

# United States Court of Appeals for the Federal Circuit

04-1412

ELECTROMOTIVE DIVISION OF GENERAL MOTORS CORPORATION,

Plaintiff-Appellant,

v.

TRANSPORTATION SYSTEMS DIVISION OF GENERAL ELECTRIC COMPANY,

Defendant-Appellee,

and

DAIDO INDUSTRIAL BEARINGS, LTD.,

Defendant-Appellee.

Ernie L. Brooks, Brooks Kushman P.C., of Southfield, Michigan, argued for plaintiff-appellant. With him on the brief were Frank A. Angileri and Thomas W. Cunningham.

Martin R. Lueck, Robins, Kaplan, Miller & Ciresi L.L.P., of Minneapolis, Minnesota, argued for defendant-appellee Transportation Systems Division of General Electric Company. With him on the brief was Jan M. Conlin. Of counsel on the brief were David P. Swenson, of Washington, DC, and David G. Mangum, C. Kevin Speirs, and Catherine A. Agnoli, Parsons Behle & Latimer, of Salt Lake City, Utah.

Appealed from: United States District Court for the Eastern District of Michigan

Judge John Corbett O'Meara

# United States Court of Appeals for the Federal Circuit

04-1412

ELECTROMOTIVE DIVISION OF GENERAL MOTORS CORPORATION,

Plaintiff-Appellant,

v.

TRANSPORTATION SYSTEMS DIVISION OF GENERAL ELECTRIC COMPANY,

Defendant-Appellee,

and

DAIDO INDUSTRIAL BEARINGS, LTD.,

Defendant-Appellee.

---

DECIDED: July 28, 2005

---

Before MICHEL, Chief Judge, PLAGER, Senior Circuit Judge, and LINN, Circuit Judge.

MICHEL, Chief Judge.

The Electromotive Division of General Motors Corporation (“EMD”) appeals the United States District Court for the Eastern District of Michigan’s grant of summary judgment of invalidity of United States Patent Nos. 5,169,242 and 5,567,056 (“the ‘242 and ‘056 patents,” respectively) under the on-sale bar of 35 U.S.C. § 102(b). Electromotive Div. of Gen. Motors Corp. v. Transp. Sys. Div. of Gen. Elec. Co. & Daido Indus. Bearings, Ltd., No. 03-70940 (E.D. Mich. May 4, 2004). The ‘242 patent is generally directed to compressor bearings for use in turbochargers for diesel locomotive

engines. The '056 patent relates generally to planetary bearings for use in turbocharger planetary drive trains. The appeal was submitted after oral argument on March 8, 2005. Because the patented compressor and planetary bearings were subject to pre-critical date sales that were commercial and not primarily experimental, we agree with the district court that the '242 and '056 patents have been proven invalid as a matter of law under the on-sale bar of § 102(b). Accordingly, we affirm the district court's grant of summary judgment of invalidity of both patents in favor of the Transportation Systems Division of General Electric Company and Daido Industrial Bearings, Ltd.

## I. BACKGROUND

### A. EMD's General Design and Testing Procedures

EMD is a division of General Motors Corporation focused on the design and production of locomotives. As part of that business, EMD designs and manufactures component parts for locomotive engines, including the two kinds of bearings at issue in this case. Both types of bearings are embedded in turbochargers, which are in turn embedded in the engines of locomotives that EMD sells.

After developing a new bearing, EMD typically initiates a two-phase testing program before releasing the new bearing for commercial production. In the first phase, termed Reliability Growth Testing, EMD tests its new bearings indoors at its engineering facilities on multiple unit turbocharger cells ("in-house program"). The purpose of the in-house program is to ascertain the durability and reliability of the new bearings.

Upon completion of the in-house program, EMD commences the second phase of testing, termed Reliability Verification Testing ("field program"). This testing occurs outdoors under actual use conditions. That is, after EMD integrates the new bearings

into existing orders, the customer railroads use the new bearings in their routine operations. The purpose of this second phase is to verify durability.

During the field program, EMD does not engage in ongoing monitoring or periodic inspections of its new bearings because they are buried inside turbochargers and cannot readily be examined by visual inspection. Rather, EMD inspects the new bearings only if a particular turbocharger fails and is sent back to EMD. In such case, EMD disassembles the failed turbocharger to assess whether the failure was caused by the new bearings or some other part.

## **B. Events Involving the New Compressor Bearings**

In the late 1980s, EMD developed a new compressor bearing for use in diesel locomotive turbochargers. On July 17, 1989, James L. Blase, an EMD employee and one of the named inventors on the two asserted patents, reported during an internal meeting that he had tested the new compressor bearings for approximately 3000 hours in a twelve-cylinder multiple unit locomotive engine. The minutes of that meeting document that the in-house program had been completed. Thus, EMD decided to proceed with the field program by substituting the new compressor bearings into locomotive orders previously placed by Norfolk Southern, Go Transit, and LZO railroads.<sup>1</sup>

EMD contacted Norfolk Southern, Go Transit, and LZO for permission to substitute the prior art bearings, originally to be used in the purchased locomotives, with the new compressor bearings. According to Mr. Blase, the three railroads agreed to

---

<sup>1</sup> In the fall of 1988 and spring of 1989, EMD sold a total of forty-six locomotives to Norfolk Southern, Go Transit, and LZO, scheduling delivery for late 1989 and early 1990. Norfolk Southern ordered thirty-three locomotives, Go Transit ordered twelve locomotives, and LZO ordered one locomotive.

accept the new bearings. None of the three companies, however, signed a confidentiality agreement or any other contract consenting to participate in the field program. They likewise were not given any design details or other documentation regarding the new compressor bearings. Further, Norfolk Southern, Go Transit, and Lxo were not restricted or supervised in their use of the new compressor bearings and were not under any obligation to collect data, keep progress records, or even operate the subject locomotives during the time of the field program.

After arranging for the substitution, EMD prepared internal memos documenting the change to be made in the Norfolk Southern, Go Transit, and Lxo orders. For example, a July 19, 1989 internal memo stated: "Orders 887007 [for Norfolk Southern], C484 [for Go Transit], and 899110 [for Lxo] are to have Turbocharger 40014638 replaced by Turbocharger 40021524. . . . The turbocharger and EMD make component schedules must be revised to reflect this change." A different July 19, 1989 memo stated that "[t]he drawings and bills of material for these orders must be changed to include this new bearing. This will be accomplished with an expedited RFC. Jim Korenchan will write this RFC and get it to the drafting room by 7-19-89." Similarly, a July 25, 1989 internal memo stated: "This new bearing addresses all known failure modes and MUST be included in upcoming 12-710GA engines. The orders affected are the [Norfolk Southern] GP59 order No. 887007, Go Transit order no. C484, and Lxo no. 899110."

On August 28, 1989, EMD modified its original specification of February 1, 1989 for the Norfolk Southern order, agreeing to supply more new compressor bearings to Norfolk Southern than originally planned for in its prior locomotive order. In particular,

EMD noted that it "will provide spare parts for [Norfolk Southern]'s GP59 locomotives," including the "Turbo" of part number 40021531. The specified Turbo included the new compressor bearings.

Between January 1989 and November 1989, EMD purchased a total of 303 new compressor bearings from Allison Gas & Turbine ("Allison"), another division of General Motors Corporation, for a price of \$298.80 each. Allison manufactured these bearings according to specifications provided by EMD. After receiving the new compressor bearings from Allison, EMD substituted them into locomotives previously sold to Norfolk Southern, Go Transit, and LZO. Thereafter, EMD shipped the subject locomotives to the three railroads.

On November 27, 1990, EMD filed a patent application for its new compressor bearings. Based upon this filing date, the critical date for applying the on-sale bar for the '242 patent is November 27, 1989. The '242 patent issued on December 8, 1992. Claims 1 through 7 of the '242 patent are directed to a turbocharger assembly, and claims 8 through 18 are directed to the new compressor bearings.

On August 19, 1991, EMD released the new compressor bearings for production. All locomotive sales involving diesel engines after August 1991 included the new compressor bearings. Before this release, however, EMD employed prior art bearings in all customer orders, except the Norfolk Southern, Go Transit, and LZO orders discussed above. EMD likewise did not advertise, market, or create promotional materials for the new compressor bearings prior to the August 1991 release.

### **C. Events Involving the New Planetary Bearings**

In September 1992, EMD designed a new planetary bearing for use in turbocharger planetary drive trains. In January 1993, EMD initiated the in-house program for this new bearing type. In March 1993, EMD decided to proceed with the field program. To do so, EMD approached Union Pacific railroad for permission to substitute its new planetary bearings for prior art bearings in an order for two locomotives that Union Pacific placed earlier in 1992. Union Pacific allegedly agreed. Nevertheless, it did not sign a confidentiality agreement or any other type of a contract consenting to participate in the field program. Union Pacific also was not placed under any restrictions or supervision regarding the use of the locomotives containing new planetary bearings. Nor was Union Pacific given any design details for the new planetary bearings or required to monitor or document its usage of the subject locomotives during the field program.

On July 6, 1993, EMD ordered 105 new planetary bearings at \$88.87 per bearing from its supplier Glacier, now Daido Industrial Bearings, Ltd. ("Daido"). On August 6, 1993, EMD installed six planetary bearings that it had purchased from Daido into turbochargers for the two locomotives destined for Union Pacific. EMD shipped those locomotives to Union Pacific that same day. On September 7, 1994, EMD released the planetary bearings for production, meaning that the new planetary bearings were included in all future locomotive sales involving turbocharger planetary drive trains.

On September 29, 1994, EMD filed a patent application for its new planetary bearings. Based upon this filing date, the critical date for the '056 patent is September 29, 1993. The '056 patent issued on October 22, 1996. Claims 1 through 6 of the '056

patent are directed to the new planetary bearings, while claim 7 is directed to a turbocharger planetary drive train.

#### **D. Trial Court Proceedings**

In March 2003, EMD filed a patent infringement action against the Transportation Systems Division of General Electric Company and Daido, asserting infringement of the '242 and '056 patents. In December 2003, GE and Daido separately moved for summary judgment that the '242 and '056 patents are invalid under the on-sale bar of 35 U.S.C. § 102(b). EMD filed a cross-motion for summary judgment that neither the '242 nor the '056 patent is invalid under the on-sale bar. EMD contended that its sales of the new compressor and planetary bearings did not raise the on-sale bar provision of § 102(b) because those sales were for purposes of experimentation.

In May 2004, the district court granted GE's and Daido's motions and denied EMD's cross-motion. The district court held that EMD's purchase of new compressor bearings from Allison before the critical date was a commercial sale within the meaning of § 102(b). The district court also held that both EMD's substitution of new compressor bearings in place of prior art bearings in sales made to Norfolk Southern, Go Transit, and LXE prior to the critical date and its sale of spare compressor bearings to Norfolk Southern prior to the critical date separately raised the on-sale bar. As for the planetary bearings, the district court concluded that Daido's sale of the planetary bearings to EMD prior to the critical date and EMD's substitution of two sets of new planetary bearings for prior art bearings in locomotives sold to Union Pacific prior to the critical date were each invalidating sales under § 102(b).

The district court considered whether the objective indicia suggesting experimentation precluded the on-sale bar for either the '242 or '056 patent, ultimately concluding that they did not. The district court found that the various transactions between EMD, Allison, Daido, and EMD's four railroad customers were no different than normal commercial sales. The district court also found that EMD exercised no control over its customers' use of the new bearings after they were sold. The district court further found that there was little evidence of experimentation given that (1) neither EMD nor its customers maintained any test data, progress reports, or other records; (2) EMD sold a large number of new compressor and planetary bearings during the periods of alleged experimentation; and (3) EMD inspected failed turbochargers in the ordinary course of business, not as part of any experimental protocol. Lastly, the district court found that the field program was unnecessary because EMD had established that both types of new bearings were durable through the in-house program.

EMD timely appealed. We have jurisdiction over this appeal pursuant to 28 U.S.C. § 1295(a)(1).

## **II. DISCUSSION**

We review a district court's grant of summary judgment de novo, and its denial of summary judgment for abuse of discretion. Intel Corp. v. Via Techs., Inc., 319 F.3d 1357 (Fed. Cir. 2003) (internal citations omitted). Whether an invention was on sale within the meaning of § 102(b) is a question of law that we review de novo based upon underlying facts, which we review for clear error. See Pfaff v. Wells Elecs., 124 F.3d 1429, 1432 (Fed. Cir. 1997), aff'd, 525 U.S. 55 (1998).

#### **A. Whether the Sales Were Sufficient to Raise the Bar of § 102(b)**

A person is entitled to a patent unless, *inter alia*, “the invention was . . . on sale in this country, more than one year prior to the date of the application for patent in the United States.” 35 U.S.C. § 102(b) (2000). In order for a patent claim to be held invalid under the on-sale bar of § 102(b), two conditions must be satisfied before the critical date. First, the claimed invention must be the subject of a commercial sale. Second, the claimed invention must be ready for patenting. Pfaff, 525 U.S. at 67-68. “Before the Supreme Court’s decision in Pfaff, this court used a multifactor, ‘totality of the circumstances’ test to enforce the on-sale bar.” EZ Dock, Inc. v. Schafer Sys., Inc., 276 F.3d 1347, 1351 (Fed. Cir. 2002). Following Pfaff, we now apply the two-part test “without balancing various policies [of the bar] according to the totality of the circumstances.” Id. (quoting Weatherchem Corp. v. J.L. Clark, Inc., 163 F.3d 1326, 1333 (Fed. Cir. 1998)).

EMD did not challenge below, and does not challenge on appeal, that its bearing inventions were “ready for patenting” at the time of the alleged commercial sales. Thus, the relevant inquiry here concerns only the first prong of the Pfaff test.

We have recognized that the first prong “involves a determination of whether a commercial offer for sale [or sale] has occurred, applying traditional contract law principles.” Allen Eng’g Corp. v. Bartell Indus., Inc., 299 F.3d 1336, 1352 (Fed. Cir. 2002). In this case, the district court found several invalidating sales for the ’242 and ’056 patents. We need not consider whether the district court was correct as to all of these sales because a single sale or offer for sale suffices to bar patentability. Atl. Thermoplastic Co. v. Faytex Corp., 970 F.2d 834, 836 (Fed. Cir. 1992) (citing In re

Caveney, 761 F.2d 671, 676 (Fed. Cir. 1985)); A.B. Chance Co. v. RTE Corp., 854 F.2d 1307, 1311 (Fed. Cir. 1988). Thus, for each type of bearing, we restrict our analysis to the question of whether any one of EMD's alleged sales is sufficient to invoke § 102(b).

Before addressing this question, we observe that the first prong of the Pfaff test entails an assessment of whether the circumstances surrounding a pre-critical date sale objectively show that it was primarily made for experimentation.

[T]he question posed by the experimental use doctrine, assessed under the first prong of the two-part on-sale bar test of Pfaff, is not whether the invention was under development, subject to testing, or otherwise still in its experimental stage at the time of the asserted sale. Instead, the question is whether the transaction constituting the sale was not incidental to the primary purpose of experimentation, *i.e.*, whether the primary purpose of the inventor at the time of the sale, as determined from an objective evaluation of the facts surrounding the transaction, was to conduct experimentation.

Allen Eng'g, 299 F.3d at 1353 (citing EZ Dock, 276 F.3d at 1356-57 (Linn, J., concurring)) (internal citations and quotations omitted). If the sale was primarily for experimentation rather than commercial gain, then the sale is not invalidating under § 102(b). Monon, 239 F.3d at 1258 (“[E]vidence that the . . . sale of the patented device was primarily experimental may negate an assertion of invalidity.”). Although we proceed in a step-wise fashion, analyzing first whether EMD made any pre-critical date sales of its compressor and planetary bearings and then whether any such sales were negated by EMD's experimentation, we emphasize for sake of clarity that we are considering only one legal question, namely, the first prong of the Pfaff test.

As to compressor bearings, Transportation Systems Division of General Electric Company and Daido (collectively “GE”) argue that EMD's agreement to supply spare compressor bearings to Norfolk Southern constituted a commercial sale under § 102(b).

The district court agreed, and so do we. In July 1989, some months after EMD arranged to substitute its new compressor bearings into locomotives ordered by Norfolk Southern, EMD contracted with Norfolk Southern to supply spare compressor bearings not included in the original deal. To reflect this transaction, EMD prepared a "Specification Supplement H," dated August 28, 1989, three months before the critical date, stating that EMD "will provide spare parts for [Norfolk Southern]'s GP59 locomotives," including the turbocharger part number 40021531. The July 1989 assembly list for turbocharger part number 40021531 reveals that this particular turbocharger contained the new compressor bearings. Based upon this evidence, we can only conclude that EMD's new compressor bearings were the subject of a sale prior to the critical date.

Turning to planetary bearings, GE asserts that EMD's purchase of more than one hundred planetary bearings from Daido was a pre-critical date sale within the meaning of § 102(b). We agree. Daido's sale to EMD was plainly a sale of the new planetary bearings prior to the critical date.

#### **B. Evidence of Experimentation**

GE contends that EMD's sale of spare compressor bearings cannot be the subject of experimentation. We are persuaded by this contention, noting in particular that the record does not reveal when or how Norfolk Southern intended to use the spare compressor bearings. There also was no evidence showing that Norfolk Southern replaced even one of the compressor bearings found in locomotives that EMD considered part of its field program with one of the spare compressor bearings. Such replacement must have occurred prior to the production release of the new compressor

bearings in August 1991. Any replacement after that date certainly could not qualify as experimentation because EMD incorporated the new compressor bearings into all diesel engine locomotive orders following production release. Therefore, for the reasons set forth below, we conclude that EMD's sale of spare compressor bearings to Norfolk Southern was not primarily for experimentation and thus that the district court did not err in holding the '242 patent invalid under § 102(b).

Regarding planetary bearings, EMD argues that, at a minimum, a genuine issue of fact exists as to whether the sale of the new planetary bearings was primarily for experimentation, pointing out that (1) completion of the field program was required under EMD's policy before releasing a new bearing for production; (2) neither monitoring nor inspection was necessary because the purpose of the field program was merely to verify durability; (3) inspection was not even possible because the new planetary bearings were embedded in the turbochargers housed inside locomotive engines; and (4) failed turbochargers were returned to EMD for teardown and inspection. EMD also analogizes the facts here to those in Manville Sales Corp. v. Paramount Systems, Inc., 917 F.2d 544 (Fed. Cir. 1990), and EZ Dock, 276 F.3d 1347. In both cases, which involved durability testing, we rejected an assertion of the on-sale bar.

GE responds that the field program was unnecessary because the new planetary bearings had already been shown to work for their intended purpose during the in-house program. GE also asserts that durability testing under actual use conditions was not required because durability is not a claim limitation in the '056 patent. Additionally, GE contends that the district court correctly found, despite EMD's

subjective intent to experiment, that the objective evidence revealed that EMD's sale to Union Pacific was not primarily for experimentation, noting, inter alia, that EMD did not control Union Pacific's use of the new planetary bearings and that the field program lacked the customary objective indicia associated with experimentation such as test records.

At the outset, we observe that EMD purchased the new planetary bearings from Daido to use in filling Union Pacific's pre-critical date locomotive order, which was to contain new planetary bearings instead of prior art bearings. Thus, we reason that the sale from Daido to EMD ("upstream sale") and the sale from EMD to Union Pacific ("downstream sale") are so inextricably linked that we cannot identify the purpose for the Daido's upstream sale without examining the purpose for EMD's downstream sale. Our analysis concerning whether the new planetary bearings were the subject of an invalidating sale under § 102(b), consequently, hinges on the purpose for the sale from EMD to Union Pacific.

It is important to recognize that this court has limited experimentation sufficient to negate a pre-critical date public use or commercial sale to cases where the testing was performed to perfect claimed features, or, in a few instances like the case here, to perfect features inherent to the claimed invention. See, e.g., EZ Dock, 276 F.3d at 1353 (experimentation focused on durability of claimed polyethylene floating dock in turbulent water of the Mississippi River, although durability was not a claim limitation); Seal-Flex, Inc. v. Athletic Track & Court Constr., 98 F.3d 1318, 1320 (Fed. Cir. 1996) (experimentation focused on durability of claimed all-weather activity mat under harsh weather conditions, but durability was not a claim limitation); Manville, 917 F.2d at 550-

51 (experimentation focused on durability of claimed self-centering, lightpole luminaire under severe winter conditions in Wyoming, even though durability was not a claim limitation). Here, EMD designed its field program to verify durability, a feature, although unclaimed, we hold is inherent to the new planetary bearings. Hence, evidence showing that EMD's field program has the requisite objective indicia of experimentation may negate EMD's pre-critical date sale of the new planetary bearings to Union Pacific.<sup>2</sup>

Few decisions address how to determine if a pre-critical date public use or sale is experimental rather than a public use or sale under § 102(b), even though the doctrine has been in existence since City of Elizabeth v. Pavement Co., 97 U.S. 126 (1878).<sup>3</sup> But certain things are settled. Significantly, an inventor's subjective intent to experiment cannot establish that his activities are, in fact, experimental.

When sales are made in an ordinary commercial environment and the goods are placed outside the inventor's control, an inventor's secretly held subjective intent to "experiment," even if true, is unavailing without objective evidence to support the contention. Under such circumstances, the customer at a minimum must be made aware of the experimentation.

LaBounty Mfg., Inc. v. U.S. Int'l Trade Comm'n, 958 F.2d 1066, 1072 (Fed. Cir. 1992) (citing In re Brigance, 792 F.2d 1103, 1108 (Fed. Cir. 1986)). Thus, while EMD officials may have subjectively believed they were conducting experimentation under actual use

---

<sup>2</sup> It is well-settled that an accused infringer carries the burden of proving invalidity by clear and convincing evidence. When the accused infringer alleges invalidity under § 102(b) based upon a pre-critical date public use or commercial sale, however, an inventor may introduce evidence showing that his public use or sale was primarily for purposes of experimentation, thus neutralizing the accused infringer's showing.

<sup>3</sup> Although City of Elizabeth involved a pre-critical date public use of the claimed invention, we have applied experimentation not only in that context but also in the on-sale context. See In re Hamilton, 882 F.2d 1576, 1580 (Fed. Cir. 1989).

conditions, their beliefs cannot establish that EMD's sales were primarily for experimentation.

We have generally looked to objective evidence to show that a pre-critical date sale was primarily for experimentation. For example, in T.P. Laboratories, Inc. v. Professional Positioners, Inc., 724 F.2d 965, 972 (Fed. Cir. 1984), we indicated that various objective indicia may be considered in determining whether the inventors engaged in experimentation:

The length of the test period is merely a piece of evidence to add to the evidentiary scale. The same is true with respect to whether payment is made for the device, whether a user agreed to use secretly, whether records were kept of progress, whether persons other than the inventor conducted the asserted experiments, how many tests were conducted, how long the testing period was in relationship to tests of other similar devices.

Id. at 971-72; see also Baker Oil Tools, Inc. v. Geo Vann, Inc., 828 F.2d 1558, 1564 (Fed. Cir. 1987) (listing similar types of objective evidence to be considered in determining if a public use or sale is experimental).

Recently, we catalogued and consolidated all these considerations into a list of thirteen objective factors: (1) the necessity for public testing; (2) the amount of control over the experiment retained by the inventor; (3) the nature of the invention; (4) the length of the test period; (5) whether payment was made; (6) whether there was a secrecy obligation; (7) whether records of the experiment were kept; (8) who conducted the experiment; (9) the degree of commercial exploitation during testing; (10) whether the invention reasonably requires evaluation under actual conditions of use; (11) whether testing was systematically performed; (12) whether the inventor continually monitored the invention during testing; and (13) the nature of the contacts made with

potential customers. Allen Eng'g, 299 F.3d at 1353 (citing EZ Dock, 276 F.3d at 1357 (J. Linn, concurring)). This list is not exhaustive, and all of the experimentation factors may not apply in a particular case. See Brigance, 792 F.2d at 1108. They simply represent various kinds of evidence relevant to the question of whether pre-critical date activities involving the patented invention – either public use or sale – were primarily experimental and not commercial.

This court, however, has held or at least suggested that certain evidentiary showings can be dispositive of the question of experimentation. In In re Hamilton, 882 F.2d 1576 (Fed. Cir. 1989), we stated:

First, we may agree with [the inventor] that control is not the “lodestar” test in all cases involving experimental use. It is nonetheless an important factor. The experimental use doctrine operates in the inventor’s favor to allow the inventor to refine his invention or to assess its value relative to the time and expense of prosecuting a patent application. If it is not the inventor or someone under his control or “surveillance” who does these things, there appears to us no reason why he should be entitled to rely upon them to avoid the statute.

Id. at 1581 (internal citation omitted and emphasis in original). We observed that nothing in the record showed that the Hamilton inventor knew what, if anything, the customer was doing in terms of testing the invention. As a result, we concluded that the inventor’s purpose in making the sale was not primarily experimental.

Following Hamilton, this court again emphasized the importance of control in Lough v. Brunswick Corp., 86 F.3d 1113 (Fed. Cir. 1996). In particular, this court said that an inventor must show control over the alleged testing to establish experimentation. Id. at 1120. Additionally, the Lough court placed critical emphasis on experimental records. After listing various objective indicia of experimentation, which included both whether records or progress reports were made concerning the testing and the extent of

control the inventor maintained over the testing, this court stated: “The last factor of control is critically important, because, if the inventor has no control over the alleged experiments, he is not experimenting. If he does not inquire about the testing or receive reports concerning the results, similarly, he is not experimenting.” Id. The Lough court also stated: “When one distributes his invention to members of the public under circumstances that evidence a near total disregard for supervision and control concerning its use, the absence of these minimal indicia of experimentation require a conclusion that the invention was in public use.” Id. at 1122 (emphasis added). Hence, this court held, based primarily upon the absence of control and records, that the inventor’s public use of the claimed invention was not experimental.

Two years after Lough, in a concurring opinion in C.R. Bard, Inc. v. M3 Systems, Inc., 157 F.3d 1340 (Fed. Cir. 1998), Judge Bryson urged that control and recordkeeping are vital to a showing of experimentation.<sup>4</sup> “Certain factors, such as the requirement that the inventor control the testing, that detailed progress records be kept, and that the purported testers know that testing is occurring, are critical to proving experimental purpose.” Id. at 1380 (citing Lough, 86 F.3d at 1120; 2 Donald S. Chisum, Chisum on Patents § 6.02[7][c] (1998)). Judge Bryson stressed awareness by the purported testers that testing is occurring. He suggested or at least implied that consideration of these three factors form the first, and potentially decisive, step in determining whether a public use or sale was primarily experimental. Indeed, we

---

<sup>4</sup> This court was divided in Bard with Judges Bryson and Mayer concurring as to the invalidity of one of the asserted patents under § 102(b), but each presented a different analytical path to that conclusion. Judge Newman dissented with respect to the on-sale bar.

discern that Judge Bryson applied only these three factors to conclude that the on-sale bar applied.

The facts of this case are analogous to those in U.S. Environmental Products, Inc. v. Westall, 911 F.2d 713 (Fed. Cir. 1990). In Westall, this court affirmed a district court's conclusion that a patent was invalidated by a sale more than one year before the filing date. That conclusion was based primarily on (1) the lack of written progress records and the failure to adhere to a testing schedule; (2) the inventor's failure to maintain control over the testing; and (3) promotion of the invention during the testing. In this case, as in Westall, the evidence shows that neither the in-house tests . . . nor the field tests . . . were under the control of the inventor or his company. There is little or no evidence of any written progress records; indeed, the inventor was apparently never provided with any test results. Finally, the communications between [a company with which the inventor was associated] and [the customer] throughout the purported testing period emphasized commercial sales and projections, not controlled experimentation.

Id. at 1381 (internal citation omitted).

We agree with Judge Bryson that a customer's awareness of the purported testing in the context of a sale is a critical attribute of experimentation. If an inventor fails to communicate to a customer that the sale of the invention was made in pursuit of experimentation, then the customer, as well as the general public, can only view the sale as a normal commercial transaction. Indeed, our predecessor court recognized in In re Dybel, 524 F.2d 1393, 1401 (C.C.P.A. 1975), that “[an inventor’s] failure to communicate to any of the purchasers or prospective purchasers of his device that the sale or offering was for experimental use is fatal to his case.” And, “we have held that the assertion of experimental sales, at a minimum, requires that customers must be made aware of the experimentation.” Paragon Podiatry Lab., Inc. v. KLM Labs., Inc., 984 F.2d 1182, 1186 (Fed. Cir. 1993) (citing LaBounty, 958 F.2d at 1072; Dybel, 524

F.2d at 1401). Accordingly, we hold not only that customer awareness is among the experimentation factors, but also that it is critical.

Our precedent has treated control and customer awareness of the testing as especially important to experimentation. Indeed, this court has effectively made control and customer awareness dispositive. See, e.g., Lough, 86 F.3d at 1120; Hamilton, 882 F.2d at 1581. Accordingly, we conclude that control and customer awareness ordinarily must be proven if experimentation is to be found.

We now consider the facts of this case. First, the record, as the district court noted, is devoid of any evidence that EMD, or Union Pacific under EMD's direction, controlled the field program for its new planetary bearings. EMD did not provide any protocols to Union Pacific directing their use of locomotives containing the new planetary bearings. EMD likewise neither supervised nor restricted Union Pacific's use of the new planetary bearings in any way. Mr. Blase testified that the railroads involved in the field testing were not required to run the subject locomotives under any specific conditions.

The record also shows that EMD made no attempt to monitor the conditions under which Union Pacific used the "test" locomotives. EMD explains away its lack of oversight by arguing that the field program was conducted solely to verify the durability of its new planetary bearings as measured by the number of turbocharger failures, not by the daily use of its new planetary bearings. Such an argument is, however, unconvincing. EMD did not request or receive any comments or data from Union Pacific concerning the operation or durability of its new planetary bearings. Without

obligating Union Pacific to provide such feedback, it cannot be reasonably said that EMD exercised any monitoring over the field program.

That Union Pacific returned failed turbochargers to EMD for teardown and inspection is insufficient to establish EMD's control over the field program. Union Pacific voluntarily returned failed turbochargers under the basic warranty given by EMD to all of its customers. It was not, however, under any obligation to do so. Mr. Blase testified that EMD requested the return of failed components from all customers in the ordinary course of business. Union Pacific thus would have returned all failed turbochargers whether it was participating in experimentation or was merely an ordinary customer. What is more, EMD's teardown reports focused only on the appearance and features of the new planetary bearings without any correlation to the field conditions. Nothing in the teardown reports thus distinguish them from any other failure reports prepared outside the field program. Accordingly, the district court did not err in finding that EMD exercised no control over Union Pacific's use of the new bearings.

Second, the record is insufficient, even on summary judgment, to objectively establish Union Pacific's awareness of the field program. The only evidence regarding communications with Union Pacific concerning the field program comes from Mr. Blase's deposition testimony and an internal memo he prepared. In his deposition, Mr. Blase testified:

- Q: Okay. Now when you would generally send out or do field verification or reliability verification in the field, were there agreements that customers entered into in connection with those?
- A: The customer would understand that – that the – that what they were receiving would be a reliability verification test.
- Q: Would you tell them which components were associated with that?
- A: We would indicate to them which components are under reliability – reliability verification test, yes.

Q: You would tell them that.  
A: Sure.  
Q: Okay. Did they sign any type of secrecy agreement or confidentiality agreement in connection with that?  
A: I do not know that.  
Q: Okay. Who would know that?  
A: The – the correspondence with the customer would be handled through the sales department as far as I know.  
Q: And who was in the sales department during this timeframe?  
A: I don't recall.

Similarly, in his memo, Mr. Blase stated under the heading "Status of Public Disclosure" that "[u]pon applying for field test on a customer's locomotive, the customer is made aware that there is an experimental part in the turbochargers they are receiving, yet details of the part are not fully disclosed." Apart from this single sentence, Mr. Blase did not otherwise describe EMD's communications with any customer or state exactly what Union Pacific was told, if anything.

Neither Mr. Blase's testimony nor his memo establishes awareness by Union Pacific that the new planetary bearings were substituted into their pre-existing order for the purpose of testing those bearings in actual use rather than as part of a commercial sale. Mr. Blase's testimony simply suggests the possibility that an unidentified EMD employee may have engaged in a conversation with one or more unidentified employees of Union Pacific about substituting the new planetary bearings.

Further, the record fails to show any objective evidence supporting Mr. Blase's inference that Union Pacific was "aware" of the field testing. It does not contain even the hint of a written agreement with Union Pacific, testimony from any representative of Union Pacific describing the railroad's awareness of the field program, or any other form of corroborating documentation held by Union Pacific regarding the field program. The

lack of such evidence to corroborate Mr. Blase's conclusory testimony and memo thus validates the lack of customer awareness.

The facts here are closely analogous to those in Lough, where, as noted above, this court rejected an inventor's claim that a pre-critical date public use of his liquid seal assembly invention was made for experimentation. In Lough, the inventor distributed six prototypes of his liquid seal assembly invention to his friends for use in their boats. After distribution, the Lough inventor did not maintain any supervision over his friends' use of the liquid seal assemblies or follow-up with them for comments as to the operability of the liquid seal assemblies. Similarly, EMD allowed Union Pacific unsupervised use of the new planetary bearings. EMD neither monitored the conditions under which Union Pacific used the new planetary bearings nor solicited any feedback from Union Pacific regarding the bearings' performance. What is more, EMD, like the inventor in Lough, did not maintain any records of the alleged testing or require Union Pacific to do so. As we stated in Lough, "Lough's failure to monitor the use of his prototypes by his acquaintances, in addition to the lack of records or reports from those acquaintances concerning the operability of the devices, compel the conclusion that, as a matter of law, he did not engage in experimental use." 86 F.3d at 1122. We are equally compelled to conclude as a matter of law that EMD did not engage in any experimentation on its new planetary bearings.

Finally, contrary to EMD's contention, Manville and EZ Dock do not control the outcome here, even though both cases involve durability testing of inventions under actual use conditions which we held to be experimental. EZ Dock and Manville are

factually distinguishable, especially with respect to control, recordkeeping, and customer awareness.

In EZ Dock, two inventors designed a floating dock made of polyethylene. They later installed one at a customer's fishing camp located in an area of the Mississippi River that experienced heavy boat traffic and turbulent water flow. Unlike the inventors in EZ Dock who routinely inspected the installed polyethylene floating dock over the course of a summer, EMD did nothing to control, monitor, or systematize the field testing of its new planetary bearings. EMD did not require Union Pacific to follow any protocols when using the subject locomotives. EMD likewise did not examine the new planetary bearings on any schedule. Instead, it did so only when a turbocharger failed.

Additionally, while shopping at one of the inventor's office supply stores to buy a copier, the EZ Dock customer noticed the polyethylene floating docks being stored in the window and approached that inventor requesting to purchase one. Here, EMD approached Union Pacific, a long-time customer, requesting permission to substitute the new planetary bearings into an order that Union Pacific had previously placed. The customer in EZ Dock thus was aware that the polyethylene floating dock was not commercially available, but instead experimental. The same cannot be said for Union Pacific given that the record contains only vague, conclusory, and uncorroborated testimony about Union Pacific's awareness of the experimental nature of the field program. Moreover, the sale in EZ Dock was an isolated, unexpected occurrence. The EZ Dock inventor clearly was not intending to sell the polyethylene floating dock, much less earn a profit from the sale, as evidenced by the fact he charged only 75 percent of the final retail price. In contrast, there is no evidence to suggest that EMD discounted

the price of the locomotive Union Pacific ordered to offset the risk that the new planetary bearings might fail. Therefore, the record suggests that EMD made the substitution as part of a commercial sale to make money, not primarily to experiment.

Finally, the inventors in EZ Dock had not tested the polyethylene floating dock in turbulent water for any length of time. They had only floated it in the Mississippi River on occasion and installed several at a marina where the water conditions were fairly stable. They did not know whether their polyethylene floating dock would be durable under heavier water flow conditions, thus establishing a need for the turbulent water testing. EMD, in comparison, had tested the new planetary bearings in the in-house program and already knew they were durable. In light of these significant factual differences, it is clear that EMD's reliance on EZ Dock is misplaced.

Turning to Manville, the plaintiff's employees invented a new, self-centering lightpole luminaire and installed one in a rest area being built along an interstate highway in Wyoming, but not yet open to the public. The Manville plaintiff directly controlled the testing by installing the luminaire in the fall, removing it in the spring, and thoroughly examining it following this testing period. By contrast, EMD did not control or systematize Union Pacific's use of the subject locomotives. Union Pacific was not placed under any restrictions or obligations concerning its use of the new planetary bearings; it was free to use the subject locomotives daily or not at all, in hot, dry climates or cold, wet climates, with maximum loads or load-free.

Also, the State of Wyoming knew of the experimental and confidential nature of Manville's installation of the luminaire. Indeed, Manville specifically informed a Wyoming official that its use of one luminaire on one pole at one site in Wyoming was

experimental. The State of Wyoming likewise received a drawing of the luminaire containing a confidentiality notice. Here, the situation was quite the reverse. Mr. Blase gave only vague, conclusory, and uncorroborated testimony regarding Union Pacific's possible awareness of the experimentation. Such testimony, however, cannot establish what Union Pacific really knew about the purpose of the sale, especially without correspondence with Union Pacific or other documentation.

In addition, Manville lacked confidence that the luminaire would perform in its intended environment because Manville only tested a single luminaire on a pole in the backyard of its Ohio factory for a few days, not under Wyoming winter conditions of high wind and ice for any extended period of time. In contrast, EMD subjected its new planetary bearings to the in-house program, which simulated actual use conditions over extended periods of time. EMD also failed to point to any evidence, like the internal memo written by a Manville employee, objectively explaining why actual conditions were impossible to replicate through its in-house program.

Finally, the State of Wyoming agreed to purchase the luminaire only if it proved operable after the winter. As a result, the State of Wyoming withheld payment until the results of the weather-related testing were known. Here, Union Pacific neither conditioned its purchase of the locomotive on the operability of the new planetary bearings nor withheld payment in an amount corresponding to the cost of the new planetary bearings pending the results of the field program. Viewing all of the differences between the facts in Manville and those implicated here, we conclude that EMD's reliance on Manville, like its reliance on EZ Dock, is misplaced.

Because the facts do not show the existence of control or customer awareness, we do not consider the other experimentation factors. We conclude, as a matter of law, that EMD's sale to Union Pacific of the new planetary bearings was not made primarily for experimentation. We, therefore, conclude that Daido's sale to EMD could not have been made primarily for experimentation, since the purpose for the upstream sale was to make the downstream sale possible. Accordingly, the district court did not err in holding the '056 patent invalid under the on-sale bar of § 102(b).

### **III. CONCLUSION**

We conclude, as a matter of law, that EMD's sale of spare compressor bearings to Norfolk Southern and Daido's sale of planetary bearings to EMD were not primarily experimental. Because the district court correctly held that EMD commercially sold the patented compressor and planetary bearings prior to the critical date, raising the on-sale bar of § 102(b) for the '242 and '056 patents, we affirm.

AFFIRMED