of the '026 Patent. Claims 7, 8, 14 and 15 of the '026 Patent are dependent on Claim 6 of the '026 Patent. The parties have focused their arguments on Claims 1 and 6 of the '026 Patent, and therefore, the Court will likewise focus its discussion on Claims 1 and 6 of the '026 Patent.[1]

A. The Disputed Terms In Claim 1 Of The '026 Patent

In full, Claim 1 of the '026 Patent provides:

> A lesion position verification system for use in a radiation therapy plan, for use with a radiation therapy device, for treating a lesion within a body of a patient, comprising:
>
> (a) a means for generating at least one ultrasound image of the lesion in the patient's body; and
>
> (b) a means for indicating the position, with respect to

[1] In its claim construction brief, NOMOS also seeks construction of dependent Claim 5 and dependent Claims 7, 8, 14 and 15. BrainLAB does not offer any argument regarding these claims. However, because Claim 5 is dependent on Claim 1 and Claims 7,8,14 and 15 are dependent on Claim 6, the Court concludes that these claims should be construed in accordance with the construction of the independent claims upon which they are based, i.e. Claims 1 and 6, as set forth in this Memorandum Opinion.

> the radiation therapy device, of the means for generating the at least one ultrasound image when the ultrasound image is generated, whereby the position of the lesion in the ultrasound image can be compared with a position of the lesion in the radiation therapy plan.

('026 Patent, col. 12, l. 7-19).

The parties have raised for construction the means-plus-function elements of paragraphs (a) and (b).[2] Accordingly, the Court will turn to the construction of the disputed terms at issue.

1. **"a means for generating at least one ultrasound image . . ."**

Although the parties' dispute the meaning of this phrase, the parties agree that paragraph (a) is a "means-plus-function" limitation, the interpretation of which is governed by 35 U.S.C. § 112, ¶ 6. In pertinent part, Section 112, ¶ 6 provides:

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

Although use of means-plus-function language in a claim is permissible, a means clause does not encompass every means for performing the specified function. The Laitram Corporation v.

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[2] Initially, the parties also raised the preamble and the "whereby clause" at the end of Claim 1 for construction. However, at the Markman hearing, BrainLAB stated that it agreed with the construction offered by NOMOS for these clauses. (D.I. 84 at 30). Accordingly, the Court will not address the preamble and the whereby clause, because they are no longer disputed.

Rexnord, 939 F.2d 1533, 1535 (Fed. Cir. 1991). Rather, the limitation must be construed "to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." Odetics, Inc. v. Storage Technology Corp., 1999 WL 455530, *4 (Fed. Cir. July 6, 1999). Accordingly, to construe this phrase the Court is required to identify the structure in the '026 Patent which corresponds to the "means for generating at least one ultrasound image" and determine the specific function of the "means for generating at least one ultrasound image." Lockheed Martin Corp. v. Space Systems/Loral, Inc., 2001 WL 436028 (Fed. Cir. Apr. 30, 2001).

NOMOS contends that the function which is performed by the means described in paragraph (a) is that of "generating at least one ultrasound image of the lesion in the patient's body." (D.I. 80 at 8). NOMOS further contends that the structure corresponding to this means is an ultrasound probe.

BrainLAB apparently agrees with NOMOS that the function of paragraph (a) is generating at least one ultrasound image of the lesion in the patient's body. (D.I. 82 at 12). However, BrainLAB disagrees with NOMOS's identification of the corresponding structures. According to BrainLAB the corresponding structures should be identified as

> a fixed ultrasound probe and a bracket that maintains the ultrasound probe perpendicular to the treatment table and constrains it to rotate or move along the axis of the table in order to generate an ultrasonic

image, and equivalent structures

(D.I. 82 at 12). According to BrainLAB, the specification of the '026 Patent does not disclose, for example, the use of a handheld ultrasound device or how such a device would work in the patented system. Accordingly, BrainLAB maintains that the corresponding structure is not any ultrasound probe as NOMOS contends, but a fixed ultrasound probe and a bracket that maintains the ultrasound probe in a particular position over the treatment table.

After reviewing the specification as it pertains to paragraph (a) of Claim 1 of the '026 Patent, the Court concludes that the structure corresponding to paragraph (a) is, as BrainLAB contends, a fixed ultrasound probe and a bracket or fixation device that maintains the ultrasound probe perpendicular to the treatment table and constrains it to rotate or move along the axis of the table in order to generate an ultrasonic image, and equivalent structures. Each time the ultrasound probe is mentioned in the specification, it is mentioned in connection with the bracket or fixation device and in a position which is perpendicular to the treatment table. For example, in describing the embodiment shown in Figure 5 of the '026 Patent, the specification explains:

> Ultrasound probe 422 is disposed upon, and mounted to, treatment table 404 by a bracket 423 which is preferably fixedly secured to the treatment table 404. Ultrasound probe 422, by means of any suitable

> conventional connection 423 is mounted so that it can be moved upwardly and downwardly with respect to the bracket 423, so that ultrasound probe 422 may be brought into contact with the patient's body 302, in order to generate ultrasound images 421.

('026 Patent, col. 7, ll. 17-22) (emphasis added). Similarly, in describing Figure 12 of the '026 Patent, the specification explains:

> Ultrasound probe 422 is then secured to treatment table 404 in a known geometric orientation, as by securing it to fixation device 306, which also functions in the same manner as bracket 423, previously described in connection with FIG. 5. . . .As previously described in connection with FIG. 5, ultrasound probe 422 may be disposed with its longitudinal axis being disposed perpendicular to the longitudinal axis of treatment table 404, and perpendicular to the plane 437 in which lies the upper surface 438 of treatment table 404. Ultrasound probe 422 is moved downwardly to contact the patient 302 directly over the position of the lesion 303 which the treatment planning system has determined for the location of lesion 303.

('026 Patent, col. 10 l. 48-col. 11, l. 2) (emphasis added). Moreover, the specification does not reveal any other embodiments for the ultrasound probe, and NOMOS has not persuaded the Court that such other embodiments exist. (D.I. 84 at 16-17).

NOMOS contends that the claim language of paragraph (a) should not be limited by the preferred embodiment, which is described in the specification. To this effect, NOMOS contends that the claim language is broad enough to cover alternative embodiments. (D.I. 84 at 17). In support of its position, NOMOS directs the Court to a statement by the Court of Appeals for the Federal Circuit in Electro Medical Systems v. Cooper Life

Sciences, Inc., that "claims are not to be interpreted by adding limitations appearing only in the specification." 34 F.3d 1048, 1054. However, in making this statement, the Federal Circuit was not discussing means-plus-function elements. The Federal Circuit has recognized that means-plus-function elements present a slightly different twist on claim construction. According to the Federal Circuit, "[b]y choosing means-plus-function language to recite the . . . claim element, the patentee necessarily restricted the scope of this element to the structure disclosed in the specification and its equivalents." Signtech USA, Ltd. v. Vutek, Inc., 174 F.3d 1352, 1357 (Fed. Cir. 1998).

Further, in this case, the specification does not refer solely to the ultrasound probe and bracket in the context of discussing the preferred embodiments. Rather, the summary of the invention discusses the importance of these structures in generating the ultrasound image, as well. For example, the summary of the invention explains, "Another feature of this aspect of the present invention is that the means for generating the ultrasound image may be an ultrasound probe, including a means for mounting the ultrasound probe to a radiation therapy device." ('026 Patent, col 3, ll. 39-42) (emphasis added).

NOMOS also contends that how an ultrasound probe is mounted has nothing to do with performing the function of generating an ultrasound image. In the Court's view, however, this argument is

contradicted by the language of the specification. For example, in describing Figure 12 of the '026 Patent, the specification links the mounting of the ultrasound probe and its perpendicular positioning with the generating of the ultrasound image:

> By rotating ultrasound probe 422, or alternatively by moving ultrasound probe 422 with respect to table 404, as will be hereinafter described in greater detail, the plurality of ultrasound images . . . may be generated.

('026 Patent, col. 7, ll. 27-31). Thus, in the Court's view, the specification does not support NOMOS contention that how the probe is mounted is irrelevant to generating the ultrasound image for purposes of the claimed invention. Accordingly, the Court concludes that the appropriate corresponding structures for the "means for generating at least one ultrasound image of the lesion in the patient's body" are a fixed ultrasound probe and a bracket or fixation device that maintains the ultrasound probe perpendicular to the treatment table and constrains it to rotate or move along the axis of the table in order to generate an ultrasonic image, and equivalent structures.

2. **"a means for indicating the position, with respect to the radiation therapy device, of the means for generating the at least one ultrasound image when the ultrasound image is generated . . ."**

Paragraph (b) of Claim 1 of the '026 Patent is also specified as a means-plus-function element. As such, construction of this phrase is governed by the principles set forth by the Court previously.

NOMOS contends that the function specified by this element is "indicating the position of the [ultrasound probe] with respect to the radiation therapy device when the ultrasound image is generated." (D.I. 80 at 8). NOMOS further contends that the structure disclosed in the '026 Patent for performing this function is a position sensing system aligned with the radiation therapy device. (D.I. 80 at 9).

As with the previous element, it appears to the Court that BrainLAB does not disagree with NOMOS that the function of this element is indicating the position of the ultrasound probe with respect to the radiation therapy device when the ultrasound image is generated. Rather, BrainLAB focuses its argument on the corresponding structures related to this element.[3] BrainLAB contends that the corresponding structures for this element include "active markers (LEDs or ultrasonic emitters) mounted on the ultrasound probe parallel to the long axis of the probe and a sensor for sensing signals actively emitted by the active markers with the active markers and sensors being aligned with the radiation therapy device, and equivalent structures." (D.I. 82

[3] In its claim construction brief, BrainLAB also raises for the Court's construction the phrase "with respect to the radiation therapy device" used in paragraph (b) of Claim 1 of the '026 Patent. However, it appears to the Court that NOMOS has not offered an alternative construction for this phrase. Accordingly, the Court declines, at this juncture, to construe this phrase. Should the parties subsequently conclude that this phrase requires construction, they may petition the Court by letter memoranda for further claim construction.

at 17). BrainLAB recognizes that the '026 Patent identifies the "means for indicating" as a "position sensing system 433 aligned with the radiation therapy device." ('026 Patent, col. 8, ll. 4-5). BrainLAB also recognizes that the '026 Patent expressly states that "[a]ny number of conventional position sensing systems can be used to determine the position of the ultrasound probe 422 with respect to the linear accelerator 401." (D.I. 82 at 17, quoting '026 Patent at col. 8, ll. 5-8). However, BrainLAB contends that the "means-plus-function" format of this element limits the corresponding structures to "active marker, i.e. light-emitting diodes (LEDs) or ultrasonic emitters, and a sensor, such as a camera system that 'sees' the LEDs or microphones that can 'hear' the ultrasonic emitters." (D.I. 82 at 18).

After reviewing the specification as it relates to this element of Claim 1 of the '026 Patent, the Court concludes that the corresponding structures related to the "indicating means" are, as BrainLAB contends, active markers, i.e. light emitting diodes (LEDs) or ultrasonic emitters, mounted on the ultrasound probe parallel to the long axis of the probe, and a sensor for sensing the signals actively emitted by the active markers with the active markers and sensors being aligned with the radiation therapy device, and equivalent structures. As with their previous argument regarding paragraph (a) of Claim 1 of the '026

Patent, NOMOS contends that this construction improperly limits the claim to the preferred embodiment. NOMOS acknowledges that the specification provides for only one or two preferred embodiments; however, NOMOS contends that the claim language is broader than the preferred embodiments. (D.I. 84 at 11). In support of its argument, NOMOS highlights the specification language which states that the means for indicating is a "position sensing system" and that "any number of convention position sensing systems can be used to determine the position of the ultrasound probe with respect to the linear accelerator." ('026 Patent, col. 8, ll. 4-25).

Although the specification of the '026 Patent suggests the possibility that other position sensing systems can be used, the specification does not identify these other possibilities. "A specification that merely mentions the possibility of alternative structures without specifically identifying them is not sufficient to expand the scope of the claim beyond the single example used." Faroudja Laboratories, Inc. v. Dwin Electronics, Inc., 76 F. Supp. 2d 999, 1003, 1011-1012 (N.D. Cal. 1999) (rejecting argument that general description of structure in patent superseded more specific examples provided in patent's illustrations, because specification did not provide alternative structures and disclosed particular structure as only embodiment) (citing Fonar Corp. v. General Electric Co., 107 F.3d 1543, 1551

(Fed. Cir.), cert. denied, 522 U.S. 908 (1997)); Continental Laboratory Products, Inc. v. Medax Internat'l, Inc., 1999 WL 33116499, *14 (S.D. Cal. Aug. 12, 1999) ("[W]hen the preferred embodiment is the only corresponding structure disclosed in the specification, the court will limit the means plus function element to cover the preferred embodiment and its 'equivalents thereof.'").

In Faroudja, the court construed a patent related to video signal processing apparatus. The plaintiff argued that the structure corresponding to "the means for comparing" should not be limited to the specific field comparator described in the patent's figure 3, because the text of the patent permitted the use of a field comparator generally. Faroudja, 76 F. Supp. 2d at 1012. Relying on the Federal Circuit's decision in Serrano v. Telular Corp., 111 F.3d 1578 (Fed. Cir. 1997), the plaintiff contended that the general description of the structure in the patent text should supersede the more specific examples provided in the patent's illustrations. However, the court found Serrano to be distinguishable, because the specification in Serrano disclosed alternative embodiments, while the specification at issue in Faroudja disclosed only the preferred embodiment. According to the court in Faroudja, "the Federal Circuit has emphatically stated that where a 'preferred embodiment' or 'alternative embodiment' is in fact the only embodiment

disclosed, the claim is limited to that embodiment." 76 F. Supp. 2d at 1013 (citing Signtech, 174 F.3d at 1356; Fonar, 107 F.3d at 1551; Valmont Industries, Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1042 (Fed. Cir. 1993).

The Court is persuaded by the analysis of the court in Faroudja and finds the circumstances in Faroudja to be comparable to the circumstances in this case. As in Faroudja, in this case, the preferred embodiment is the only embodiment disclosed in the patent. Although the specification suggests that other possibilities may exist for the position sensing system, these possibilities are not identified or described in any detail. Accordingly, in these circumstances, the Court concludes that it is inappropriate to construe the claim language beyond the contours of that which is described in the specification. See also Nilssen v. Motorola, Inc., 130 F. Supp. 2d 976, 978 (N.D. Ill. 2000) (recognizing that means-plus-function format is mean to "cut back" on structure that could perform claimed function and declining to identify corresponding structure as "generic inverter" because a generic inverter did not correspond with any structural details in the specification).

B. The Disputed Terms In Claim 6 Of The '026 Patent

In full, Claim 6 of the '026 Patent provides:

> A method for verifying the position of a lesion, having an outer surface, within a body of a patient for use in a radiation treatment plan which includes a plurality of diagnostic images, which each depict an outline of

the outer surface of the lesion, comprising the steps of:

(a) disposing the patient on a treatment table of a radiation therapy device;

(b) disposing on the treatment table a means for generating an ultrasound image;

(c) generating at least one two-dimensional ultrasound image of the lesion in the patient's body, with the ultrasound image generating means being disposed in a known geometric orientation for each ultrasound image generated;

(d) outlining the outer surface of the lesion in at least one of said ultrasound images; and

(e) comparing the outlines of the outer surface of the lesion of the said at least one ultrasound image with the outline of the outer surface of the lesion of at least one of the diagnostic images, whereby the position of the lesion with respect to the radiation therapy device may be verified to conform to a desired position of the lesion in the radiation treatment plan.

('026 Patent, col. 12, ll. 37-61).

The parties have raised for construction selected terms in paragraphs (b) and (c). Accordingly, the Court will turn to the construction of the disputed terms at issue.

1. **"disposing on the treatment table a means for generating an ultrasound image"**

In construing the term "disposing on," NOMOS breaks the term into its components, "disposing" and "on." NOMOS contends that these words should be construed in accordance with their normal dictionary meaning. Specifically, NOMOS contends that "disposed" should be construed to mean "arranged," and "on" should be construed to "indicate a position . . . near a specified part of

something." (D.I. 80 at 12-13). Taken together, NOMOS contends that the phrase "disposing on" should be construed to mean "arranging the position of [the patient or ultrasound probe] near the treatment table." (D.I. 80 at 13).

In response, BrainLAB contends that "disposing on the treatment table" means "arranging the 'means for generating an ultrasound image' in physical contact with and supported by the treatment table." (D.I. 82 at 22). BrainLAB agrees with NOMOS that the term "dispose" can be construed as "arrange," but BrainLAB disagrees with NOMOS insofar as the construction of the term "on" is concerned. BrainLAB contends that the term "on" is more accurately defined using the alternate definition provided by the dictionary, i.e. "in a position above, but in contact with and supported by; upon." (D.I. 82 at 24) (citing Webster's New Word Dictionary, p. 993, Prentice Hall Press (Second College Edition 1986)).

In its claim construction, NOMOS contends that "on" cannot be construed in accordance with this alternate dictionary definition. Using the preferred embodiment as an illustration, NOMOS contends:

> While the patient is in 'contact' with the treatment table (i.e. that which supports from beneath), the ultrasound probe, even in the preferred embodiment of the invention of the '026 Patent, is not in contact with the treatment table. Rather in the preferred embodiment of the '026 Patent, the ultrasound probe is attached to a bracket which is above the treatment table and the bracket is only preferably fixedly

attached to the treatment table.

(D.I. 80 at 13) (emphasis in original).

After reviewing the claim language in light of the specification, the Court concludes, as BrainLAB contends, that "disposing on the treatment table a means for generating an ultrasound image" means "arranging the means for generating an ultrasound image in physical contact with and supported by the treatment table." In the Court's view, this construction is supported by both the specification and the manner in which the phrase "disposing on" is used in the claim language. The specification of the '026 Patent uses the phrase "disposing on" to denote a physical connection or contact. For example, the specification provides:

> Ultrasound probe 422 is <u>disposed upon and mounted to</u>, treatment table 404 as by a bracket 423 which is preferably fixedly secured to treatment table 404. Ultrasound probe 422, by means of any suitable conventional connection 423, is mounted so that it can be moved upwardly and downwardly with respect to bracket 423.

('026 Patent, col. 7, ll. 14-20). Further, the drawings in the specification all depict the ultrasound probe as being in contact with or connected to the treatment table, albeit by virtue of the bracket or other fixation device.

In the Court's view, this definition is also consistent with the claim language. That the term "disposing on" denotes a physical connection is apparent in the manner in which the phrase

is used elsewhere in the claim. For example, the term "disposing on" is used in paragraph (a) of Claim 6 which provides "disposing the patient on a treatment table of a radiation therapy device." ('026 Patent, col. 12, ll. 43-44). When used in this sense, it is evident that the term "on" denotes a physical contact between the patient and the treatment table, and not merely that the patient is "near" the treatment table as NOMOS's definition suggests.

NOMOS contends that BrainLAB's definition of the term "on" improperly limits the invention to the preferred embodiment. However, in this case, the preferred embodiment is the only embodiment described by the specification. In the Court's view, its construction of this term is consistent with the specification. That this construction happens to be consistent with the preferred embodiment, as well, is the result of the patentee's use of the preferred embodiment in the specification and not the result of the Court improperly limiting the invention to the preferred embodiment.

NOMOS also contends that BrainLAB's construction of the phrase "disposing on" runs afoul of the doctrine of claim differentiation. According to NOMOS, claim 20 of the '026 Patent indirectly depends on claim 6, and claim 20 specifies that the ultrasound probe is disposed on the treatment table by mounting the ultrasound probe perpendicular to the treatment table. NOMOS

contends that it is error for the limitation of Claim 20 to be read into Claim 6. In support of its contention, NOMOS directs the Court to the Federal Circuit's decision in Environmental Designs, Ltd. v. Union Oil Co. of California, 713 F.2d 693, 699 (Fed. Cir. 1983), cert. denied, 464 U.S. 1043 (1984), for the proposition that "[i]t is improper for courts to read into an independent claim a limitation explicitly set forth in another claim." Id.

The Court is not persuaded that its claim construction runs afoul of the doctrine of claim differentiation. Under the doctrine of claim differentiation, claims should be presumed to cover different inventions. Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1538 (Fed. Cir. 1991). Stated another way, a claim should not be construed in a manner that would make it read like another claim. Id. However, the doctrine of claim differentiation is merely a construction guideline, and not a rigid rule. Id. Thus, "[i]f a claim will bear only one interpretation, the similarity [between the two claims] will have to be tolerated." Id.

In pertinent part, Claim 20 of the '026 Patent reads:

> The method of claim 17, wherein the ultrasound image generating means is disposed on the treatment table by mounting the ultrasound image generating means perpendicular to the treatment table.

('026 Patent, col. 14, ll. 21-24). Claim 20 is dependent on Claim 17, which is in turn dependent on Claim 6. Claim 20,

however, adds the limitations of Claim 17, and thus, Claim 20 does not have the same scope as Claim 6. Further, the Court's construction of the image generating means (as construed in the context of Claim 1) includes an ultrasound probe and a bracket which maintains the ultrasound probe perpendicular to the treatment table and equivalents of that structure. Where, as here, a dependent claim recites a structure corresponding to an independent means-plus-function claim, the Federal Circuit has concluded that claim differentiation is maintained. IMS Technology Inc. v. Haas Automation Inc., 206 F.3d 1422, 1431 (Fed. Cir. 2000) (claim differentiation is maintained when the disclosed structure corresponding to an independent § 112, ¶6 claim is recited in a dependent claim) (citing Laitram Corp., 939 F.2d at 1538). Accordingly, the Court concludes that its construction of the phrase "disposing on" is not inconsistent with claim differentiation principles.

2. **"disposed in a known geometric orientation"**

NOMOS contends that the phrase "disposed in a known geometric orientation" used in paragraph (c) of Claim 6 of the '026 Patent means "that the orientation of the ultrasound probe must be known with respect to the frame of reference of the radiation therapy device." (D.I. 80 at 16). NOMOS further contends that the Court should specify in its claim construction order that "the ultrasound probe is disposed [i.e. arranged] in a

known geometric position under circumstances where the position of the ultrasound probe with respect to the radiation therapy device is indicated." (D.I. 80 at 16).

BrainLAB contends that "disposed in a known geometric orientation" means "placed or arranged to move with respect to the frame of reference of the linear accelerator." (D.I. 82 at 26). BrainLAB relies both on the language of the specification and on the prosecution history for its construction.

In response to BrainLAB's argument, NOMOS contends that the phrase "to move" is not found in the specification, and thus, BrainLAB's construction improperly limits the claim language to the preferred embodiment. (D.I. 84 at 21). BrainLAB has agreed to change its definition to "place or arrange with respect to the frame of reference of the linear accelerator," in order to eliminate the parties' dispute over the phrase "to move." (D.I. 84 at 34).

After reviewing the claim language in light of the specification and the prosecution history, the Court concludes, as BrainLAB contends, that "disposed in a known geometric orientation" means "arranged with respect to the frame of reference of the linear accelerator." The term "disposed" has previously been construed to mean "arranged," and the parties apparently agree with this construction. The parties' dispute centers on the phrase "known geometric orientation." In

discussing the concept of a "known geometric orientation," the specification states:

> Preferably, the known geometric orientation is the orientation of the ultrasound probe 422 with respect to the coordinate system, or frame of reference of the linear accelerator 401, which is along the longitudinal axis of the treatment table 404 . . .

('026 Patent, col. 7, ll. 60-65). However, during the prosecution history of the '026 Patent, NOMOS clarified that the phrase "known geometric orientation" must relate to the linear accelerator, and that such relation to the linear accelerator was not merely "preferable," but necessary to the invention. To this effect NOMOS stated:

> [I]t is necessary that the ultrasound probe 422 be disposed in a known geometric orientation with respect to the frame reference of the linear accelerator 401.

(D.I. 82, Ex. B at 5) (emphasis added). Accordingly, the Court's construction of this phrase is consistent with the specification of the '026 Patent as clarified by the patentee during the prosecution history.

CONCLUSION

For the reasons discussed, the Court has construed the disputed terms of the '026 Patent as provided herein. An Order consistent with this Memorandum Opinion will be entered setting forth the meaning of the disputed terms in the '026 Patent.

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

NOMOS CORPORATION,	:	
	:	
Plaintiff,	:	
	:	
v.	:	Civil Action No. 98-788-JJF
	:	
BRAINLAB, INC. and BRAINLAB USA, INC.,	:	
	:	
Defendants.	:	

O R D E R

At Wilmington, this 28 day of March 2002, for the reasons discussed in the Memorandum Opinion issued this date;

IT IS HEREBY ORDERED that for purposes of Claim 1 and Claim 6 of U.S. Patent No. 5,411,026 (the '026 Patent), the following terms and/or phrases are assigned the following meanings:

a. The structure corresponding to "a means for generating at least one ultrasound image" described in paragraph (a) of Claim 1 of the '026 Patent is a fixed ultrasound probe and a bracket or fixation device that maintains the ultrasound probe perpendicular to the treatment table and constrains it to rotate or move along the axis of the table in order to generate an ultrasonic image, and equivalent structures.

b. The function of "a means for generating at least one ultrasound image" described in paragraph (a) of Claim 1 of the '026 Patent is generating at least one ultrasound image of the lesion in the patient's body.

c. The structure corresponding to "a means for indicating the position, with respect to the radiation therapy device, of the means for generating the at least one ultrasound image when the ultrasound image is generated" described in paragraph (b) of Claim 1 of the '026 Patent is active markers, i.e. light emitting diodes (LEDs) or ultrasonic emitters, mounted on the ultrasound probe parallel to the long axis of the probe, and a sensor for sensing the signals actively emitted by the active markers with the active markers and sensors being aligned with the radiation therapy device, and equivalent structures.

d. The function of "a means for indicating the position, with respect to the radiation therapy device, of the means for generating the at least one ultrasound image when the ultrasound image is generated" described in paragraph (b) of Claim 1 of the '026 Patent is indicating the position of the ultrasound probe with respect to the radiation therapy device when the ultrasound image is generated.

e. The meaning of the phrase "disposing on the treatment table a means for generating an ultrasound image" stated in paragraph (b) of Claim 6 of the '026 Patent is "arranging the means for generating an ultrasound image in physical contact with and supported by the treatment table."

f. The meaning of the phrase "disposed in a known geometric orientation" stated in paragraph (c) of Claim 6 of the '026 Patent is "arranged with respect to the frame of reference

of the linear accelerator."

JOSEPH J. FARNAN, JR.
UNITED STATES DISTRICT JUDGE