

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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VARIAN MEDICAL SYSTEMS, INC.,  
Petitioner,

v.

WILLIAM BEAUMONT HOSPITAL,  
Patent Owner.

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Case IPR2016-00162  
Patent 6,842,502 B2

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Before MICHAEL W. KIM, KALYAN K. DESHPANDE, and  
MATTHEW R. CLEMENTS, *Administrative Patent Judges*.

CLEMENTS, *Administrative Patent Judge*.

DECISION  
Decision Instituting *Inter Partes* Review  
*37 C.F.R. § 42.108*

## I. INTRODUCTION

### A. *Background*

Varian Medical Systems, Inc. (“Petitioner”) filed a Petition to institute an *inter partes* review of claims 1–14, 16–29, 33, and 35–38 of U.S. Patent No. 6,842,502 B2 (Ex. 1101, “the ’502 Patent”). Paper 1 (“Pet.”). William Beaumont Hospital (“Patent Owner”) filed a Preliminary Response. Paper 11 (“Prelim. Resp.”).

We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless the information presented in the Petition shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Upon consideration of the Petition and Preliminary Response, we are persuaded that Petitioner has met its burden of showing a reasonable likelihood that it would prevail in showing that claims 1–14, 16–29, 33, and 35–38 are unpatentable.

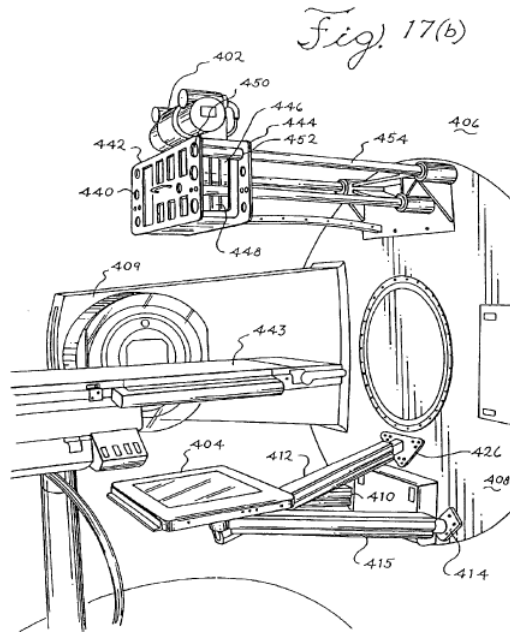
### B. *Related Proceedings*

Petitioner and Patent Owner identify the following district court proceedings concerning the ’502 Patent: *Elekta Ltd. and William Beaumont Hospital v. Varian Medical Systems, Inc.*, Case No. 2:15-cv-12169-AC-MKM (E.D. Mich.). Pet. 1; Paper 9, 1. Petitioner and Patent Owner identify further the following *inter partes* reviews also directed to the ’502 Patent: IPR2016-00160, IPR2016-00163, and IPR2016-00166. Pet. 1; Paper 9, 2. Patent Owner identifies additionally the following *inter partes* reviews directed to U.S. Patent No. 7,471,765 B2, which claims priority to the ’502 Patent: IPR2015-00169, IPR2016-00170, and IPR2016-00171. Paper 9, 2. Patent Owner identifies also the following *inter partes* review directed to

U.S. Patent No. 7,826,592 B2, which claims priority to the '502 Patent:  
IPR2016-00187. Paper 9, 3.

*C. The '502 Patent*

The '502 Patent discloses that it is directed to a cone-beam computed tomography system that employs an amorphous silicon flat-panel imager for use in radiotherapy applications where images of a patient are acquired with the patient in a treatment position on a treatment table. Ex. 1101, 1:11–17. Figure 17(b) (below) depicts a diagrammatic view of one orientation of an exemplary wall-mounted cone beam computerized tomography system employing a flat-panel imager. Ex. 1101, 6:53–56.



Specifically, Figure 17(b) depicts wall-mounted cone beam computerized tomography system 400 includes an x-ray source, such as x-ray tube 402, and flat-panel imager 404 mounted on gantry 406. Ex. 1101, 19:64–67. X-ray tube 402 generates beam of x-rays 407 in a form of a cone or pyramid. Ex. 1101, 19:67–20:2. Flat-panel imager 404 employs amorphous silicon detectors. Ex. 1101, 20:6–7.

*D. Illustrative Claim*

Petitioner challenges claims 1–14, 16–29, 33, and 35–38 of the '502 Patent. Claim 1 is the only independent claim, and is reproduced below:

1. A radiation therapy system comprising:
  - a radiation source that moves about a path and directs a beam of radiation towards an object;
  - a cone-beam computed tomography system comprising:
    - an x-ray source that emits an x-ray beam in a cone-beam form towards said object;
    - a flat-panel imager receiving x-rays after they pass through the object, said imager providing an image of said object, wherein said image contains at least three dimensional information of said object based on one rotation of said x-ray source around said object; and
    - a computer connected to said radiation source and said cone beam computed tomography system, wherein said computer receives said image of said object and based on said image sends a signal to said radiation source that controls said path of said radiation source.

*E. Asserted Grounds of Unpatentability*

Petitioner challenges claims 1–14, 16–29, 33, and 35–38 on the following grounds.

Reference(s)	Basis	Challenged Claims
Cho, <sup>1</sup> Antonuk, <sup>2</sup> Jaffray 1997, <sup>3</sup> Adler, <sup>4</sup> and Depp <sup>5</sup>	§ 103(a)	1–8, 10–14, 16–29, 33, and 35–38
Cho, Antonuk, Jaffray 1997, Boyer, <sup>6</sup> Adler, and Depp	§ 103(a)	9

II. ANALYSIS

A. § 325(d)

Patent Owner argues that we should deny this Petition under § 325(d) because “the asserted grounds rely on ‘substantially the same’ art and arguments as were cited during prosecution.” Prelim. Resp. 39. This argument is not persuasive because the references asserted here are not the same as those cited by the Examiner during prosecution, and the Patent Owner has not shown that the references asserted here are substantially the

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<sup>1</sup> P.S. Cho et al., *Cone-beam CT for radiotherapy applications*, Phys. Med. Biol., 40:1863-83 (1995) (Ex. 1105, “Cho”).

<sup>2</sup> L.E. Antonuk et al., *Thin-Film, Flat-Panel, Composite Imagers for Projection and Tomographic Imaging*, IEEE Transactions on Medical Imaging, 13:482-90 (1994) (Ex. 1106, “Antonuk”).

<sup>3</sup> D.A. Jaffray et al., *Exploring “Target Of The Day” Strategies for A Medical Linear Accelerator With Conebeam-CT Scanning Capability*, Proceedings of the 12<sup>th</sup> International Conference on the Use of Computers in Radiation Therapy, Medical Physics Publishing, pp. 172-75 (1997) (Ex. 1107, “Jaffray 1997”)

<sup>4</sup> U.S. Patent No. 5,207,223, issued May 4, 1993 (Ex. 1103, “Adler”).

<sup>5</sup> U.S. Patent No. 5,427,097, issued June 27, 1995 (Ex. 1104, “Depp”).

<sup>6</sup> A.L. Boyer, *Laser “cross-hair” sidelight*, Med. Phys., 5:58-60 (1978) (Ex. 1108, “Boyer”)

same as the references cited by the Examiner during prosecution. Patent Owner also argues that “this Petition is the second of two Petitioner filed on the same day challenging the same claims of the ’502 patent.” Prelim. Resp. 41. This Petition, however, is based upon a combination of Cho, Antonuk, Jaffray 1997, Adler, and Depp, whereas the ground asserted in the other petition is based upon a combination of Jaffray 1999 SPIE, Jaffray 1999 JRO, Adler, and Depp. Patent Owner has not shown sufficiently that the teachings of Cho, Antonuk, and Jaffray 1997 are “substantially the same” as the teachings of Jaffray 1999 SPIE and Jaffray 1999 JRO. Moreover, Cho, Antonuk, and Jaffray 1997 are prior art under 35 U.S.C. § 102(b), whereas the prior art status of Jaffray 1999 SPIE and Jaffray 1999 JRO is in dispute in the other proceeding. For all of the foregoing reasons, we decline to deny this Petition under § 325(d).

#### *B. Claim Construction*

As a step in our analysis for determining whether to institute a review, we determine the meaning of the claims for purposes of this Decision. In an *inter partes* review, a claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278 (Fed. Cir. 2015) (“We conclude that Congress implicitly approved the broadest reasonable interpretation standard in enacting the AIA.”), *cert. granted sub nom. Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 890 (mem.) (2016). Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249,

1257 (Fed. Cir. 2007). Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). We must be careful not to read a particular embodiment appearing in the written description into the claim if the claim language is broader than the embodiment. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993). Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

For the purposes of this Decision, only the following terms require construction.

*1. “three-dimensional information”*

Independent claim 1 recites “three-dimensional information.” Petitioner asserts that “three-dimensional information” should be construed as “information concerning three dimensions of an object (such as length, width, and depth).” Pet. 13–14 (citing Ex. 1101, 3:40–43; Ex. 1102 ¶ 37). Patent Owner disagrees, and asserts that “three-dimensional information” should be construed more narrowly as “volumetric data.” Prelim. Resp. 26–30 (citing Ex. 1101, 2:42–48, 3:30–43, 9:62–64, 10:3–5, 11:9–12, 16:27–63, 31:17–21, Fig. 14; Ex. 1102 ¶¶ 70; Ex. 1103, 9:12–16; Ex. 1110). We agree with Petitioner.

We begin first with the claim language, and note that “three-dimensional information” appears facially to be co-extensive with any information relevant to three-dimensions. We discern that “length, width, and depth” are just such information. We have considered Patent Owner’s above-cited portions of the ’502 Patent, but are unpersuaded that those

portions narrow “three-dimensional information” with sufficient “reasonable clarity, deliberateness, and precision” such that one of ordinary skill would have understood “three-dimensional information” as co-extensive with Patent Owner’s proffered construction. *In re Paulsen*, 30 F.3d at 1480. For example, column 3, lines 40–43, mentions “three-dimensional (3-D) images,” which we agree would appear to require “volumetric data”; however, the claim limitation at issue is the broader term “three-dimensional information.” In another example, column 9, line 62, through column 10, line 5, clearly refers to “volumetric data,” but does not indicate its relation to “three-dimensional information.” In a further example, column 16, lines 27–63, does not recite “three-dimensional information,” instead disclosing “3-D structure” and “3-D nature” in relation generally to “volumetric data,” but, again, not in a manner sufficient to indicate a particular relationship. Finally, in regards to Dr. Balter’s Declaration, we discern that while Dr. Balter’s testimony supports the proposition that “volume data sets” and “volumetric image” clearly are “three-dimensional information,” we are unpersuaded that it follows that “three-dimensional information” is limited to “volume data sets” and “volumetric image.”

2. *“a computer . . . that controls said path of said radiation source.”*

Independent claim 1 recites “a computer connected to said radiation source and said cone beam computed tomography system, wherein said computer receives said image of said object and based on said image sends a signal to said radiation source that controls said path of said radiation source.” Petitioner asserts that this is a means-plus-function limitation that should be construed in accordance with § 112 ¶ 6. Pet. 14. Petitioner contends that the term is indefinite because the ’502 Patent does not disclose



an algorithm for programming the general purpose computer to perform the claimed function. *Id.* at 14–16. Petitioner contends, in the alternative, that the structure for performing the recited function is a computer performing the algorithm described at column 4, lines 57–62, column 27, lines 15–23, column 27, line 40 to column 28, line 19, and depicted in Figures 24 and 26. *Id.* at 16.

Patent Owner argues that the limitation does *not* invoke § 112 ¶ 6. Prelim. Resp. 13–14. Patent Owner contends that the claim language appropriately “describes how the ‘computer’ operates in the context of the invention, including its connections to and interactions with other components,” (*id.* at 14), and argues that a “computer” is sufficient structure, at least for the purposes of § 112 ¶ 6 (*id.* at 15–16). Patent Owner argues, in the alternative, that even if the limitation is construed under § 112 ¶ 6, the ’502 Patent discloses an algorithm for performing the recited function. *Id.* at 16–18.

On this record, we are not persuaded that this is a means-plus-function limitation that should be construed in accordance with § 112, ¶ 6. “The standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) (citing *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996)); *Greenberg*, 91 F.3d at 1583 (“What is important is . . . that the term, as the name for structure, has a reasonably well understood meaning in the art.”). When, as here, a claim term lacks the word “means,” “the presumption [that § 112 ¶ 6 does not apply] can be overcome and § 112 [¶] 6 will apply if the challenger demonstrates that the

claim term fails to ‘recite sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function.’” *Williamson*, 792 F.3d at 1349 (citing *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)).

Petitioner asserts that “[t]his purely functional computer term is not a description of structure, and no structure for performing the claimed function is recited elsewhere in the claim.” Pet. 14. Petitioner does not, however, provide any further analysis, evidence, or testimony to support its assertion, or even cite a case in which the term “computer” has been construed as a means-plus-function limitation. *See id.* In the absence of such evidence analysis, evidence, or testimony by Petitioner, we agree with Patent Owner for the reasons set forth in the Preliminary Response.

On this record, and for purposes of this Decision, we are not persuaded that the term “computer” fails to recite sufficiently definite structure. As a result, we decline to construe this limitation as a means-plus-function limitation in accordance with § 112 ¶ 6.

*C. Claims 1–8, 10–14, 16–29, 33, and 35–38 – Obviousness over Cho, Antonuk, Jaffray 1997, Adler, and Depp*

Petitioner asserts that a combination of Cho, Antonuk, Jaffray 1997, Adler, and Depp renders obvious claims 1–8, 10–14, 16–29, 33, and 35–38. Pet. 16–58. Patent Owner disagrees. Prelim. Resp. 22–44.

*1. Cho*

Cho describes a cone-beam CT system for radiotherapy applications, and algorithm used therein to permit an increased reconstruction volume to be imaged using a detector of a given size. Ex. 1105, Abstract. The system described in Cho is a digital spot imager (*id.* at 6), but Cho also describes the

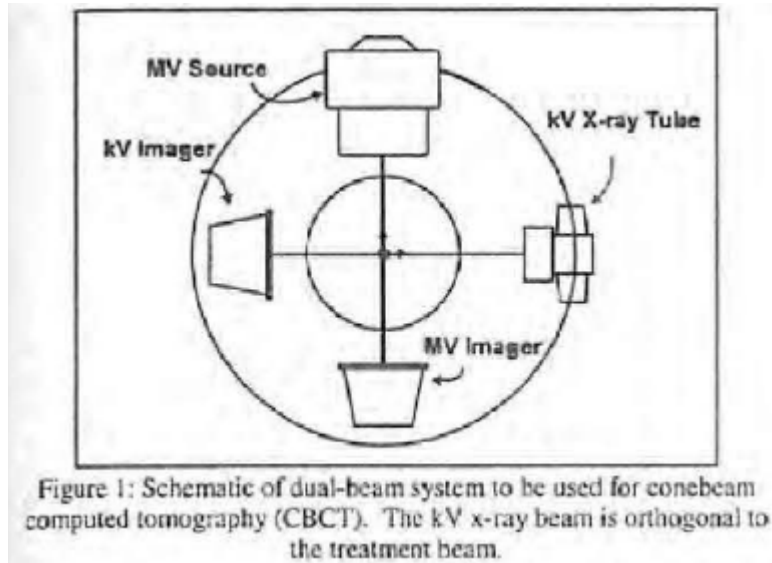
use of a flat panel detector for real-time diagnostic X-ray imaging (*id.* at 24 (citing Antonuk)). Cho describes generating a 3-D image “by rotating the gantry over 360° at approximately 1° increments.” *Id.* at 15; *id.* at 9, 16–17.

## 2. *Antonuk*

Antonuk describes “Thin-Film, Flat-Panel, Composite Imagers for Projection and Tomographic Imaging.” Ex. 1106, Title. Specifically, Antonuk describes how “[t]he recent development of large-area, flat-panel a-Si:H imaging arrays is generally expected to lead to real-time diagnostic and megavoltage x-ray projection imagers with film-cassette-like profiles.” *Id.* at Abstract. According to Antonuk, “[t]he construction, operation, and properties of the arrays have been extensively reported.” *Id.* at 3. “It is widely perceived that part of the solution is to obtain imaging information with the portal beam immediately prior to and/or during the treatment.” *Id.* at 5. “Toward this aim of patient verification, a variety of real-time megavoltage imaging devices, including our a-Si:H imager, have been developed over the last decade.” *Id.* “This composite imager would be positioned behind the patient in the middle of the megavoltage radiation field during imaging.” *Id.* at 6, Fig. 5. In an alternative configuration, “[s]everal a-Si:H x-ray detectors rotate with an x-ray tube collecting conebeam projection data inside the bore of a PET machine.” *Id.* at 8.

## 3. *Jaffray 1997*

Jaffray 1997 describes “a conebeam-computed tomography (CB-CT) scanner for installation on our medical linear accelerator.” Ex. 1107, 4. A schematic of the dual-beam imaging system is shown in Figure 1 of Jaffray 1997.



*Id.* at 5. As shown in Figure 1, “[t]wo fluoroscopic imaging systems are attached to a Philips SL-20 medical linear accelerator; one detects the megavoltage image, the other a kV image produced with a kV beam projected at 90° to the treatment beam axis.” *Id.* at 4. Jaffray 1997 states that the “gantry is rotated continuously” in order to generate a “conebeam imaging sequence consist[ing] of ~100 exposures over 194° of rotation.” *Id.* at 5.

#### 4. *Adler*

Adler teaches an apparatus and method for extending a surgical instrumentality to a target region in a patient, for example, for performing stereotaxic surgery using an x-ray linear accelerator. Ex. 1103, 1:6–10. Specifically, Adler teaches that a 3-dimensional mapping of a mapping region of at least a portion of a living organism is prepared. Ex. 1103, 3:64–68. First and second diagnostic beams are then passed through the mapping region, and are used to produce respective first and second images of respective first and second projections within the mapping region. Ex. 1103, 4:5–10. Adler then teaches that the 3-dimensional mapping and the first and

second images are compared to derive therefrom data representative of a real-time location of a target portion of the mapping region. Ex. 1103, 4:41–46. Adler teaches further “adjusting the relative position of the beaming apparatus 20 and the patient 14 as needed in response to data which is representative of the real time location of the target region 18.” Ex. 1103, 7:37–40.

### 5. *Depp*

Depp teaches an apparatus for and method of carrying out stereotaxic radiosurgery and/or radiotherapy on a particular target region within a patient utilizing previously obtained reference data indicating the position of the target region with respect to its surrounding area which also contains certain nearby reference points. Ex. 1104, 1:6–12. Depp further teaches the following:

The apparatus also utilizes a pair of diagnostic beams of radiation or target locating beams, as they will be referred to in this discussion. These beams are passed through the surrounding area containing the target region and reference points and, after passing through the surrounding area, contain data indicating the positions of the reference points within the surrounding area. This position data is collected by cooperating detectors, as described previously, and delivered to the multiprocessor computer where the latter compares it with previously obtained reference data for determining the position of the target region with respect to each of the reference points during each such comparison. The radiosurgical beam is accurately directed into the target region in substantially real time based on this information.

Ex. 1104, 11:46–61.

### 6. *Analysis*

Petitioner asserts that a combination of Cho, Antonuk, Jaffray 1997, Adler, and Depp renders obvious claims 1–8, 10–14, 16–29, 33, and 35–38.

Pet. 16–58. For example, independent claim 1 recites “a radiation source that moves about a path and directs a beam of radiation towards an object.” Petitioner cites Adler for teaching beaming apparatus 20 performing stereotaxic surgery using an x-ray linear accelerator, and cites Antonuk and Jaffray 1997 for teaching medical linear accelerators. Pet. 25–26.

Independent claim 1 also recites

a cone-beam computed tomography system comprising:

an x-ray source that emits an x-ray beam in a cone-beam form towards said object;

a flat-panel imager receiving x-rays after they pass through the object, said imager providing an image of said object

Petitioner cites Cho and Jaffray 1997 for disclosing CBCT x-ray systems, and cites Cho and Antonuk for teaching a flat panel imager for receiving diagnostic x-rays. Pet. 26–29. Independent claim 1 also recites “wherein said image contains at least three dimensional information of said object based on one rotation of said x-ray source around said object.” Petitioner cites Cho for disclosing that “[t]he projection data were obtained by rotating the gantry over 360° at approximately 1° increments,” and for disclosing a modified Feldkamp algorithm for reconstructing the projection data into a 3-D image Pet. 30 (quoting Ex. 1105, 15); Ex. 1105, 22 (“data were available through a full 360° rotation.”). Independent claim 1 also recites “a computer connected to said radiation source and said cone beam computed tomography system, wherein said computer receives said image of said object and based on said image sends a signal to said radiation source that controls said path of said radiation source.” Petitioner cites Adler for disclosing the comparing of a previously obtained 3-dimensional mapping with newly acquired first and second images, and then adjusting patient

treatment based on that comparison. Pet. 31–33. For a rationale to modify Cho, Antonuk, Jaffray 1997, Adler, and Depp in view of each other, Petitioner sets forth such a rationale on pages 34–37 of the Petition. Petitioner performs a similar analysis for dependent claims 2–14, 16–29, 33, and 38–38.

Patent Owner argues that “Cho employs a digital spot detector imager (not a flat panel imager).” Prelim. Resp. 23. Petitioner, however, relies upon not only Cho, but also Antonuk, which explicitly teaches a flat-panel imager. *See* Pet. 28–29.

Patent Owner also argues that “Cho does not disclose use of a flat panel imager *on a linear accelerator for image guided radiation therapy*” (Prelim. Resp. 24) (emphasis added) because the CBCT system in Cho is being used with “a radiotherapy simulator (not a linear accelerator) to perform cone beam CT for treatment planning (not for image guided radiation therapy).” Prelim. Resp. 23. Patent Owner’s arguments are not commensurate with the scope of the claims, which do not recite a linear accelerator for image guided radiation therapy. To the extent Patent Owner is arguing that Cho does not disclose the “radiation therapy system” recited in the preamble or the “radiation source” recited in claim 1, that argument is not persuasive because Petitioner relies upon Adler and Depp, not Cho, to teach those limitations. *See* Pet. 24–26.

Patent Owner also argues that “Antonuk does not use cone beam computed tomography in any context,” and “does not disclose capturing any 3-D images; he only discloses using 2-D images for guiding treatment.” Prelim. Resp. 24. Again, Patent Owner’s arguments are not persuasive

because Petitioner relies upon Cho and Jaffray 1997, not Antonuk, for teaching those limitations. *See* Pet. 30–31.

Patent Owner also argues that Jaffray 1997 “likewise provides no disclosure of a flat panel imager for image guided radiation therapy.” Prelim. Resp. 25. Again, Patent Owner’s arguments are not persuasive because Petitioner relies upon Antonuk, not Jaffray 1997, for teaching the flat panel imager (*see* Pet. 28–29), and upon Adler and Depp, not Jaffray 1997, for teaching a radiation therapy system (*see id.* at 24–26).

Patent Owner asserts that “Petitioner has not shown that the cited references disclose a computer that sends a signal that controls the path of the radiation source ‘based on’ an image that ‘contains three dimensional information,’” (Prelim. Resp. 26) because Adler’s imager “creates two flat, two-dimensional pictures that contain no volumetric data” (*id.* at 30). As an initial matter, we note that we construed “three dimensional information” as “information concerning three dimensions of an object (such as length, width, and depth),” not as “volumetric data.” Moreover, Patent Owner’s assertions are unpersuasive because Petitioner is proposing a combination that replaces the two flat, two-dimensional pictures of Adler with the volumetric image of Cho and Jaffray 1997. Specifically, Petitioner asserts the following:

One of skill in the art would be motivated to combine the Cho, Antonuk, and Jaffray 1997 references with Adler/Depp because all the references are in the same field of medical imaging in conjunction with radiation therapy and all are concerned with the problem of obtaining accurate 3-D information about the internal structure of objects like patients. (*See* Adler, 1:6–18; Depp, 1:6–18; Cho, at 5; Antonuk, at 3, 5; Jaffray 1997, at 4.) As explained by Dr. Balter, the results obtained by the inventors (obtaining 3-D image information concerning target lesions in patients for the



purpose of targeting the radiation source) were the predictable work of combining the CBCT-FPI system of the Cho and Antonuk references with the radiotherapy systems of Adler/Depp. (*See* Ex. 1102, ¶¶ 69–71.)

Pet. 37. We have considered Petitioner’s proffered rationale in light of Patent Owner’s assertions, and, on this record, determine Petitioner’s proffered rationale is persuasive. In particular, Adler teaches a 3-dimensional mapping, and we are persuaded that comparing that 3-dimensional mapping with another 3-dimensional mapping, as disclosed in Cho and Jaffray 1997, would be preferable to the two flat, two-dimensional pictures of Adler.

Patent Owner asserts further that Adler does not disclose “adjusting a patient’s position to correct for any shift in the target’s location relative to surrounding tissues after treatment planning images are acquired.” Prelim. Resp. 31. Patent Owner’s assertions are misplaced, as the relevant limitation of independent claim 1 is not so narrowly directed to “shift correction,” instead reciting “said computer . . . based on said image sends a signal to said radiation source that controls said path of said radiation source.” To that end, Adler teaches “adjusting the relative positions of the beaming apparatus 20 and the patient 14 as needed in response to data which is representative of the real time location of the target region 18.” Ex. 1103, 7:37–40.

Patent Owner asserts additionally that Petitioner’s representations concerning Adler and Depp are inconsistent with Petitioner’s conduct during prosecution of Petitioner’s patents. Prelim. Resp. 33–34. Patent Owner’s assertions are misplaced, as our focus here is not on Petitioner’s conduct in

other proceedings, but what the references themselves disclose or suggest relative to the challenged claims of the '502 Patent.

Patent Owner asserts also that the Petition should be denied because Petitioner confusingly cites multiple references for the same claim limitation, without explaining explicitly how those multiple references are to be modified in view of each other, as required to make a showing of obviousness. Prelim. Resp. 34–37. Patent Owner represents that such a format is a violation of Board rules, and that the Petition should be denied on that basis. *Id.* Although we agree with Patent Owner that Petitioner's citation format is not a best practice, on this record, we are unpersuaded that it is so incomprehensible or confusing as to warrant a denial of institution on that basis. To be sure, if the citation of multiple references for a particular claim limitation causes such confusion that it is unclear whether that claim limitation is met, such confusion should be held against Petitioner. On this record, however, Patent Owner has not identified, and we are unable to ascertain independently, any particular claim limitation for which such confusion exists.

In essence, we discern that Petitioner has taken the general structural framework of Adler and, where Adler teaches comparing two flat, two-dimensional pictures to its 3-dimensional mapping in order to control a path of the radiation source, Petitioner has replaced those two flat, two-dimensional pictures with the volumetric images from Cho and Jaffray 1997. On this record, we are persuaded that Petitioner has made that proposed combination with adequate clarity.

Patent Owner asserts that Dr. Balter's Declaration largely parrots conclusory statements made in the Petition and should be afforded little or

no weight. Prelim. Resp. 42–43. We disagree. To the extent that Dr. Balter does repeat *verbatim* a specific conclusory assertion set forth in the Petition that does not have sufficient underlying facts or rational underpinnings, we agree that assertion should be given little or no weight. We decline, however, to conclusorily extend that determination to the entirety of Dr. Balter’s Declaration. Furthermore, we have reviewed certain portions of Dr. Balter’s Declaration that were deemed relevant to our analysis herein, and are unpersuaded that they are so conclusory or lacking in support or analysis as to be accorded no weight. Patent Owner will certainly have further opportunities to challenge portions of Dr. Balter’s Declaration as lacking adequate support, to cross-examine Dr. Balter, and to present its own contrary evidence and assertions, upon institution of trial.

Patent Owner asserts further that Petitioner presents numerous other Exhibits 1111–1134 that are not referenced in the Petition, and which Petitioner only presents in a section of Dr. Balter’s Declaration labelled “Additional Prior Art Demonstrating Obviousness of the Claims,” and spanning paragraphs 114–142. Prelim. Resp. 43–44. Patent Owner asserts that Petitioner should not be permitted to rely on these references in this proceeding. We agree. Insofar as Petitioner may attempt to use any of these references to “fill in” any “gap” in the Petition that has been or will be identified by Patent Owner, we determine that Petitioner is prohibited expressly from doing so.

## 7. *Conclusion*

On this record, we are persuaded that Petitioner has shown a reasonable likelihood that claims 1–8, 10–14, 16–29, 33, and 35–38 are

obvious over a combination of Cho, Antonuk, Jaffray 1997, Adler, and Depp.

*D. Claim 9 – Obviousness over Obviousness over Cho, Antonuk, Jaffray 1997, Boyer, Adler, and Depp*

Petitioner asserts that a combination of Cho, Antonuk, Jaffray 1997, Boyer, Adler, and Depp renders obvious claim 9. Pet. 58–60. Patent Owner does not address this ground separately.

*1. Boyer*

Boyer teaches a laser system for patient alignment during radiation therapy. Ex. 1108, 4.

*2. Analysis*

Petitioner asserts that a combination of Cho, Antonuk, Boyer, Adler, and Depp renders obvious claim 9. Pet. 58–60. For example, claim 9 depends from claim 8, and recites “further comprising an alignment laser that allows visualization of said axis of rotation.” Petitioner cites Boyer for teaching “a laser sidelight [ ] has been designed and built at this institution. The sidelight projects a cross-hair image which can be aligned to a therapy-machine isocenter.” Pet. 59 (quoting Ex. 1108, 4). For a rationale to modify Cho, Antonuk, Jaffray 1997, Boyer, Adler, and Depp in view of each other, Petitioner sets forth a rationale on pages 59–60 of the Petition.

We are persuaded that Petitioner has a reasonable likelihood in demonstrating that claim 9 is obvious over Cho, Antonuk, Jaffray 1997, Boyer, Adler, and Depp. Patent Owner does not address this ground separately.

3. *Conclusion*

On this record, we are persuaded that Petitioner has shown a reasonable likelihood that claim 9 is obvious over a combination of Cho, Antonuk, Jaffray 1997, Boyer, Adler, and Depp.

E. *Conclusion*

For the foregoing reasons, we are persuaded that Petitioner has met its burden of showing a reasonable likelihood that claims 1–14, 16–29, 33, and 35–38 are unpatentable.

III. ORDER

After due consideration of the record before us, and for the foregoing reasons, it is:

ORDERED that pursuant to 35 U.S.C. § 314, an *inter partes* review is hereby instituted as to the following grounds:

1. Claims 1–8, 10–14, 16–29, 33, and 35–38 of the '502 Patent as unpatentable under 35 U.S.C. § 103(a) over a combination of Cho, Antonuk, Jaffray 1997, Adler, and Depp;
2. Claim 9 of the '502 Patent as unpatentable under 35 U.S.C. § 103(a) over a combination of Cho, Antonuk, Jaffray 1997, Boyer, Adler, and Depp; and

FURTHER ORDERED that no other grounds are instituted; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(a), *inter partes* review of the '502 Patent is hereby instituted commencing on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial.

IPR2016-00162  
Patent 6,842,502 B2

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