

United States Court of Appeals for the Federal Circuit

GEORGETOWN RAIL EQUIPMENT COMPANY,
Plaintiff-Appellee

v.

HOLLAND L.P.,
Defendant-Appellant

2016-2297

Appeal from the United States District Court for the
Eastern District of Texas in No. 6:13-cv-00366-RWS,
Judge Robert Schroeder III.

Decided: August 1, 2017

DANA M. HERBERHOLZ, Parsons Behle & Latimer, Boise, ID, argued for plaintiff-appellee. Also represented by CHRISTOPHER CUNEO, JAMIE K. ELLSWORTH; C. KEVIN SPEIRS, Salt Lake City, UT.

DANIEL J. SCHWARTZ, Faegre Baker Daniels LLP, Chicago, IL, argued for defendant-appellant. Also represented by KATHRYN ANN FEIEREISEL; LAUREN J. FRANK, TIMOTHY E. GRIMSRUD, Minneapolis, MN.

Before REYNA, SCHALL, and WALLACH, *Circuit Judges*.

WALLACH, *Circuit Judge*.

Following a claim construction ruling adverse to Appellant Holland L.P. (“Holland”), a jury in the U.S. District Court for the Eastern District of Texas (“District Court”) found that Holland infringed Appellee Georgetown Rail Equipment Company’s (“Georgetown”) U.S. Patent 7,616,329 (“the ’329 patent”) and awarded Georgetown lost profits. The District Court later approved an additional award of enhanced damages based on a finding of willful infringement. Holland appeals the District Court’s conclusions as to claim construction, willful infringement, and enhanced damages, as well as its decision to deny Holland’s renewed motion for judgment as a matter of law (“JMOL”) of noninfringement. See *Georgetown Rail Equip. Co. v. Holland L.P.* (*Georgetown Rail II*), No. 6:13-cv-366, 2016 WL 3346084, at *1 (E.D. Tex. June 16, 2016) (denying JMOL and granting Motions for Finding of Willful Infringement and Enhanced Damages); *Georgetown Rail Equip Co. v. Holland L.P.* (*Georgetown Rail I*), No. 6:13-cv-366-JDL, 2014 WL 11498109, at *1 (E.D. Tex. Nov. 13, 2014) (Claim Construction Order); J.A. 162–63 (Final Judgment). We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1) (2012). We affirm.

BACKGROUND

I. The Patented Technology

The ’329 patent generally relates to a “system and method for inspecting railroad tracks” with the use of digital technology. ’329 patent, Abstract. Specifically, it discloses a system for inspecting tie plates, which are steel plates that connect the steel rail tracks to wooden ties. *Id.* col. 2 ll. 19–31; J.A. 928. Tie plates can sink or cut into the wooden ties and disrupt railroad service. ’329 patent, Abstract. The ’329 patent purportedly improves the prior art by automating the examination of misaligned tie plates, a process that was historically per-

formed manually with certain software systems. *See id.* col. 1 l. 39–col. 2 l. 6 (describing the prior art).

Claim 16, the only asserted claim, recites:

A system for inspecting a railroad track bed, including the railroad track, to be *mounted on a vehicle for movement along the railroad track*, the system comprising:

- at least one light generator positioned adjacent the railroad track for projecting a beam of light across the railroad track bed;

- at least one optical receiver positioned adjacent the railroad track for receiving at least a portion of the light reflected from the railroad track bed and generating a plurality of images representative of the profile of at least a portion of the railroad track bed; and

- at least one processor for analyzing the plurality of images and determining one or more physical characteristics of the said portion of the railroad track bed, the one or more physical characteristics comprising at least a geographic location of the plurality of images along the railroad track bed, wherein the processor includes an algorithm for detecting a misaligned or sunken tie plate of the railroad track bed, the algorithm comprising the steps of:

- (a) analyzing a frame of the plurality of images, the frame comprising a region of interest;

- (b) determining whether the region of interest contains a tie plate;
- (c) if a tie plate is present, determining a crosstie contour and a tie plate contour;
- (d) comparing an orientation of the crosstie contour and an orientation of the tie plate contour; and
- (e) determining whether the tie plate is misaligned or sunken based upon the comparison.

Id. col. 11 l. 40–col. 12 l. 2 (emphasis added).

II. Relevant Facts and Procedural History

Holland purchases track and crosstie measuring technologies from Rail Vision Systems, J.A. 1072–73, and then places those technologies on its own track inspection vehicles, called TrackStar vehicles, J.A. 1564. Data from the track is collected and then may be sent to third-party companies, for example, Rail Vision Europe Ltd., a company based in the United Kingdom, for data processing. *See Georgetown Rail II*, 2016 WL 3346084, at *6. Rail Vision Europe Ltd. then sends finished reports back to Holland for distribution to Holland’s customers. *Id.* at *5–6; *see* J.A. 1103–04.

Georgetown markets similar products that practice the ’329 patent as part of its Aurora Track Inspection System. J.A. 850. Specifically, the Aurora Track Inspection System uses lasers and cameras mounted on a Hi-Rail vehicle to collect and process information about track ties. J.A. 817–19. The purpose of these types of systems is generally to allow customers to use the processed data to “manage the logistics of crosstie replacement and to

quantify the need for new crossties.” ’329 patent col. 1 ll. 39–40; *see* J.A. 1102–03.

Holland and Georgetown knew of each other’s place in the track-tie market. In January 2012, both companies participated in a “head-to-head challenge,” in which they demonstrated their services to potential customer Union Pacific Railroad (“Union Pacific”). *Georgetown Rail II*, 2016 WL 3346084, at *3 (citations omitted). Following the demonstrations, Union Pacific and Holland entered into a change order agreement (“Change Order”) to alter an existing contract between Holland and Union Pacific to allow Holland to provide Rail Vision Systems technology to Union Pacific on an as needed basis. *Id.*; Appellant’s Br. 23; Appellee’s Br. 13; J.A. 10741–44. The Change Order was signed for a particular number of years and included compensatory amounts for actual quantities of work performed upon Union Pacific’s request. Appellant’s Br. 25–26; J.A. 10742.

Georgetown sued Holland for infringement in 2013 and was granted a preliminary injunction in January 2014, ending any of Holland’s potential sales to Union Pacific under the Change Order. *Georgetown Rail II*, 2016 WL 3346084, at *3. The parties proceeded to a jury trial, and the jury found that Holland willfully infringed the ’329 patent and awarded \$1,541,333 in damages. *Id.* The District Court then denied Holland’s motion for JMOL and awarded Georgetown an additional \$1,000,000 in enhanced damages based on a finding of willful infringement pursuant to 35 U.S.C. § 284 (2012). *Id.* at *12–21.¹

¹ The District Court additionally found the case exceptional under 35 U.S.C. § 285 and awarded attorney fees. *Georgetown Rail II*, 2016 WL 3346084, at *21–24.

DISCUSSION

Holland raises four issues on appeal. First, Holland challenges the District Court’s finding that the term “mounted on a vehicle for movement along the railroad track” in the preamble of claim 16 is not a claim limitation. Appellant’s Br. 62–66. Second, Holland challenges the jury’s infringement finding. *Id.* at 33–45. Third, Holland challenges the District Court’s approval of the jury’s award of lost profits. *Id.* at 45–58. Fourth, Holland argues that we should reverse the District Court’s award of enhanced damages. *Id.* at 58–62. We address these issues in turn.

I. Claim Construction

At the District Court, Holland argued that the phrase “mounted on a vehicle for movement along the railroad track” in the preamble of claim 16 was a claim limitation, such that Holland’s product, which did not have a processor capable of mounting on a vehicle, could not infringe. *Georgetown Rail I*, 2014 WL 11498109, at *2. The District Court rejected this argument for four reasons. First, it found that the term did not recite an “essential structure” of the invention because the specification also included the phrase “[a]lternatively, the computer analysis can be performed by another computer system having image processing software known in the art,” ’329 patent col. 7 ll. 12–14, such that the system need not be performed in a vehicle, *Georgetown Rail I*, 2014 WL 11498109, at *2–3. Second, it found that, for the same reason, the phrase could not recite “additional structure or steps . . . underscored as important by the specification.” *Id.* at *3 (capitalization omitted). Third, it found that the term was not an “antecedent basis” for the claim

Holland does not challenge this finding. *See generally* Appellant’s Br.

terms because “[t]he claim body, neither in whole [n]or in part, mentions the phrase ‘mounted on a vehicle.’” *Id.* Finally, it found that Georgetown did not clearly rely on the limitation during prosecution because the cited statements from the prosecution history did not “distinguish the claimed invention from the prior art by reference to the system being mounted on a vehicle.” *Id.* at *4.

A. Standard of Review and Legal Standard

We review the district court’s ultimate construction of the claim language *de novo*. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 835 (2015). “[W]hen the district court reviews only evidence intrinsic to the patent (the patent claims and specifications, along with the patent’s prosecution history^[2]), the judge’s determination will amount solely to a determination of law, and the Court of Appeals will review that construction *de novo*.” *Id.* at 841. “In cases where . . . subsidiary facts [relating to claim construction] are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the evidentiary underpinnings of claim construction . . . and this subsidiary factfinding must be reviewed for clear error on appeal.” *Id.* (internal quotation marks omitted). Because our analysis of the relevant issue here, the preamble, involves an examination of only intrinsic evidence, we review the District Court’s determination *de novo*.

“Whether to treat a preamble as a limitation is a determination resolved only on review of the en-

² A patent’s prosecution history “consists of the complete record of the proceedings before the [U.S. Patent and Trademark Office (‘USPTO’)],” providing “evidence of how the [US]PTO and the inventor understood the patent.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (en banc) (citation omitted).

tire . . . patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (internal quotation marks, brackets, and citation omitted); see *Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1572–73 (Fed. Cir. 1996) (stating that whether the preamble constitutes a limitation “is determined on the facts of each case in light of the overall form of the claim, and the invention as described in the specification and illuminated in the prosecution history”). “[T]here is no simple test” for understanding the import of the preamble, but “we have set forth some general principles to guide th[e] inquiry.” *Am. Med. Sys., Inc. v. Biolitec, Inc.*, 618 F.3d 1354, 1358 (Fed. Cir. 2010).

“Generally, the preamble does not limit the claims.” *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002) (citation omitted). However, a preamble may be limiting if: “it recites essential structure or steps”; claims “depend[] on a particular disputed preamble phrase for antecedent basis”; the preamble “is essential to understand limitations or terms in the claim body”; the preamble “recit[es] additional structure or steps underscored as important by the specification”; or there was “clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art.” *Catalina Mktg.*, 289 F.3d at 808 (citations omitted).

The reverse is also true. A preamble is not a claim limitation if the claim body “defines a structurally complete invention . . . and uses the preamble only to state a purpose or intended use for the invention.” *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997). “[P]reamble language merely extolling benefits or features of the claimed invention does not limit the claim scope without clear reliance on those benefits or features as patentably significant.” *Catalina Mktg.*, 289 F.3d at 809 (citations omitted).

B. The District Court Properly Found the Preamble Is Not Limiting

In the context of the entire patent, it is apparent that the term “mounted on a vehicle for movement along the railroad track” is meant to describe the principal intended use of the invention but not to import a structural limitation or to exclude from the reach of the claims an assembly that does not include a vehicle mount. Nothing in the specification or prosecution history states, or even suggests, that Georgetown intended to exclude use of technology that was structurally identical to its claimed product but that was installed and performed analysis on a non-vehicle mount. *See generally* ’329 patent; *see* J.A. 10967, 11034, 11043, 11057–58, 11067, 11070, 11078, 11092–94 (’329 patent prosecution history). The body of the claim itself describes a “structurally complete invention,” *Rowe*, 112 F.3d at 478, because it describes a closed “system” comprised of a “light generator,” “optical receiver,” and “processor,” which are the objects required to perform the stated purposes of gathering and processing data on misaligned track ties, ’329 patent, col. 11 ll. 42, 43, 46, 51; *see id.*, Abstract, col. 2 ll. 13–34 (Summary of the Disclosure). The location of the system is not an essential feature of the invention. Indeed, as the District Court noted, the specification states that “[t]he computer analysis can be performed by the processing device . . . located on the inspection vehicle. *Alternatively*, the computer analysis can be performed by another computer system having image processing software known in the art.” *Georgetown Rail I*, 2014 WL 11498109, at *2–3 (quoting ’329 patent col. 7 ll. 10–14).

Holland’s arguments do not require us to reach a different conclusion. First, Holland argues that the specification describes all embodiments of the invention as vehicle-based, such that the phrase is “underscored as important” by the specification. Appellant’s Br. 63 (internal quotation marks and citation omitted). Holland is

incorrect. The specification states that the disclosed inspection system “can be mounted on an inspection vehicle . . . *or other device moving along the track* so as to maintain the inspection system . . . in the proper position.” ’329 patent col. 3 ll. 55–57 (emphasis added). It gives additional options that are not vehicle mounts as well, such as mounting the system on a “chassis that is towed by a vehicle” or on a “locomotive” or “freight car.” *Id.* col. 4 ll. 7–8. The specification also uses the verb “can be,” indicating an option rather than a requirement. *Id.* col. 3 l. 54. Moreover, the specification describes the patented invention as the system itself, noting that to mount the system “it is understood that other known components . . . may be needed” but do not form the basis for the patented invention. *Id.* col. 3 ll. 59–60. As the District Court noted, the specification explicitly states that the relevant computation and processing of the data using the patented algorithms and the processing device, respectively, also do not need to be performed on or affixed to a vehicle. *Georgetown Rail I*, 2014 WL 11498109, at *2–3; *see* ’329 patent col. 7 ll. 10–14. For these reasons, the phrase “mounted on a vehicle for movement along the railroad track” cannot be a part of the essential structure of the invention or a “fundamental characteristic” required for any part of the claims. *Poly-Am., L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1310 (Fed. Cir. 2004).

Holland’s second argument, that the preamble is “essential” to understand limitations in the claim body, Appellant’s Br. 66 (internal quotation marks and citation omitted), fails for the same reason. Contrary to Holland’s assertion, the system described in the claim body and in the specification is structurally complete without the disclosure of how the technology moves over the tracks. Holland argues as an example of the need to include the preamble in the claim language that the claim terms “plurality of images” and light generator and cameras that are “positioned adjacent” to the track would not

make sense without the preamble. *Id.* (internal quotation marks omitted). This puts the caboose before the locomotive. It is easy to imagine that the patented system could be manually carried or pulled across tracks, and that software configured in any type of device, on-site or off, could process the data. These claim terms still would apply, because the system, i.e., the “lasers, cameras, and a processor,” ’329 patent col. 2 ll. 14–15, still would generate a “plurality of images” using a light generator and cameras that are “positioned adjacent” to the track, *id.* col. 11 ll. 43–48. Such a preamble is not limiting “where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.” *Catalina Mktg.*, 289 F.3d at 808 (internal quotation marks and citation omitted).

Finally, Holland argues that Georgetown relied upon the preamble during prosecution to distinguish the invention from the prior art. Appellant’s Br. 66–67. Holland relies upon Georgetown’s statements that various prior art references teach away from the ’329 patent because the prior art did not teach “analyzing or determining . . . characteristics . . . along the railroad track bed,” J.A. 11092 (internal quotation marks and emphasis omitted), “utiliz[ing] physical track measurements to position the system,” J.A. 11058, or “correlat[ing] measured surface characteristics to geographic measured locations along roadway/rail surfaces,” J.A. 11034. However, none of these statements distinguish the patented invention from the prior art based on the mounting of the data processor part of the invention onto a vehicle. Ambiguous statements made during prosecution, especially those that do not directly distinguish the element claimed as essential for purposes of finding a limitation in the preamble, “cannot fairly limit the characteristics of the claim term.” *Grober v. Mako Prods., Inc.*, 686 F.3d 1335, 1342 (Fed. Cir. 2012). For these reasons, we hold that the

District Court properly found the preamble does not limit the asserted claim term.

II. Infringement

At the District Court, Holland argued that it could not have infringed because it “did not benefit from or control” the purported infringing technology. *Georgetown Rail II*, 2016 WL 3346084, at *5. In denying Holland’s request for JMOL, the District Court found that “Holland has provided no basis for the [District] Court to reevaluate the evidence,” because “[a] reasonable jury could find that Holland exercised control of and benefited from” its infringing Rail Vision Systems device, regardless of the fact that a third party, Rail Vision Europe Ltd., processed the gathered data. *Id.* at *6.

A. Standard of Review and Legal Standard

“For issues not unique to patent law, we apply the law of the regional circuit in which this appeal would otherwise lie,” here, the Fifth Circuit. *i4i Ltd. P’ship v. Microsoft Corp.*, 598 F.3d 831, 841 (Fed. Cir. 2010). The Fifth Circuit reviews denials of a renewed JMOL de novo. *Vanderbilt Mortg. & Fin., Inc. v. Flores*, 692 F.3d 358, 364 (5th Cir. 2012). “When reviewing jury verdicts, the court views all the evidence and draws all reasonable inferences in the light most favorable to the verdict.” *Black v. Pan Am. Labs., L.L.C.*, 646 F.3d 254, 258 (5th Cir. 2011) (citation omitted). A JMOL will be granted “[i]f the facts and inferences point so strongly in favor of [appellant] that a rational jury could not arrive at a contrary verdict.” *Id.* (internal quotation marks, brackets, and citation omitted).

“[D]irect infringement by use of a system claim requires a party . . . to use each and every . . . element of a claimed system.” *Centillion Data Sys., LLC v. Qwest Commc’ns Int’l, Inc.*, 631 F.3d 1279, 1284 (Fed. Cir. 2011) (internal quotation marks and brackets omitted). “[T]o

use a system for purposes of infringement, a party must put the invention into service, *i.e.*, control the system as a whole and obtain benefit from it.” *Id.* (internal quotation marks and citation omitted). Significantly, use does not require a party to “exercise physical or direct control over each individual element of the system.” *Id.* In a situation where a “back-end system[]” is used for processing certain data or information, the party collecting the information may still be said to be using the system because, “[i]f the user did not make the request, then the back-end processing would not be put into service,” demonstrating “control” of the system. *Id.* at 1285.

B. The District Court Did Not Err in Denying JMOL for Infringement

Holland presents two theories why it has not directly infringed the ’329 patent pursuant to 35 U.S.C. § 271(a).³ First, it alleges that “[n]o reasonable jury could have found that Holland ‘used’ . . . the allegedly infringing data processing equipment.” Appellant’s Br. 34; *see id.* at 34–41. Second, it claims that no reasonable jury could have found that it “offer[ed] to sell” the entire invention covered by the ’329 patent, as required under a separate theory of infringement. *Id.* at 42 (internal quotation marks and citation omitted); *see id.* at 42–45. Because we resolve this question on the first theory argued by Holland, we need not address Holland’s arguments related to the offer to sell. *See Novartis AG v. Noven Pharm., Inc.*, 853 F.3d 1289, 1296 (Fed. Cir. 2017).

³ In relevant part, § 271 provides that “whoever without authority makes, *uses, offers to sell*, or sells any patented invention[] within the United States . . . infringes the patent.” 35 U.S.C. § 271(a) (emphasis added). Section 271 was not amended in the Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 3, 125 Stat. 284, 285–93 (2011).

In *Centillion*, this court addressed infringement of a system claim on information technology. The claim recited a “front-end” system maintained by an end user and a “back-end” system maintained by a service provider. *Centillion*, 631 F.3d at 1281. The facts of the case were that customers of the company accused of infringing used the company’s front-end client application software to trigger data processing by the company’s back-end system. *See id.* at 1281–82. Relevant to this case, we held that the company’s customers “used” the entire system for purposes of § 271(a) because the customers entered informational queries into the front-end, and these queries caused the back-end to perform additional processing as required by the patent claim. *Id.* at 1285. Importantly, we held that “[i]t makes no difference that the back-end processing is physically possessed by” a third party. *Id.*

Holland’s use of Rail Vision Systems’s technology is analogous to the system found “used” for purposes of the infringement analysis in *Centillion*. As in *Centillion*, Holland collects and gathers data by its system platform on the front-end. J.A. 1137–39. Then, Holland sends the gathered information to a back-end third-party company with instructions to process and analyze the information. J.A. 1106, 1139–40. The fact that the transmission from the front-end to the back-end in this case involves “physically remov[ing] the hard drives with data . . . and ship[ping] them overseas to Rail Vision [Europe Ltd.]” is of no consequence. Appellant’s Br. 38 (citing J.A. 1103–04). The intermediary steps are still “put into service” as a result of Holland’s front-end collection and request for processing, demonstrating Holland’s ultimate control of, and derivation of benefit from, the system. *See Centillion*, 631 F.3d at 1285. Holland would have us look to the part of *Centillion* that found the back-end processor had not infringed because it only supplied software for the customer to use on the front-end. Appellant’s Br. 39–40.

However, this analogy overlooks the finding of infringing use by the company's customers, who were actively using and requesting the analysis of their data. J.A. 1126–27, 1139–40. Here, Holland acts like the customers in *Centillion*—its trucks gather and collect the data, and it makes the choice to send collected information to the third-party, Rail Vision Europe Ltd., for processing.

Holland argues that, as a factual matter, it may have collected and shipped the raw data to Rail Vision Europe Ltd., but it has not been proven that Holland actually ever gathered any data that was sent for processing. Appellant's Br. 34–37; see Oral Arg. at 3:45–4:09, <http://oralarguments.ca9.uscourts.gov/default.aspx?fl=2016-2297.mp3>. Specifically, Holland points to a line in the District Court opinion stating that “Holland's 2012 demonstration in Yuma is a use of the Rail Vision Systems,” Appellant's Br. 20 (quoting *Georgetown Rail II*, 2016 WL 3346084, at *5), and alleges that there is “no evidence that any data collected during the Yuma Demonstration was processed by anyone,” *id.* at 34. Regardless of whether the information shown at the Yuma Demonstration was ever processed by Rail Vision Europe Ltd., Holland's expert affirmatively stated several times on the record that Holland has collected data and has directed Rail Vision Systems to process the collected data. See J.A. 1135, 1138–39, 1141, 1143–44; see also J.A. 1103, 1106 (similar).⁴ As such, a reasonable jury could

⁴ Although these pages have been designated as confidential, the information generally contained therein was discussed publically at oral argument. Oral Arg. at 2:19–5:05, 31:51–32:24 (statements made by Holland's attorney), 20:45–21:49 (statements made by Georgetown's attorney), <http://oralarguments.ca9.uscourts.gov/default.aspx?fl=2016-2297.mp3>; see Appellee's Br. 36–37.

find evidence supporting its conclusion that Holland infringed Georgetown's '329 patent by putting all elements of the infringing system into use. That is all that is required to uphold the jury finding of infringement.

III. The District Court Did Not Err in Denying JMOL for Damages Based on Lost Profits

Holland challenges the District Court's denial of JMOL on lost profits damages. At trial, Georgetown asserted that Holland's infringing sales of data collected and analyzed from the Rail Vision Systems technology caused it to lose profits that it otherwise would have made from the '329 patent. The jury awarded Georgetown \$1,541,333 in lost profits. *Georgetown Rail II*, 2016 WL 3346084, at *7.

A. Standard of Review and Legal Standard

As stated above, the Fifth Circuit reviews denials of a renewed JMOL de novo. *Vanderbilt Mortg.*, 692 F.3d at 364. To recover lost profits, "a patent owner must prove a causal relation between the infringement and its loss of profits." *Crystal Semiconductor Corp. v. TriTech Microelects. Int'l, Inc.*, 246 F.3d 1336, 1353 (Fed. Cir. 2001) (internal quotation marks and citation omitted). "In other words, the burden rests on the patentee to show a reasonable probability that but for the infringing activity, the patentee would have made the infringer's sales." *Id.* (internal quotation marks and citation omitted). "There is no particular required method to prove but for causation" in patent cases. *Mentor Graphics Corp. v. EVE-USA, Inc.*, 851 F.3d 1275, 1284 (Fed. Cir. 2017). "One useful, but non-exclusive method to establish the patentee's entitlement to lost profits is the . . . test first articulated by the Sixth Circuit" in *Panduit Corp. v. Stahlin Brothers Fibre Works, Inc.*, 575 F.2d 1152 (6th Cir. 1978). *Mentor Graphics*, 851 F.3d at 1284 (internal quotation marks and citation omitted). Before the District Court, Georgetown chose to calculate damages based on a lost profits model

under the four-factor *Panduit* test. See *Georgetown Rail II*, 2016 WL 3346084, at *7–8. The *Panduit* test requires the patentee to show: (1) “demand for the patented product”; (2) “absence of acceptable noninfringing substitutes”; (3) “manufacturing and marketing capability to exploit the demand”; and (4) “the amount of profit that . . . would have [been] made.” 575 F.2d at 1156.

B. Substantial Evidence Supports the Award of Lost Profits

Holland challenges the sufficiency of evidence for *Panduit* factors one and four, arguing that Georgetown’s calculation of lost profits had “no legally sufficient evidentiary basis” to support the District Court’s findings as to these factors. Appellant’s Br. 46. We disagree.

1. Demand for the Patented Product

As to the first *Panduit* factor, Holland alleges that there is no evidence that Union Pacific demanded Georgetown’s patented invention and, instead, evidence points to a conclusion that Union Pacific “repeatedly rejected” Georgetown’s patented technology. *Id.* at 49; see *id.* at 49–53. Holland further contends that the evidence cannot support demand for the patented product because it “consists only of generalized market projections by Holland, not Union Pacific,” *id.* at 51–52 (citation omitted), and that Georgetown “fail[ed] to show demand during the period of allegedly infringing sales,” *id.* at 51. Holland also states that evidence of demand by other Class I railroads cannot satisfy the *Panduit* test because it does not “establish that Union Pacific demanded its technology.” *Id.*

Holland improperly narrows the scope of the inquiry for the first *Panduit* factor. The proper inquiry asks whether demand existed in the marketplace for the patented product, i.e., a product “covered by the patent in suit or that directly competes with the infringing device.”

DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc., 567 F.3d 1314, 1330 (Fed. Cir. 2009) (internal quotation marks and citation omitted). Georgetown's Aurora System and Holland's Rail Vision Systems are covered by claim 16 of the '329 patent. *See supra* Section II. Holland submitted its own evidence showing that there was demand for the Rail Vision Systems device at least before 2011. *See* J.A. 1113–15, 1127–30. Georgetown submitted evidence that its Aurora System generated millions in revenue and was contracted out to four U.S. railroad companies in long-term contracts, exhibiting strong evidence of demand. *See* J.A. 66, 867–68, 1011–12, 1591, 10091–147. Although Holland attempts to discredit this evidence by stating that Georgetown must show demand “during the period of allegedly infringing sales,” Appellant's Br. 51 (internal quotation marks and citation omitted), Holland again recites an incorrect standard. All a patentee must do is “sell[] some item, the profits of which have been lost due to infringing sales.” *Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d 1255, 1265 (Fed. Cir. 2013) (internal quotation marks and citation omitted). Holland has not suggested, nor can it suggest, that Georgetown was not selling its Aurora System from 2012 through 2015 (the period of allegedly infringing sales). *See generally* Appellant's Br. Thus, we find substantial evidence supports a finding that demand for the patented product existed, and we decline to disturb the jury's award or the District Court's denial of Holland's request for JMOL on this basis.

2. Amount of Profits That Would Have Been Made

As to the fourth *Panduit* factor, Holland alleges that Georgetown did not submit adequate evidence to show its lost profits. *Id.* at 53–58. Georgetown submitted evidence that its lost profits calculation was based on failure to secure a contract with Union Pacific, which entered into a deal with Holland instead through the Change Order. *See Georgetown Rail II*, 2016 WL 3346084, at *8;

J.A. 1600. Holland contends that because it made no profit under the Change Order signed with Union Pacific, Georgetown could not have missed any potential profits. Appellant's Br. 47. It further alleges that the District Court's assumption that Holland made no profit on the Change Order solely due to the January 2014 preliminary injunction preventing sales was improper speculation running contrary to actual commercial data. *Id.* at 48.

Georgetown's expert calculated lost profits using the following method. First, he assumed that had the Change Order between Holland and Union Pacific not been implemented, Union Pacific's track maintenance business would have gone to Georgetown. J.A. 1608–10. Second, he calculated that Georgetown would have inspected a certain mileage of Union Pacific's track over a certain period at a prevailing market rate. J.A. 1606, 1610–12. Third, he accounted for the typical delay between the contract's effective date and the start of Georgetown's hypothetical work. J.A. 1610. He further stated that the per-mile rate was on the higher end of comparable ranges because it would not have included downward pressure on price created with the entrance of the infringing technology into the current market. J.A. 1599–600. Fourth, to calculate the length of the contract, he looked at comparable contracts already entered into between Georgetown and four other U.S. railway companies. *See* J.A. 10148, 10170, 10179, 10091; *see also* J.A. 1586, 1608. His proposed contract length, squarely in the middle of lengths contracted with other railroads, was also the same number of years as Holland's Change Order with Union Pacific. *See* J.A. 10742–45.⁵ Finally, to keep the estimate

⁵ Holland makes an additional argument objecting to the lost profits calculation as improper for calculating subjective "future" profits that would accrue following trial. *See* Appellant's Br. 56–57. Georgetown counters

within a reasonable range, he did not include more speculative damages, such as loss of market share or ancillary costs. J.A. 1587–88, 1601, 1605.

Georgetown’s expert used the same method of reviewing competitive market contracts to determine the number of miles of track to be inspected yearly and to approximate the per-mile rates of inspection. See J.A. 1585–618. Both of these numbers were within the range of rates in the valid contracts Georgetown maintained with other U.S. railroads. See J.A. 10145, 10160, 10177, 10198; see also J.A. 860–63. The number used for the per-mile rate was also the same calculation that Georgetown had submitted in a revised proposal to Union Pacific to use its technology in April 2012, an offer which Union Pacific did not accept. J.A. 973, 10213. Finally, Georgetown’s expert deducted costs to arrive at the final calculation. J.A. 1612–18. These cost deductions included job costs, capital expenditures, and deductions for net-present value using a standard discount rate. J.A. 1613–18.

Holland’s argument that the award does not reflect market or economic variables is belied by the record. “We have affirmed lost profits awards based on a wide variety of reconstruction theories in which the patentee has presented reliable economic evidence of but for causation.” *Ericsson, Inc. v. Harris Corp.*, 352 F.3d 1369, 1377 (Fed. Cir. 2003) (internal quotation marks and citation omit-

that this argument has been waived because it was not raised below. See Appellee’s Br. 56 (citing *Golden Bridge Tech., Inc. v. Nokia, Inc.*, 527 F.3d 1318, 1323 (Fed. Cir. 2008)). Because we find substantial evidence exists to support the length of the contract calculation for lost profits, we decline to address arguments related to future lost profits that are encompassed within the reasonable contract length.

ted). That is the case here. Georgetown's lost profits calculation, including contract length, per-mile rate, and yearly miles of track to review, was based on sound economic proof confirmed by the historical record. As such, Georgetown "made a prima facie showing of lost profits and the burden shifted to [Holland] to prove that a different rate would have been more reasonable." *Versata*, 717 F.3d at 1267 (citation omitted); see *Mentor Graphics*, 851 F.3d at 1285–89 (reviewing case law using the *Panduit* test and using similar evidence to award lost profits in a two-player market), *Crystal Semiconductor*, 246 F.3d at 1354–57 (calculating lost profits based on similar "market variables"). Holland did not make any such showing, nor has it alleged that it made a showing of a more reasonable damages award. See generally Appellant's Br.

Holland also contends that there is no but-for causation because Georgetown's calculations assume that Union Pacific would have ordered from Georgetown; however, during the same period where Union Pacific could have ordered data collection services "as needed" from Holland under the Change Order, Union Pacific did not purchase any services. *Id.* at 47–48. Losses must be "reasonably related" to the infringing activity. *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1579 (Fed. Cir. 1992). Georgetown presented evidence that the market for its laser-based track inspection services was a two-supplier market. See J.A. 828, 1264, 1522. Its expert stated that only Georgetown and Holland were invited to demonstrate their technologies for Union Pacific, J.A. 890–92, and that Union Pacific was interested in purchasing this technology and asked for it, J.A. 1592. Georgetown provided further evidence that Union Pacific entered into a Change Order with Holland that contemplated providing the services, J.A. 1626–27, and that Union Pacific purchased a certain amount of inspection system technologies from Holland before the preliminary injunction went into effect, J.A. 1179,

10521–24. We conclude that there was a legally sufficient evidentiary basis in the record from which a reasonable jury could have found that Georgetown would have received business from Union Pacific for data collection services if Holland’s infringing product was not in the market. Holland presented evidence that: Georgetown had offered its services unsuccessfully to Union Pacific prior to the relevant time period, J.A. 1627; Union Pacific had not authorized work under the Change Order, J.A. 1627–29; and at all times, even after the Change Order was signed, Union Pacific was free to enter into a separate contract for services with Georgetown, J.A. 10740–43 (demonstrating non-exclusivity of the Change Order). The jury weighed that evidence against Georgetown’s and found Georgetown’s evidence more persuasive. We may not reweigh that evidence here. *See Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.*, 790 F.3d 1329, 1342 (Fed. Cir. 2015). Thus, we affirm the District Court’s entry of the jury award of lost profits.

IV. Willfulness and Enhanced Damages

The final issue before us concerns the District Court’s finding of willful infringement and its related decision to enhance damages. The District Court found, in relevant part, that the jury verdict of willful infringement was supported by substantial evidence and that “the totality of the circumstances” warranted an award of enhanced damages based, in part, on the fact that “Holland continued to rely on arguments through trial that were substantially weak and rejected time and again.” *Georgetown Rail II*, 2016 WL 3346084, at *15, *17; *see id.* at *15–21. The District Court awarded Georgetown an additional \$1,000,000 in enhanced damages. *Id.* at *21.

A. Standard of Review and Legal Standard

“When reviewing damages in patent cases, we apply regional circuit law to procedural issues and Federal Circuit law to substantive . . . issues pertaining to patent

law.” *Whitserve, LLC v. Comput. Packages, Inc.*, 694 F.3d 10, 26 (Fed. Cir. 2012) (internal quotation marks and citation omitted) (reviewing willfulness and enhanced damages under Federal Circuit law). A jury’s willfulness finding is a question of fact reviewed for substantial evidence. *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1341–42 (Fed. Cir. 2016). A district court’s decision to award enhanced damages upon a finding of willful infringement is reviewed for abuse of discretion. *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1934 (2016).

When a court is assessing appropriate damages upon a finding for the claimant, “the court may increase the damages up to three times the amount found or assessed.” 35 U.S.C. § 284. This case was decided by the District Court under the then-applicable willful infringement standard. At the time of the decision, proof of willful infringement required “clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent” and that “this objectively-defined risk . . . was either known or so obvious that it should have been known.” *In re Seagate Tech., LLC*, 497 F.3d 1360, 1371 (Fed. Cir. 2007). Since the District Court’s decision, the Supreme Court issued *Halo Electronics*, which rejected the requirement of “finding . . . objective recklessness in every case before district courts may award enhanced damages.” 136 S. Ct. at 1932. Now, “[t]he subjective willfulness of a patent infringer, intentional or knowing, may warrant enhanced damages, without regard to whether his infringement was objectively reckless.” *Id.*

The Supreme Court has made it clear that awards of enhanced damages are discretionary, and “courts should continue to take into account the particular circumstances of each case in deciding whether to award damages, and in what amount.” *Id.* When deciding how much to award in enhanced damages, district courts often apply the non-

exclusive factors articulated in *Read Corp. v. Portec, Inc.*, 970 F.2d 816 (Fed. Cir. 1992), *abrogated in part on other grounds by Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).⁶ See *i4i Ltd. P'ship*, 598 F.3d at 858–59 (affirming district court's review of the *Read* factors); *Innovention Toys, LLC v. MGA Entm't, Inc.*, 667 F. App'x 992, 993 (Fed. Cir. 2016) (similar).

B. The District Court Did Not Err in Its Willfulness
Finding or Award of Enhanced Damages

Holland argues that this court should reverse the finding of willful infringement and the award of enhanced damages because (1) there is no evidence to suggest that Holland knew of the '329 patent before the start of this litigation; (2) there is no evidence to suggest that Holland had access to the technical algorithms used in the '329 patent, such that willful copying would be impossible; (3) it is undisputed that Holland was not involved in development of the Rail Vision Systems software; and (4) Holland processes its data using different software algorithms than those in the '329 patent. Appellant's Br. 58–61.

⁶ The *Read* factors consider (1) “whether the infringer deliberately copied the ideas of another”; (2) “whether the infringer, when he knew of the other's patent protection, investigated the scope of the patent and formed a good-faith belief that it was invalid or that it was not infringed”; (3) “the infringer's behavior as a party to the litigation”; (4) the “[d]efendant's size and financial condition”; (5) the “[c]loseness of the case”; (6) the “[d]uration of the defendant's misconduct”; (7) “[r]emedial action by the defendant”; (8) the “[d]efendant's motivation for harm”; and (9) “[w]hether the defendant attempted to conceal its misconduct.” 970 F.2d at 827 (footnote and citations omitted).

Substantial evidence supports the jury's finding that subjective recklessness led to willful infringement in this case. The jury heard evidence that Holland was aware of the '329 patent prior to the current litigation, *see, e.g.*, J.A. 1180–87, 1340, 1384–85; *see also* J.A. 1161–62, 1277, and believed that it was infringing the patent. Evidence to support this latter proposition included evidence of the parties' prior business dealings from which the jury could have inferred that Holland believed that it needed to acquire or license Georgetown's Aurora System to avoid infringement, *see, e.g.*, J.A. 1187–88, and "circumstantial evidence that Holland copied [Georgetown's] technology," *Georgetown Rail II*, 2016 WL 3346084, at *17. Although Holland continues to dispute several of these facts, the jury was free to decide whose evidence it found more compelling on the question of willfulness and found in Georgetown's favor. *Lighting Ballast Control*, 790 F.3d at 1342. We will not disturb that finding here, where substantial evidence supports the jury's conclusions. *See id.*

As for enhanced damages, on this record, we cannot conclude that the District Court abused its discretion in weighing the evidence or applying the *Read* factors. *See i4i Ltd. P'ship*, 598 F.3d at 858. Holland makes no specific arguments with respect to the District Court's application of the *Read* factors in its Opening Brief. *See generally* Appellant's Br. In its Reply Brief, Holland states that the same arguments it makes to reverse the finding of willfulness go to certain *Read* factors, without directly connecting its arguments to individual *Read* factors. Reply Br. 28.

None of the arguments Holland makes with respect to the findings of enhanced damages demonstrate abuse of discretion by the District Court. The District Court made detailed factual findings which, taken together, support its award of enhanced damages. It did not merely look at the jury's finding of willfulness; rather, it applied and considered all nine *Read* factors. Specifically, after ana-

lyzing each *Read* factor individually, the District Court stated that “[f]actors 1, 2, and 5 support enhancement; factors 3, 4, and 7 slightly support enhancement; and factors 6, 8, and 9 are neutral.” *Georgetown Rail II*, 2016 WL 3346084, at *21. It also found that “no single factor weighs against enhancement.” *Id.* Finally, the District Court took into account the degree of willfulness and found that it was “not warranted” to enhance damages to the full maximum statutory amount of treble damages (over \$4,500,000); rather, it awarded only an additional \$1,000,000. *Id.* Considering all of the *Read* factors and the District Court’s statutory authority to treble damages under § 284, the award of \$1,000,000 in addition to the damages award of \$1,544,333 was not an abuse of discretion.

CONCLUSION

We have considered the parties’ remaining arguments and find them unpersuasive. Accordingly, the Final Judgment of the U.S. District Court for the Eastern District of Texas is

AFFIRMED

COSTS

Costs to Georgetown Rail.