

# United States Court of Appeals for the Federal Circuit

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IN RE: WARSAW ORTHOPEDIC, INC.,  
*Appellant*

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2015-1050, 2015-1058

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Appeals from the United States Patent and Trade-  
mark Office, Patent Trial and Appeal Board in Nos.  
IPR2013-00206 and IPR2013-00208.

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Decided: August 9, 2016

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JOHN C. O'QUINN, Kirkland & Ellis LLP, Washington,  
DC, argued for appellant. Also represented by WILLIAM H.  
BURGESS, BRIAN H. GOLD; LUKE DAUCHOT, STEVEN  
PAPAZIAN, NIMALKA R. WICKRAMASEKERA, Los Angeles, CA.

MONICA BARNES LATEEF, Office of the Solicitor, United  
States Patent and Trademark Office, Alexandria, VA, argued  
for intervenor Michelle K. Lee. Also represented by THOMAS  
W. KRAUSE, STACY BETH MARGOLIES, SCOTT  
WEIDENFELLER.

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Before PROST, *Chief Judge*, BRYSON and WALLACH, *Circuit  
Judges*.

WALLACH, *Circuit Judge*.

Based on two petitions filed by NuVasive, Inc. (“NuVasive”), the United States Patent and Trademark Office’s (“USPTO”) Patent Trial and Appeal Board (“PTAB”) instituted inter partes reviews of claims 1–30 of U.S. Patent No. 8,251,997 (“the ’997 patent”). In separate Final Written Decisions, the PTAB found claims 1–8 and 17–23 obvious and therefore invalid. *See NuVasive, Inc. v. Warsaw Orthopedic, Inc. (NuVasive I)*, No. IPR2013-00208, 2014 WL 3422010 (P.T.A.B. July 10, 2014) (addressing claims 1–8); *NuVasive, Inc. v. Warsaw Orthopedic, Inc. (NuVasive II)*, No. IPR2013-00206, 2014 WL 3422008 (P.T.A.B. July 10, 2014) (addressing claims 9–30).

Warsaw Orthopedic, Inc. (“Warsaw”), the assignee of the ’997 patent, appeals.<sup>1</sup> We affirm-in-part, vacate-in-part, and remand.

## DISCUSSION

### I. Subject Matter Jurisdiction and Standard of Review

This court possesses subject matter jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A) (2012). We review the PTAB’s legal conclusions de novo, *Redline Detection, LLC v. Star Envirotech, Inc.*, 811 F.3d 435, 449 (Fed. Cir. 2015), and its factual findings for substantial evidence, *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000). “Substantial evidence is something less than the weight of the evidence but more than a mere scintilla of evidence.” *In re Moutett*, 686 F.3d 1322, 1331 (Fed. Cir. 2012).

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<sup>1</sup> NuVasive initially appealed several aspects of the PTAB’s decisions, but later terminated its appeal (No. 2015-1049) and withdrew from Warsaw’s appeals (Nos. 2015-1050 and -1058). We permitted the USPTO to participate in oral argument in defense of the PTAB’s decisions.

## II. Substantial Evidence Supports Some, But Not All, of the PTAB's Obviousness Findings

A patent claim is invalid “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art [(‘PHOSITA’)] to which said subject matter pertains.” 35 U.S.C. § 103(a) (2006).<sup>2</sup> Obviousness is a question of law based on underlying findings of fact. *Gartside*, 203 F.3d at 1316. The underlying factual findings include (1) “the scope and content of the prior art,” (2) “differences between the prior art and the claims at issue,” (3) “the level of ordinary skill in the pertinent art,” and (4) the presence of secondary considerations of nonobviousness such “as commercial success, long felt but unsolved needs, [and] failure of others.” *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966).

Warsaw contests the PTAB's findings that claims 1–8 and 17–23 of the '997 patent would have been obvious over various prior art references. We address the claims in turn.

### A. The '997 Patent

A brief review of the anatomy of the human spine will provide the context necessary to understand the invention disclosed in the '997 patent. A human spine contains twenty-four vertebrae divided over three regions: seven cervical (neck), twelve thoracic (chest), and five lumbar

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<sup>2</sup> Congress amended § 103 when it passed the Leahy-Smith America Invents Act (“AIA”). Pub. L. No. 112-29, § 3(c), 125 Stat. 284, 287 (2011). However, because the application that led to the '997 patent was filed before March 16, 2013, the pre-AIA § 103 applies. *Id.* § 3(n)(1), 125 Stat. at 293.

(lower) vertebrae. Each vertebra has three parts, including a body. A vertebral body has three components: the “endplate,” which is at the center and contains blood vessels, as well as the “apophyseal ring” (tracing the circumference of a vertebral body) and the “cortical rim” (constituting the edge of the vertebral body), which are made of dense bone and do not contain blood vessels. Discs occupy the space between the vertebrae, absorbing shock.

The ’997 patent relates to spinal surgery that “insert[s] an artificial implant between two adjacent vertebrae” from a patient’s side. ’997 patent, Abstract. In particular, the ’997 patent discloses “instrumentation and methods of performing surgical procedures on the human thoracic and lumbar spine along the lateral aspect [(i.e., side)] of the spine” to correct “thoracic and lumbar disc disease and spinal deformities where concomitant fusion is desired.” *Id.* col. 1 ll. 17–23. The lateral approach to spinal surgery disclosed by the ’997 patent seeks to avoid complications that may arise when the surgery is performed anteriorly or posteriorly (i.e., from the front or back of a patient). *Id.* col. 3 ll. 22–23.

The ’997 patent contains four independent claims—including claims 1 and 17—and twenty-six dependent claims. *Id.* col. 22 l. 47–col. 28 l. 37. Independent claims 1 and 17 follow a similar structure: they recite a method that begins with an incision in the patient’s side, followed by steps of advancing specific instruments into the surgical path and inserting an implant between the vertebrae to be fused. *See id.* col. 22 l. 47–col. 23 l. 39 (claim 1); *id.* col. 25 l. 18–col. 26 l. 24 (claim 17). In relevant part, independent claim 1 recites

[i]nserting . . . a non-bone interbody intraspinal implant . . . , the *length* of said implant being sized to occupy *substantially the full transverse width of the vertebral bodies* of the two adjacent

vertebrae, the *length* of said implant being greater than the depth of the disc space, . . . [and] the *length* of said implant being greater than the maximum height of said implant.

*Id.* col. 23 ll. 19–39 (emphases added). Independent claim 17 recites nearly identical language. *Id.* col. 26 ll. 3–24 (claim 17). The “length” is measured laterally, consistent with the direction of the insertion, from the “insertion end” to the “trailing end.” See, e.g., *id.* col. 23 ll. 24–26 (claim 1). These appeals principally concern the length of the implant recited in the ’997 patent’s independent claims.<sup>3</sup>

#### B. Substantial Evidence Supports the PTAB’s Findings as to Brantigan and the Motivation to Combine Prior Art References

The PTAB found that claims 1 and 17 of the ’997 patent would have been obvious over a combination of three prior art references: U.S. Patent Nos. 4,545,374 (“Jacobson”) and 5,192,327 (“Brantigan”); and Hansjorg F. Leu & Adam Schreiber, *Percutaneous Fusion of the Lumbar Spine: A Promising Technique*, St. Art Revs., Sept. 1992, at 593–604 (“Leu”) (J.A. 493–506). See *NuVasive I*, 2014

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<sup>3</sup> Claims 2–8 and 18–23 depend from independent claims 1 and 17, respectively. See ’997 patent col. 23 ll. 40–59 (claims 2–8); *id.* col. 26 ll. 25–42 (claims 18–23). Warsaw does not argue the merits of the dependent claims separately or attempt to distinguish them from prior art. Therefore, the dependent claims stand or fall with their attendant independent claim. See, e.g., *In re Kaslow*, 707 F.2d 1366, 1376 (Fed. Cir. 1983) (“Since the claims are not separately argued, they all stand or fall together.” (citation omitted)).

WL 3422010, at \*4–13.<sup>4</sup> Warsaw challenges the PTAB’s factual findings regarding the teachings of Brantigan as well as its finding of a motivation to combine Brantigan with Leu and Jacobson. We discuss each issue in turn.

### 1. Brantigan

Warsaw alleges that “Brantigan does not disclose an implant with any dimension spanning ‘substantially the full transverse width’ of a vertebra” as recited in claims 1 and 17 of the ’997 patent, such that the PTAB erred in finding claims 1 and 17 obvious in light of Brantigan. Warsaw’s Br. 60 (capitalization omitted). According to Warsaw, “Brantigan’s specification and claims repeatedly and specifically explain that its implants must be recessed within the vertebrae *to sit on the endplate portion of the vertebra—which, as a matter of anatomy, is substantially shorter than the full width of a vertebra.*” *Id.* at 61 (emphasis modified) (citations omitted).

Warsaw’s argument assumes that the limitation “substantially the full transverse width” in claims 1 and 17 of the ’997 patent means that the length of the patented implant must extend beyond a vertebra’s endplate to include the apophyseal ring. However, the PTAB properly concluded that

claim 1 recites an implant being sized to occupy substantially the full transverse width of the vertebral body. [Warsaw] does not show that claim 1 also recites an implant being sized to extend onto the apophyseal ring of the vertebral body or an

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<sup>4</sup> The PTAB’s analysis of claim 1 is identical to its analysis of claim 17. *Compare NuVasive I*, 2014 WL 3422010, at \*4–13 (claim 1), *with NuVasive II*, 2014 WL 3422008, at \*4–14 (claim 17). Unless otherwise noted, we refer only to the PTAB’s analysis of claim 1 in *NuVasive I* for ease of reference.

implant being sized to extend beyond a central region of a vertebral body. Nor does [Warsaw] point to an explicit disclosure in the [s]pecification [of the '997 patent] regarding the length of the implant with respect to the alleged “apophyseal ring.”

*NuVasive I*, 2014 WL 3422010, at \*9; *see also NuVasive II*, 2014 WL 3422008, at \*10 (providing a similar analysis with respect to claim 17). The subject claims’ text supports the PTAB’s conclusion. *See* '997 patent col. 23 ll. 26–29 (where claim 1 recites “the length of said implant being sized to occupy substantially the full transverse width of the vertebral bodies of the two adjacent vertebrae,” but does not recite anything about the apophyseal ring); *id.* col. 26 ll. 10–12 (reciting substantially the same in claim 17).

Warsaw next contends “[t]he PTAB’s conclusion that Brantigan teaches an implant sized to span substantially the full transverse width of adjacent vertebrae depends on its fundamental misunderstanding of the statement that the Brantigan implant is ‘generally shaped and sized to conform with the disc space’” between the adjacent vertebrae. Warsaw’s Br. 64 (citations omitted). That “an implant is designed to fit the disc space” between the adjacent vertebrae, Warsaw contends, “does not reveal what all of its dimensions are.” *Id.* at 66.

When the PTAB examines the scope and content of prior art, such as Brantigan, it must consider the prior art “in its entirety, i.e., as a *whole*.” *Panduit Corp. v. Denison Mfg. Co.*, 810 F.2d 1561, 1568 (Fed. Cir. 1987) (citation omitted). An examination of the scope and content of the prior art produces factual findings reviewed for substantial evidence. *Gartside*, 203 F.3d at 1316.

Substantial evidence supports the PTAB’s finding that Brantigan teaches an implant that spans substantially the full width of a vertebra, as recited in claims 1

and 17 of the '997 patent. The PTAB observed that “Brantigan discloses, for example, a ‘plug . . . generally shaped and sized to conform with the disc space between adjoining vertebrae in a vertebral column.” *NuVasive I*, 2014 WL 3422010, at \*8 (citing Brantigan col. 4 ll. 6–8). Based on this evidence, the PTAB reasoned that

it would have been obvious to one of ordinary skill in the art that an implant that is “sized to conform with the disc space,” as disclosed by Brantigan, would have occupied at least a length that is less than the full transverse width of the vertebral bodies by an insubstantial amount (i.e., occupying “substantially” the full transverse width). Otherwise, an implant that does not occupy “substantially” the full transverse width would not have been sized to conform to the disc space, in contrast to Brantigan’s disclosure that the implant is, in fact, sized to conform to the disc space.

*Id.* at \*9. The evidence cited and rationale provided by the PTAB comports with what our precedent demands. *See, e.g., In re Zurko*, 258 F.3d 1379, 1386 (Fed. Cir. 2001) (“[T]he [PTAB] must point to some concrete evidence in the record in support of [its] findings.” (footnote omitted)); *see also In re Lee*, 277 F.3d 1338, 1342 (Fed. Cir. 2002) (“Judicial review of a [PTAB] decision . . . is thus founded on the obligation of the agency to make the necessary findings and to provide an administrative record showing the evidence on which the findings are based, accompanied by the agency’s reasoning in reaching its conclusions.” (citations omitted)). To the extent that Warsaw argues the PTAB erred because it did not decide whether Brantigan discloses dimensions that *exactly* meet the limitation “substantially the full transverse width” in claims 1 and 17 of the '997 patent, Warsaw’s Br. 66, Warsaw misunderstands the governing law, *see, e.g., Beckson Marine, Inc. v. NFM, Inc.*, 292 F.3d 718, 727



(Fed. Cir. 2002) (“[O]bviousness does not require the prior art to reach expressly each limitation exactly.”).

Warsaw also argues that the PTAB erred because “Brantigan does not disclose an implant with a ‘length’ substantially the full transverse width of a vertebra.” Warsaw’s Br. 69 (capitalization omitted). That is so, Warsaw argues, because “[t]he Brantigan implants were not designed or intended for lateral implantation,” but rather concern implants surgically inserted anteriorly or posteriorly. *Id.* at 71.

Warsaw’s argument misunderstands the PTAB’s findings. The PTAB concluded that the lateral insertion aspect would have been obvious in view of Jacobson, not Brantigan. *NuVasive I*, 2014 WL 3422010, at \*11 (“Jacobson discloses or suggests th[e lateral] feature. We need not determine whether one of ordinary skill in the art would have understood Brantigan to also disclose this feature.”). Warsaw does not separately contest the PTAB’s findings as to Jacobson, at least on this point. *See* Warsaw’s Br. 69–73. Thus, we will not disturb this aspect of the PTAB’s decision. *See Nat’l Steel Car, Ltd. v. Canadian Pac. Ry., Ltd.*, 357 F.3d 1319, 1336–37 (Fed. Cir. 2004) (rejecting argument directed at the wrong prior art). In any event, the record belies Warsaw’s argument that the Brantigan implants were not designed for lateral implantation. Brantigan col. 6 ll. 62–68 (“[T]he plugs of this invention . . . are inserted into the opened up disc space . . . either anteriorly, laterally[,] or posteriorly . . .”).

Warsaw further alleges that “Brantigan does not disclose implants with a length—or any dimension—‘greater than the depth of the disc space,’” as claims 1 and 17 of the ’997 patent recite. Warsaw’s Br. 73 (capitalization omitted). However, in its response to NuVasive’s petition, Warsaw did not raise this argument. Accordingly, Warsaw has waived this argument. *See, e.g., Redline*, 811

F.3d at 450 (explaining that this court does not consider arguments not raised before the PTAB).

Warsaw also argues that “Brantigan’s disclosure of implants that can be rotated or reversed *teaches away* from the ’997 patent.” Warsaw’s Br. 77. We disagree that Brantigan’s disclosure of implants that can be rotated or reversed teaches away from the claimed invention. A reference “teach[es] away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference.” *Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738 (Fed. Cir. 2013) (citation omitted). Whether a reference teaches away presents a factual question reviewed for substantial evidence. *See In re Urbanski*, 809 F.3d 1237, 1241 (Fed. Cir. 2016) (examining “whether the prior art teaches away from the claimed invention” produces “factual findings”). Warsaw’s argument asks the court to elevate one aspect of Brantigan (i.e., that the implants can be rotated or reversed prior to implantation) over another (i.e., that the implants are sized to conform with the disc space). The PTAB concluded that, regardless of whether the Brantigan implants may be rotated or reversed, “Brantigan discloses that the implant is ‘sized to conform with the disc space,’ which one of ordinary skill in the art would have understood to mean sized to occupy substantially the full transverse widths of the vertebral bodies for reasons previously stated.” *NuVasive I*, 2014 WL 3422010, at \*11. We may not reweigh this evidence on appeal. *See In re NTP, Inc.*, 654 F.3d 1279, 1292 (Fed. Cir. 2011) (We do “not reweigh evidence on appeal, but rather determine[] whether substantial evidence supports the [PTAB’s] fact findings.”).

## 2. Motivation to Combine Prior Art References

As part of the obviousness inquiry, we consider “whether a [PHOSITA] would have been motivated to combine the prior art to achieve the claimed invention

and whether there would have been a reasonable expectation of success in doing so.” *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006) (citation omitted). The answers to these questions require producing factual findings that we review for substantial evidence. *See Gartside*, 203 F.3d at 1316 (discussing motivation to combine); *see also Alza Corp. v. Mylan Labs., Inc.*, 464 F.3d 1286, 1289 (Fed. Cir. 2006) (discussing reasonable expectation of success).

Warsaw alleges that “[t]he *entire* affirmative portion of the [PTAB’s] analysis” regarding motivation to combine is insufficient as a matter of law because it reflects “a belief that one of ordinary skill in the art *could* combine [Jacobson, Leu, and Brantigan], not that [one] *would* have been motivated to do so.” Warsaw’s Br. 79–80 (internal quotation marks and citations omitted). According to Warsaw, the PTAB “did not supply the necessary explanation or evidence for combining Jacobson, Leu, and Brantigan because it could not.” *Id.* at 82.

We disagree with Warsaw that the PTAB’s analysis suffers from legal error or that the PTAB failed to supply the requisite explanation in support of its conclusions. In its analysis, the PTAB determined that a PHOSITA “would have” been motivated to combine Jacobson, Leu, and Brantigan, and provided a reasoned explanation for reaching that conclusion. *See NuVasive I*, 2014 WL 3422010, at \*12 (“[T]he combination of the known element of performing a spinal fusion procedure by laterally advancing instruments into the disc space (Jacobson) with the known element of using an ‘interbody graft’ in a spinal fusion procedure (Leu and Brantigan) *would have* resulted in no more than the predictable and expected result of performing a spinal fusion procedure (Jacobson) that includes inserting an implant into a disc space (Leu or Brantigan).” (emphasis added)); *see also id.* at \*12–13 (providing a full motivation-to-combine analysis). The true nature of Warsaw’s arguments reflects a collateral

attack on the teachings of the prior art references, based on aspects of the references that it finds more persuasive than did the PTAB. *See* Warsaw's Br. 83–85. Those arguments contest the weight the PTAB afforded to the record evidence, but we may not reweigh facts already considered by the PTAB. *See NTP*, 654 F.3d at 1292.

C. The PTAB Did Not Adequately Explain How Jacobson Discloses Claim 17's "Elongated Portions" Limitation

Finally, Warsaw raises an argument specific to a limitation in claim 17 of the '997 patent. In relevant part, claim 17 requires the positioning of a surgical instrument with "elongated portions" so that at least part of one elongated portion "is over one of the two adjacent vertebrae and at least part of another . . . elongated portion[] is over the other of the two adjacent vertebrae." '997 patent col. 25 l. 65–col. 26 l. 2. Warsaw contends that "no substantial evidence support[s] the [PTAB]'s conclusion that Jacobson discloses a surgical instrument with 'elongated portions' positioned" over adjacent vertebrae, as recited by claim 17. Warsaw's Br. 86. Warsaw avers that the PTAB erred in finding that "anchor wires" in Jacobson meets the "positioned over" limitation recited in claim 17. *See id.*

Warsaw raises several arguments that it did not present to the PTAB. *Compare id.* at 86–90, *with* J.A. 1213 (where, before the PTAB, Warsaw argued only that "claim 17 recites a third surgical instrument with at least two elongated portions that are positioned over adjacent vertebral bodies. [NuVasive] relies solely on Jacobson's wires for this element. These portions are not 'positioned over' adjacent vertebrae. Instead, the wires 'are advanced into the disc capsule.'" (citation omitted)). In responding to this narrow argument, the PTAB found that Warsaw did "not provide sufficient evidence of specific differences between the 'elongated portion' being 'positioned over' adjacent vertebrae, as recited in claim 17, and the 'anchor wires' [disclosed in Jacobson] that are also 'positioned

over' adjacent vertebrae." *NuVasive II*, 2014 WL 3422008, at \*13. Based on the limited argument before it, we cannot say that the PTAB erred in rejecting Warsaw's argument. "If all of the arguments made on appeal had been made to [the agency] and the record made to support them, [the agency] may well have reached a different conclusion"; however, we may not "entertain new arguments[] and reverse [the agency] on the basis of them." *Jacobi Carbons AB v. United States*, 619 F. App'x 992, 1001 (Fed. Cir. 2015) (unpublished).

Nevertheless, as we stated above, the PTAB maintains the independent "obligation . . . to make the necessary findings and to provide an administrative record showing the evidence on which the findings are based, accompanied by the agency's reasoning in reaching its conclusions." *Lee*, 277 F.3d at 1342 (emphasis added) (citations omitted). As for its reasoning, the PTAB "must articulate 'logical and rational' reasons for [its] decisions." *Synopsys, Inc. v. Mentor Graphics Corp.*, 814 F.3d 1309, 1322 (Fed. Cir. 2016) (citation omitted). We may affirm the PTAB's finding "if we may reasonably discern that it followed a proper path, even if that path is less than perfectly clear." *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1365 (Fed. Cir. 2015) (citation omitted).

We cannot reasonably discern that the PTAB's decision as to the "elongated portions" limitation in claim 17 followed the proper path. The PTAB's affirmative narrative in support of its finding that Jacobson discloses the subject limitation in claim 17 consists of a single sentence: "Jacobson appears to disclose anchor wires (i.e., 'elongated portions') that are positioned over adjacent vertebrae." *NuVasive II*, 2014 WL 3422008, at \*13 (citing Jacobson fig.5). The PTAB's conclusory assertion that Figure 5 of Jacobson "appears to" support its finding does not equate to the reasoned explanation needed to support its conclusion. *See Synopsys*, 814 F.3d at 1322; *see also Lee*, 277

F.3d at 1345 (“The [PTAB] cannot rely on conclusory statements when dealing with . . . prior art and specific claims, but must set forth the rationale on which it relies.”). Thus, we remand this issue to the PTAB for additional explanation.

Finally, we take no position on whether Jacobson, taken as a whole, discloses the “elongated portions” limitation in claim 17, for that is a matter for the PTAB to decide on remand. *See Gartside*, 203 F.3d at 1316 (examining the scope and content of the prior art produces factual findings reviewed for substantial evidence); *see also Ariosa*, 805 F.3d at 1365 (“[W]e must not ourselves make factual and discretionary determinations that are for the [USPTO] to make.” (citations omitted)). If the PTAB determines on remand that Jacobson does not disclose the “elongated portions” limitation in claim 17, it may take additional actions that it deems appropriate.

#### CONCLUSION

We have considered the remaining arguments and find them unpersuasive. Accordingly, the Final Written Decisions of the United States Patent and Trademark Office’s Patent Trial and Appeal Board are

#### **AFFIRMED-IN-PART, VACATED-IN-PART, AND REMANDED**

#### COSTS

Each party shall bear its own costs.