

NOTE: This disposition is nonprecedential.

**United States Court of Appeals  
for the Federal Circuit**

---

**IQASR LLC,**  
*Plaintiff-Appellant*

v.

**WENDT CORP.,**  
*Defendant-Appellee*

---

2019-2227

---

Appeal from the United States District Court for the District of Colorado in No. 1:16-cv-01782-MSK-KMT, Senior Judge Marcia S. Krieger.

---

Decided: September 15, 2020

---

RUDOLPH A. TELSCHER, JR., Husch Blackwell LLP, St. Louis, MO, for plaintiff-appellant. Also represented by KARA RENEE FUSSNER.

ROBERT R. BRUNELLI, Sheridan Ross P.C., Denver, CO, for defendant-appellee. Also represented by KENDRIA ELIZABETH PEARSON.

---

Before DYK, CLEVINGER, and HUGHES, *Circuit Judges*.

HUGHES, *Circuit Judge*.

This case concerns the validity of a patent for an automobile scrap recycling process. IQASR LLC appeals the district court's decision holding U.S. Patent No. 9,132,432 invalid for indefiniteness. IQASR argues that the district court erred in its application of the legal standard for indefiniteness and in its findings on both the intrinsic and extrinsic evidence. Because the district court did not err in its legal analysis or its factfinding, we affirm.

## I

The '432 patent teaches various methods to sort recyclable materials from non-recyclable materials in "automobile shredder residue." This term refers to the residue produced by shredding "end-of-life" vehicles, i.e., "scrapped" or "junked" automobiles, for disposal and recycling. The '432 patent's claimed methods aim to enhance the separation of non-recyclable materials like "trash and magnetic fuzz" from recyclable materials like "plastics and metals," allowing recovery of more recyclable materials. *See, e.g.*, '432 patent at 1:48–50, 2:1–15.

The claim terms whose definiteness is disputed in this appeal, "magnetic fuzz," and "low susceptance microparticles" are found in independent claim 1 and dependent claim 13, reproduced below with the relevant terms italicized.

1. A method of separation of automobile shredder residue comprising the steps of:
  - providing automobile shredder residue as a result from a ferrous sorting recovery system;
  - introducing said automobile shredder residue into an auto mobile shredder residue sorting, non-ferrous recovery system;
  - non-magnetically sorting *magnetic fuzz* from said automobile shredder residue with said

automobile shredder residue sorting, non-ferrous recovery system;

wherein said sorted *magnetic fuzz* is substantially free of recyclable materials.

**13.** A method of separation of automobile shredder residue according to claim 1 wherein said step of non-magnetically sorting *magnetic fuzz* from said automobile shredder residue with said automobile shredder residue sorting, non-ferrous recovery system comprises the step of non-magnetically sorting separating [sic] *low susceptance microparticles* from said automobile shredder residue with said automobile shredder residue sorting, non-ferrous recovery system.

'432 patent at 23:7–18, 24:16–23.

## II

IQASR sued Wendt Corp. for infringement of the '432 patent. *See IQASR LLC v. Wendt Corp.*, No. 16-CV-01782-MSK-KMT, 2019 WL 1075477 (D. Colo. Mar. 7, 2019) (*Decision*). After a *Markman* hearing, the district court held the '432 patent invalid under 35 U.S.C. § 112. *See id.* The parties disputed six claim terms. *Id.* at \*2–3. In construing these terms, the court found “magnetic fuzz” indefinite, rendering independent claim 1 (and thus the remaining claims, all dependent from claim 1) indefinite. *Id.* at \*6–8. It also found “low susceptance microparticles” in dependent claim 13 indefinite. *Id.* at \*9.

IQASR appeals the district court's final judgment invalidating all claims of the '432 patent based on these two terms' indefiniteness. IQASR having timely appealed, we have jurisdiction under 28 U.S.C. § 1295(a)(1).

“[W]e review a district court's determination that a claim is invalid as indefinite . . . *de novo*, although, as with claim construction, any factual findings by the district

court based on extrinsic evidence are reviewed for clear error.” *Sonix Tech. Co. v. Publications Int’l, Ltd.*, 844 F.3d 1370, 1376 (Fed. Cir. 2017). “To trigger clear error review, ‘it is not enough that the district court may have heard extrinsic evidence during a claim construction proceeding—rather, the district court must have actually made a factual finding.’” *Id.* (quoting *CardSoft, LLC v. VeriFone, Inc.*, 807 F.3d 1346, 1350 (Fed. Cir. 2015)). “Moreover, ‘[a] party cannot transform into a factual matter the internal coherence and context assessment of the patent simply by having an expert offer an opinion on it. The internal coherence and context assessment of the patent, and whether it conveys claim meaning with reasonable certainty, are questions of law.’” *Id.* (quoting *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 789 F.3d 1335, 1342 (Fed. Cir. 2015)).

### III

IQASR asserts that the district court erred on three fronts. First, IQASR argues that the district court committed multiple legal errors in applying the law of indefiniteness. These assertions of legal error leak into IQASR’s second and third arguments: that the district court erred in its findings of fact from both the extrinsic evidence proffered and the intrinsic record. We reject each of these arguments because the district court appropriately analyzed the definiteness of the ’432 patent and did not reversibly err in its factfinding. As a result, we affirm the district court’s conclusion that, as used in the ’432 patent, “magnetic fuzz” is indefinite.<sup>1</sup>

---

<sup>1</sup> Since we affirm the indefiniteness of “magnetic fuzz,” used in independent claim 1, we need not decide the definiteness of “low susceptance microparticles.” The latter term appears only in claim 13, which depends from

We address IQASR's assertions of error regarding the extrinsic evidence and then its assertions regarding the intrinsic evidence, interspersing its assertions of legal error where relevant to the district court's analysis of its findings of fact.

A

“In the face of an allegation of indefiniteness, general principles of claim construction apply.” *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1377–78 (Fed. Cir. 2015) (quoting *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010)). “The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005). “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Id.*

We do not perceive any clear error in the district court's finding that “magnetic fuzz” lacks “a readily-understood definition in [its] field.”<sup>2</sup> *Decision* at \*7. “A factual finding is clearly erroneous if, despite some supporting evidence,

---

claim 1, so our disposition of “magnetic fuzz” renders superfluous the dispute over claim 13's validity.

<sup>2</sup> The scope of the relevant “field” is unclear. On appeal, IQASR asserts that “[i]f ‘magnetic fuzz’ is a term of art . . . it is a term from the automobile recycling industry. A person with no experience in that field cannot competently testify as to whether the term was known and used.” Reply Br. 16. But this contradicts IQASR's experts, both of whom defined the relevant skilled artisan to include persons with no direct experience in the automotive recycling industry. See J.A. 1236–37; J.A. 1578.

we are left with the definite and firm conviction that a mistake has been made.” *Stone Basket Innovations, LLC v. Cook Med. LLC*, 892 F.3d 1175, 1178 (Fed. Cir. 2018) (quoting *Rothschild Connected Devices Innovations, LLC v. Guardian Prot. Servs., Inc.*, 858 F.3d 1383, 1387 (Fed. Cir. 2017)). The district court reviewed evidence from experts on both sides. Although it did not cite the evidence from Wendt’s expert, “failure to mention [evidence] does not mean failure to consider [that evidence] when the evidence supplies support for the district court’s determination.” *FMC Corp. v. Hennessy Indus.*, 836 F.2d 521, 524 (Fed. Cir. 1987). The testimony of Wendt’s expert supported the district court’s determination. *See, e.g.*, J.A. 1734–40. The district court could properly rely on that testimony to establish that “magnetic fuzz” had no ordinary meaning. *Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1331 (Fed. Cir. 2012) (“A district court . . . has the discretion to take expert testimony into account in determining the ordinary meaning of a claim term to one skilled in the art.”).

Although IQASR argues that the expert’s testimony should be discounted because of his lack of direct experience in automobile recycling, the district court was entitled to weigh the expert’s testimony as it thought appropriate based on the expert’s qualifications and experience. “Determining the weight and credibility of the evidence is the special province of the trier of fact.” *Inwood Labs., Inc. v. Ives Labs., Inc.*, 456 U.S. 844, 856 (1982); *see also Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 326–27 (2015) (“[I]n patent construction, subsidiary factfinding is sometimes necessary. . . . [S]ometimes courts may have to make ‘credibility judgments’ about witnesses . . . [and] may have to resolve subsidiary factual disputes.” (quoting *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 389 (1996))).

Finally, that IQASR’s experts provided testimony contradicting Wendt’s expert does not foreclose the district court from finding Wendt’s expert’s testimony clear and

convincing evidence that “magnetic fuzz” has no ordinary meaning. See *Intel Corp. v. U.S. Int’l Trade Comm’n*, 946 F.2d 821, 830 (Fed. Cir. 1991) (“Clear and convincing evidence has been described as evidence which proves in the mind of the trier of fact ‘an abiding conviction that the truth of [the] factual contentions are [sic] “highly probable.”” (quoting *Colorado v. New Mexico*, 467 U.S. 310, 316 (1984))).

We see no clear error in the district court’s conclusion that IQASR’s evidence about the existence of an ordinary meaning of “magnetic fuzz” failed to rebut Wendt’s evidence about the absence of an ordinary meaning. The district court could reasonably discount the importance of the more extensive use of the term “fuzz” prior to the invention date or the isolated use of the term “magnetic fuzz” in related, but different recycling contexts. *Decision* at \*7. These usages may have given a skilled artisan some context for the meaning of “magnetic fuzz” in the ’432 patent, but IQASR does not establish that these alone could resolve “questions of precision as to the[] boundaries” of magnetic fuzz. *Frans Nooren Afdichtingssystemen B.V. v. Stopaq Amcorr Inc.*, 744 F.3d 715, 725 (Fed. Cir. 2014).

Likewise, the district court was entitled to give no weight to the evidence that, in IQASR’s view, shows there was an ordinary and customary meaning of “magnetic fuzz” known in the art. IQASR points to (1) an email exchange between an associate of the inventor and Wendt’s engineer where the associate used the term “magnetic fuzz,” and Wendt’s engineer responded without expressing confusion about the term, J.A. 1825, and (2) the inventor’s question to a panelist at the Institute of Scrap Recycling Industries conference, in which the inventor used the term “magnetic fuzz” among a host of related terms, and the panelist answered the question without showing confusion about the term. J.A. 1840–43.

But these events took place after the issuance of the patent, *see* J.A. 59, 278–81, limiting their value in establishing the meaning of the term at the time of invention, some five years earlier. *See Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1299 (Fed. Cir. 2003) (refusing to consider documents published after the grant of a patent in construing the patent’s claims because the documents were “not contemporaneous with the patent, [and] do not reflect the meanings that would have been attributed to the words in dispute by persons of ordinary skill in the art as of the grant of [the] patent”). Even if the timing of these events did not undermine their evidentiary value, the district court could have reasonably found these events unhelpful in establishing that an artisan would understand the meaning “magnetic fuzz” with reasonable certainty, and discounted this evidence. *See Decision* at \*7.

And, as the trier of fact, in neither of these circumstances did the district court err by drawing inferences against IQASR from IQASR’s own evidence. Thanks to the presumption of validity, “the patent challenger bears the burden of proving the factual elements of invalidity by clear and convincing evidence.” *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1359 (Fed. Cir. 2007). But the patent challenger’s standard of proof does not impose limitations on the factfinder’s ability to draw reasonable inferences from the evidence presented.

Altogether, IQASR’s arguments do not leave us with a definite and firm conviction that the district court clearly erred in finding that “magnetic fuzz” lacked an ordinary and customary meaning in the art at the time of the invention.

## B

The district court’s focus on whether the intrinsic record adequately prescribes the meaning of “magnetic fuzz” was also proper. Because indefiniteness applies “general principles of claim construction,” indefiniteness “involves

consideration of primarily the intrinsic evidence, *viz.*, the claim language, the specification, and the prosecution history.” *Biosig*, 783 F.3d at 1377–78 (quoting *Enzo*, 599 F.3d at 1332). The importance of the intrinsic evidence reaches its zenith in cases like this when the district court finds from the extrinsic evidence that the term lacks an ordinary meaning. When a term “has no ordinary and customary meaning,” it is a “coined term,” raising the question of “whether the intrinsic evidence provides objective boundaries to the scope of the term.” *Iridescent Networks, Inc. v. AT&T Mobility, LLC*, 933 F.3d 1345, 1353 (Fed. Cir. 2019) (citing *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (“The claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art.”)). “The failure to define [a] term is . . . not fatal, for if the meaning of the term is fairly inferable from the patent, an express definition is not necessary.” *Bancorp Servs., L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1373 (Fed. Cir. 2004).

Reviewing the intrinsic record, we agree with the district court that the ’432 “patent fails to offer any meaningful and functional explanation” of the definitional characteristics of “magnetic fuzz,” leaving “the nature of that substance . . . decidedly unclear.” *Decision* at \*7. In other words, the ’432 patent neither defines “magnetic fuzz,” nor provides enough explanation that an artisan may infer reasonably certain, objective boundaries of the term. *See Biosig*, 783 F.3d at 1380–81.

IQASR argues that the ’432 patent defines “magnetic fuzz” as a light, unrecyclable component of automobile shredder residue, that is a type of magnetic “low susceptibility microparticle” and also “magnetically active disassociated microparticles,” that would clog a non-ferrous recovery system. Appellant’s Br. 39–43. The specification supports these statements—but it also clouds them. For example, “low susceptibility microparticles could be magnetic fuzz, iron oxide particles, microparticles, dust, trash,

ferromagnetic particles, non- or even anti-ferromagnetic particles or the like and may even be small perhaps less than about one inch in size or the like.” ’432 patent at 6:7–11. So magnetic fuzz is not the only type of low susceptibility microparticle.<sup>3</sup> “Low susceptibility microparticles may be magnetically active disassociated particles with low or magnetic or perhaps even low sensor susceptibility, such s [sic] but not limited to magnetic fuzz.” *Id.* at 6:18–21. So magnetic fuzz is a type of low susceptibility microparticle that is a magnetically active disassociated microparticle—but not the only type of magnetically active disassociated microparticle. How is one to know, then, whether a magnetically active disassociated particle is magnetic fuzz? The patent explains only that “[d]isassociated magnetically active microparticles may be magnetic fuzz because these particles may be difficult to substantially identify.” *Id.* at 6:27–29. The equivocation and subjectivity displayed in this statement present obstacles to understanding no matter the reader’s technical background.

---

<sup>3</sup> In fact, magnetic fuzz may be distinct from low susceptibility microparticles; the ’432 patent describes using a magnet to remove “low susceptibility microparticles *or* magnetic fuzz *or* the like.” ’432 patent at 6:41–42; *see also id.* at 13:31–38 (“The collection of materials (9) may include, but is not limited to, recyclable materials, sorted materials, a collection of low susceptibility microparticles, a salable output, a salable concentration output of end product waste, a collection of magnetic fuzz, a collection of substantially isotropic quantized materials, a trash output, sorted landfill substances, additional processing substances, or the like.”).

Ultimately, to discern “magnetic fuzz,” an artisan has to find the low susceptance microparticles,<sup>4</sup> and then identify which low susceptance microparticles are disassociated magnetically active microparticles. Because the multiple layers of definitions are all open-ended and non-limiting,<sup>5</sup> a skilled artisan must wade through a morass of uncertainty and contradiction to get to this point. It is this word salad of inconsistent indirect definitions and examples that so flummoxed the district court. We agree with the district court that “[t]he lack of a meaningful description of what constitutes magnetic fuzz prevents a person skilled in the

---

<sup>4</sup> “Low susceptance microparticles” are themselves described capriciously enough that the district court held the term indefinite. *See Decision* at \*9. We need not rely on this conclusion in our analysis of magnetic fuzz, however.

<sup>5</sup> “Low susceptance microparticles may have low magnetic sensor susceptibility, may be small magnetic particles in size, or may even be non-magnetic or the like.” ’432 patent at 6:14–16. So low susceptance particles might have low magnetic sensor susceptibility. But maybe not? They might be small magnetic particles—but they might not be magnetic at all. They “may even be small perhaps less than about one inch in size or the like.” *Id.* at 6:10–11. But the specification does not foreclose the possibility that they are not. Without better guidance, an artisan must speculate which choice of the alternative characteristics better describes any of these terms in a given situation. *Cf. Interval Licensing*, 766 F.3d at 1373–74 (“Had the phrase been cast as a definition instead of as an example—if the phrase had been preceded by ‘i.e.’ instead of ‘e.g.’—then it would help provide the clarity that the specification lacks. But as the specification is written, we agree with the district court that a person of ordinary skill in the art would not understand the ‘e.g.’ phrase to constitute an exclusive definition.”).

art from knowing when it is present and how to address it.” *Decision* at \*7. A technical degree or industry experience does not confer the ability to transcend patent ambiguity.

IQASR argues that the district court erred by recognizing the uncertainty in the specification’s habitual use of “may” to define and describe these terms, professing that the district court improperly disregarded these definitions based on this usage pattern. IQASR is correct that the use of “modal verbs” to give non-limiting examples for a claim term does not necessarily render that term indefinite. But, such *non-limiting* examples do not on their own expressly define the bounds—the *limits*—of the claim. *Cf. Am. Med. Sys., Inc. v. Biolitec, Inc.*, 618 F.3d 1354, 1361 (Fed. Cir. 2010) (finding that “the use of the words ‘based upon,’ rather than ‘means’ or ‘is,’” to describe a term used in a claim preamble undermined the patentee’s argument that the description of the term was intended to be “used as a definition” of the term). A patentee cannot simultaneously use non-modal verbs to avoid limiting the scope of an invention while also arguing that those same examples define the limits of the invention. And this is especially true when the non-limiting examples include both possibilities of a binary property (i.e., that low susceptance microparticles may be magnetic—but also, may not be).

In some cases, non-limiting examples provide sufficient information to allow a skilled artisan to infer the bounds of a term or to eradicate any latent ambiguity in a term. *Interval Licensing*, 766 F.3d at 1373 (“We recognize that a patent which defines a claim phrase through examples may satisfy the definiteness requirement.”). But in other cases, contradictory examples in the specification introduce ambiguity to an otherwise clear term and render it indefinite. “[C]laims which on first reading . . . appear indefinite may upon a reading of the specification disclosure or prior art teachings become quite definite. . . . [But] this rule also applies in the reverse, making an otherwise definite claim

take on an unreasonable degree of uncertainty.” *Application of Moore*, 439 F.2d 1232, 1235 n.2 (CCPA 1971).

This is not a case where the specification “provides ‘a general guideline and examples sufficient to enable a person of ordinary skill in the art to determine [the scope of the claims] . . . .’” *Enzo*, 599 F.3d at 1335 (alteration in original) (quoting *In re Marosi*, 710 F.2d 799, 803 (Fed. Cir. 1983)). Open-ended definition of categories that might or might not possess certain traits cannot provide reasonably certain bounds on the scope of “magnetic fuzz.” The number of times “magnetic fuzz” is referenced in the specification is inapposite. Additional discussion of a concept may obfuscate the concept just as much as it may clarify it. We see no error in the district court’s holding that the intrinsic record lacks the “meaningful and functional explanation of th[e] characteristics” of “magnetic fuzz” needed to provide reasonably certain bounds of the scope of the term. *Decision* at \*7.

We further note that even if an artisan were to pierce the fog of microparticle definitions, the chief definitional characteristic of magnetic fuzz remains that it is “difficult to substantially identify.” ’432 patent at 6:29. This is a subjective definition, with no further explanation of how to decide when particles are “difficult to substantially identify.” Merely defining magnetic fuzz as the subset of disassociated magnetically active microparticles that are “difficult to substantially identify” “leave[s] the skilled artisan to consult the ‘unpredictable vagaries of any one person’s opinion.’” *Dow Chem. Co. v. Nova Chems. Corp. (Canada)*, 803 F.3d 620, 635 (Fed. Cir. 2015) (quoting *Interval Licensing*, 766 F.3d at 1374). Since the patent provides no explanation of what makes a particle “difficult to substantially identify,” resolving whether particles are “difficult to substantially identify” requires reliance on subjective opinion alone. Whether an object is difficult to identify will always depend on an artisan’s own perception of difficulty and an uncertain concept of identity that varies

depending on the level of detail sought. And on top of this, the inherent uncertainty in the patent's definition of low susceptance microparticles and magnetically active disassociated microparticles further undermines the definiteness of "magnetic fuzz."

### C

We reject IQASR's assertions that the district court must have applied an impermissibly strict standard of definiteness or neglected the perspective of a skilled artisan to come to this conclusion.<sup>6</sup> IQASR argues that magnetic fuzz is definite because "the skilled artisan would presumably be familiar with what clogged the non-ferrous recovery system and would thereby recognize magnetic fuzz." Appellant's Br. 43 (emphasis omitted). But this asserts a subjective view of the claims that improperly allows "the scope [to] vary from day-to-day and from person-to-person," providing "a moving target that may change over time." *Icon Health & Fitness, Inc. v. Polar Electro Oy*, 656 F. App'x 1008, 1016 (Fed. Cir. 2016). The problem raised by this subjectivity is not the "fact that the composition varies from process-to-process." Appellant's Br. 47. It is that the "lack of a meaningful description of what constitutes magnetic fuzz prevents a person skilled in the art from knowing

---

<sup>6</sup> Nor does the failure to cite any particular legal standard compel the conclusion that the district court ignored that standard. "The court is presumed to have applied the law correctly, absent a clear showing to the contrary." *Lee v. Dayton-Hudson Corp.*, 838 F.2d 1186, 1189 (Fed. Cir. 1988). "When determining whether a court committed legal error in selecting the appropriate legal standard, we determine which legal standard the tribunal *applied* . . ." *James v. Wilkie*, 917 F.3d 1368, 1373–74 (Fed. Cir. 2019) (emphasis in original). For the reasons explained within, we remain unpersuaded that the district court applied incorrect legal standards.

when” a composition produced by a particular process—or clogging the non-ferrous recovery system—is or is not magnetic fuzz. *Decision* at \*7.

Furthermore, a claim term does not become reasonably certain simply because a skilled artisan, when pressed, managed to articulate a definition for it. “Even if a claim term’s definition can be reduced to words, the claim is still indefinite if a person of ordinary skill in the art cannot translate the definition into meaningfully precise claim scope.” *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1251 (Fed. Cir. 2008). For this reason, Wendt did not have to “prove by clear and convincing evidence that the claim term was not understood amongst the industry” as IQASR suggests. Appellant’s Br. 48. It had to prove that “magnetic fuzz,” “when read in light of the specification and the prosecution history, ‘fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.’” *Interval Licensing*, 766 F.3d at 1369–70 (quoting *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014)). Showing that a skilled artisan cannot recognize the scope of a claim term with reasonable certainty requires showing considerably less uncertainty than showing that a skilled artisan could not understand the claim term. The latter is closer to the “insolubly ambiguous” standard rejected by *Nautilus*. See *Nautilus*, 572 U.S. at 911 (“It cannot be sufficient that a court can ascribe *some* meaning to a patent’s claims . . .”).

#### IV

We have considered the parties’ other arguments and find them unpersuasive. Because the district court appropriately scrutinized the intrinsic and extrinsic evidence and suitably applied the law of indefiniteness, we affirm the district court’s judgment holding the ’432 patent invalid for indefiniteness.

**AFFIRMED**