

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

QUEST INTEGRITY USA, LLC)	
)	
Plaintiff,)	
)	
v.)	Civ. No. 14-1482-SLR
)	
CLEAN HARBORS INDUSTRIAL SERVICES, INC.)	
)	
Defendant.)	

QUEST INTEGRITY USA, LLC)	
)	
Plaintiff,)	
)	
v.)	Civ. No. 14-1483-SLR
)	
COKEBUSTERS USA INC.)	
)	
Defendant.)	

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MEMORANDUM OPINION

Dated: March 28, 2017
Wilmington, Delaware


ROBINSON, Senior District Judge

I. INTRODUCTION

Quest Integrity USA, LLC (“plaintiff”) initiated the above lawsuits on December 15, 2014, by filing complaints against Clean Harbors Industrial Services, Inc. (“Clean Harbors”) and Cokebusters USA Inc. (“Cokebusters”) (collectively, “defendants”) asserting infringement of U.S. Patent No. 7,542,874 (“the ‘874 patent”), entitled “2D and 3D Display System and Method for Furnace Tube Inspection.” (Civ. No. 14-1482, D.I. 1, ex. A) Plaintiff filed for a preliminary injunction, which the court denied on June 12, 2015. (Civ. No. 14-1482, D.I. 99) On June 28, 2016, the court issued its claim construction. (Civ. No. 14-1482, D.I. 137) Now that discovery has concluded, plaintiff has reduced the number of asserted claims to nine. Plaintiff asserts claims 1, 13, 25, 33, and 37 against defendant Clean Harbors and claims 12, 24, 30, 33, and 40 against defendant Cokebusters.¹ (Civ. No. 14-1482, D.I. 180 at 1; Civ. No. 14-1483, D.I. 286 at 1) Therefore, claims 1, 12, 13, 24, 25, 30, 33, and 40 of the ‘874 patent are pending.²

In December 2016, the parties filed various motions for summary judgment. Plaintiff moves for summary judgment of infringement and validity. (Civ. No. 14-1482, D.I. 179, D.I. 183; Civ. No. 14-1483, D.I. 285, D.I. 289) Defendants move for summary judgment of invalidity. (Civ. No. 14-1482, D.I. 184; Civ. No. 14-1483, D.I. 293) Clean Harbors moves for summary judgment of noninfringement. (Civ. No. 14-1482, D.I. 189) Cokebusters moves for summary judgment of noninfringement and no willfulness. (Civ. No. 14-1483, D.I. 290)

¹ The court ordered plaintiff to limit the asserted claims to “three independent and two dependent claims.” (Civ. No. 14-1482, D.I. 145 at ¶ 6) Meanwhile, after the court denied reconsideration on this matter, plaintiff sees fit to complain about this requirement yet again. (Civ. No. 14-1482, D.I. 169 at ¶¶ 2-3; D.I. 180 at 1 n.1)

² As is discussed herein, defendants move for invalidity of independent claim 11 and dependent claims 27 and 28.

II. STANDARD OF REVIEW

“The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” Fed. R. Civ. P. 56(a). The moving party bears the burden of demonstrating the absence of a genuine issue of material fact. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 415 U.S. 475, 586 n. 10 (1986). A party asserting that a fact cannot be—or, alternatively, is—genuinely disputed must be supported either by citing to “particular parts of materials in the record, including depositions, documents, electronically stored information, affidavits or declarations, stipulations (including those made for the purposes of the motions only), admissions, interrogatory answers, or other materials,” or by “showing that the materials cited do not establish the absence or presence of a genuine dispute, or that an adverse party cannot produce admissible evidence to support the fact.” Fed. R. Civ. P. 56(c)(1)(A) & (B). If the moving party has carried its burden, the nonmovant must then “come forward with specific facts showing that there is a genuine issue for trial.” *Matsushita*, 415 U.S. at 587 (internal quotation marks omitted). The court will “draw all reasonable inferences in favor of the nonmoving party, and it may not make credibility determinations or weigh the evidence.” *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 150 (2000).

To defeat a motion for summary judgment, the non-moving party must “do more than simply show that there is some metaphysical doubt as to the material facts.” *Matsushita*, 475 U.S. at 586-87; *see also Podohnik v. U.S. Postal Service*, 409 F.3d 584, 594 (3d Cir. 2005) (stating party opposing summary judgment “must present more than just bare assertions, conclusory allegations or suspicions to show the existence of a genuine issue”) (internal quotation marks omitted). Although the “mere existence of some alleged factual dispute between the parties will not defeat an otherwise properly supported motion for summary judgment,” a factual dispute is genuine where “the

evidence is such that a reasonable jury could return a verdict for the nonmoving party.” *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247-48 (1986). “If the evidence is merely colorable, or is not significantly probative, summary judgment may be granted.” *Id.* at 249-50 (internal citations omitted); *see also Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986) (stating entry of summary judgment is mandated “against a party who fails to make a showing sufficient to establish the existence of an element essential to that party’s case, and on which that party will bear the burden of proof at trial”).

III. DISCUSSION

A. Claim Construction

At claim construction, neither party sought construction of claims 12 and 25.³ (Civ. No. 14-1482, D.I. 119) Plaintiff moves for summary judgment of validity of these two claims and now proposes constructions for their limitations. (Civ. No. 14-1482, D.I. 195 at 19-21) Defendants argue that no construction is necessary but offer an alternate construction.⁴ (Civ. No. 14-1482, D.I. 220 at 26-27)

1. Standard

Claim construction is a matter of law. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1330 (Fed. Cir. 2005) (en banc). Claim construction focuses on intrinsic evidence - the claims, specification, and prosecution history - because intrinsic evidence is “the most significant source of the legally operative meaning of disputed claim language.”

Vitronics Corp. v. Conceptoronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996); *Markman v.*

³ Plaintiff averred that with respect to the “generate a display . . . arranged to represent said physical geometry” limitations, “similar phrases exist in other claims, but they should be construed consistently with Quest’s proposed construction as noted in the Joint Claim Construction Statement.” (Civ. No. 14-1482, D.I. 128 at 24 n.11)

⁴ Defendants argue further that claim 12 is invalid under section 112 because “[c]laim 11 requires that the display be of a ‘plurality’ of tube segments (two or more), while the display in dependent claim 12 (which must by law practice all the elements of claim 11) allows display of ‘one or more’ tube segments.” (Civ. No. 14-1482, D.I. 220 at 28 n.28)

Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Claims must be interpreted from the perspective of one of ordinary skill in the relevant art at the time of the invention. *Phillips*, 415 F.3d at 1313. In some cases, “the district court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period.” *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, _ U.S. _, 135 S. Ct. 831, 841 (2015) (citation omitted).

Claim construction starts with the claims and remains centered on the words of the claims throughout. *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001). In the absence of an express intent to impart different meaning to claim limitations, “the words of a claim are generally given their ordinary and customary meaning,” which 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.” *Phillips*, 415 F.3d at 1312-13 (quoting *Vitronics*, 90 F.3d at 1582). “The ordinary meaning may be determined by reviewing various sources, such as the claims themselves, the specification, the prosecution history, dictionaries, and any other relevant evidence. Ultimately, “[t]he only meaning that matters in claim construction is the meaning in the context of the patent.” *Ruckus Wireless, Inc. v. Innovative Wireless Sols., LLC*, Civ. No. 2015-1425, _ F.3d. _, 2016 WL 3065024, at *3 (Fed. Cir. May 31, 2016). The specification is often “the single best guide to the meaning of a disputed term.” *Phillips*, 415 F.3d at 1315.

2. Analysis

Claim 12 recites “[t]he computerized method of claim 11, wherein said display is comprised of a two-dimensional or three-dimensional representation of one or more of

said stacked tube segments of said furnace.” (‘874 patent, 17:35-38) Claim 25 recites an article of manufacture claim for performing the method of claim 12.⁵ (*Id.* at 18:46-49)

The term “**wherein said display is comprised of a two-dimensional or three-dimensional representation of one or more stacked tube segments of said furnace**”⁶ means “inspection data from one or more of the stacked tube segments is displayed in two or three dimensions.”⁷ The “said display” of claim 12 refers to the term in claim 11 “generating a display of at least a portion of said partitioned inspection data arranged to represent said physical geometry of a plurality of said tube segments,” which the court construed to mean “creating a visual representation of at least a portion of the inspection data to depict or portray the arrangement of the tube segments.”⁸ (Civ. No. 14-1482, D.I. 137 at ¶ 5) The display is of the inspection data and not the tube segments: “the computer is also programmed to generate a display of the partitioned inspection data.” (‘874 patent, abstract) “The present invention relates generally to furnace tube inspection systems, and more particularly to a system and method for displaying inspection data in a two-dimensional and/or three-dimensional format to enable visual detection of problem areas within the furnace.” (*Id.* at 1:20-24)

⁵ The parties argue claim 25 alongside claim 12.

⁶ Found in claims 12 and 25 of the ‘874 patent.

⁷ Defendants proposed “wherein said display is comprised of one or more of said stacked tube segments visually represented in two or three dimensions.” (Civ. No. 14-1482, D.I. 220 at 27) Defendants had argued that claims 12 and 25 “merely add a 2D or 3D requirement to the independent claims.” (*Id.* at 26) Defendants’ proposed construction did not resolve plaintiff’s suggestion that (in addition to requiring 2D or 3D displays of inspection data), claims 12 and 25 add another limitation requiring the 2D or 3D display “of the stacked tubes themselves.” (Civ. No. 14-1482, D.I. 195 at 20-21) For reasons to be discussed below, the 2D and 3D display embodiments relate to the display of inspection data and not representations of the furnace tubes themselves.

⁸ The independent claim already addresses the physical geometry of the tubes in the so-called “Display Limitation.” For reasons to be discussed below, there is nothing in the specification to suggest that applicant intended additional limitations (in claims 12 and 25) beyond 2D and 3D display of inspection data.

The specification identifies figures 3, 4, 5, and 6 as “two-dimensional color-coded” charts and figure 9 as a “three dimensional color-coded chart.” (*Id.* at 3:55-4:20) In example 1, “computer 102 is programmed to generate a two-dimensional display of the wall thickness readings and/or inside radius readings collected from a furnace.” (*Id.* at 9:54-56) The two-dimensional display embodiments of example 1 are disclosed with reference to figures 3 and 4. (*Id.* at 9:66-11:47) Examples 2 and 3 describe that “computer 102 is programmed to generate a two-dimensional display of the wall thickness readings” in which the “tube segments are positioned in their proper orientation.” (*Id.* at 11:52-53; 12:21-22; 11:61-62; 12:31-32; *see also id.* at 12:6-7; 12:42-43 (“viewing all of the tube segments in their proper orientation”)) Example 2 references figure 5, and example 3 references figures 5 and 6. (*Id.* at 11:56-12:17; 12:25-55)

Examples 1 and 4 discuss three-dimensional displays of inspection data “in a manner that matches the **actual physical geometry** of the furnace.” (‘874 patent, 14:65-66 (emphasis added); *see also* 11:44-46) For instance, example 1 contemplates a 3D display of the “wall thickness readings and/or inside radius readings.” (*Id.* at 11:42-43) Meanwhile, example 4 recites:

Computer 102 is also programmed to generate a display of the partitioned inspection data that may be viewed by a data analyst in order to visually detect problem areas within the furnace. This display may comprise a two-dimensional or three-dimensional representation of one or more of the tube segments of the furnace, which may be customized in accordance with customer requirements. For example, one customer may require a display that shows the wall thickness at five equally spaced positions along the length of a specific tube segment, while another customer may require a display that shows the minimum wall thickness for each tube segment of the furnace. Of course this information may also be provided to the customer in the form of a written report that accompanies the display.

(*Id.* at 14:45-59) Example 4 refers to figure 9. (*Id.* at 14:60-15:17)

The specification discloses several embodiments of 2D and 3D representations of inspection data, which range from 2D strip charts with no limitations on the orientation of the inspection data to 3D displays of inspection data portrayed “in a manner matching the physical geometry of the furnace.” Mere reference to these embodiments does not support a construction limited to one of those embodiments. As discussed extensively in the court’s claim construction order, the intrinsic record shows that applicant did not disclaim strip charts during prosecution. (Civ. No. 14-1482, D.I. 137 at ¶¶ 9-11)

Nothing in the specification or the claims suggests that claims 12 and 25 should be read to exclude example 1 and figures 3 and 4. Therefore, claims 12 and 25 do not add limitations that require: (1) 2D or 3D representations of the tube segments themselves; (2) inspection data to be displayed in a manner representing the “actual physical geometry” of the furnace; or (3) an arrangement of the inspection data in a manner that places tube segments in their “proper orientation.”⁹

⁹ Plaintiff sought a construction wherein “said display is comprised of a two-dimensional depiction of one or more of the inspected tubes displayed as a stacked set of bars wherein each bar displays readings from a single tube segment of the furnace or a three-dimensional depiction where the displayed tube segments match the actual physical geometry of the furnace.” (Civ. No. 14-1482, D.I. 195 at 20-21, 24) Plaintiff argues extensively that this construction is necessary to read out example 1 and figures 3 and 4 from claims 12 and 25, which applicant allegedly disclaimed during prosecution and is otherwise apparent from the specification. In support, plaintiff cited to “stacked set of bars” language from example 1 at col. 11, lines 36-46 (discussing figures 3 and 4) and argued that “[t]his language never appears in Example 1 and never appears in the discussion of the strip charts shown in figures 3 and 4.” (Civ. No. 14-1482, D.I. 195 at 18) Given that plaintiff’s argument contradicts the specification, the court declines to address it. Additionally, plaintiff contended that “[e]ven if strip charts are regarded . . . as being coextensive with [] independent claims . . . 11 and 24, claims 12/25 are dependent and thus narrower by definition.” (Civ. No. 14-1482, D.I. 195 at 23; see also D.I. 187, ex. 17 at 45-46) This is an improper blurring between anticipation and claim construction. See *Akamai Techs., Inc. v. Cable & Wireless Internet Servs., Inc.*, 344 F.3d 1186, 1195 n.4 (Fed. Cir. 2003). Moreover, the strip charts in the Norco sale could anticipate both independent claim 11 and dependent claim 12. See, e.g., *In re Slayter*, 276 F.2d 408, 411 (C.C.P.A. 1960). The court declines to address plaintiff’s remaining, duplicative arguments.

The court has provided a construction in quotes for the claim limitations at issue. The parties are expected to present the claim construction consistently with any explanation or clarification herein provided by the court, even if such language is not included within the quotes.

B. '874 Patent – Validity

Defendants assert that claims 1, 11, 12, 13, 24, 25, 27, 28, 30, 33, 37 and 40 of the '874 patent are invalid as anticipated under pre-AIA 35 U.S.C. § 102(b) by plaintiff's¹⁰ sale to Orion Norco Refining located in Norco, Louisiana ("the Norco sale"), as documented in the first of two reports (the "Norco Reports") dated February 17-23, 2003. (Civ. No. 14-1482, D.I. 185 at 11; D.I. 187, ex. 8) Defendants contend that these claims are also obvious under § 103 and invalid for claiming patent ineligible subject matter under § 101. (*Id.* at 26-27) Plaintiff, in its answering brief, argues that the Norco sale does not anticipate the claims and that the Norco sale was part of a pattern of experimental sales and product improvement, which means that the FTIS product and services were not "on sale" within the meaning of § 102(b). (Civ. No. 14-1482, D.I. 195 at 8-11) Plaintiff contends that the claims are not obvious or invalid for failing to claim eligible subject matter. (*Id.* at 26, 39) Given the late timing of this argument, defendants contend that the eleventh-hour declaration by plaintiff's experts Robert Caligiuri, PhD, PE, FASM ("Caligiuri") and Shukri J. Souri, PhD ("Souri") "should be disregarded under (1) the sham affidavit doctrine; (2) Fed. R. Civ. P. 30(e); and/or (3) Fed. R. Civ. P. 37."¹¹ (Civ. No. 14-1482, D.I. 220 at 4)

Plaintiff moves for summary judgment of validity with respect to dependent claims 12 and 25. (Civ. No. 14-1482, D.I. 183; Civ. No. 14-1483, D.I. 289) Plaintiff

¹⁰ The sale was by plaintiff's predecessor, "Quest Integrated, Inc."

¹¹ Alternatively, defendants assert that the court should exclude the expert testimony from evidence by relying on the *Pennypack* factors. (Civ. No. 14-1482, D.I. 220 at 6)

contends that these claims are directed to figures 5, 6, and 9 of the '874 patent and that the court's claim construction did not address these narrow claim limitations. (Civ. No. 14-1482, D.I. 195 at 4-5) Plaintiff argues that, under the principle of claim differentiation, prior art (the Norco sale) presented at the preliminary injunction could not invalidate both the independent claims as well as the dependent claims 12 and 25. (*Id.*) Defendants respond that plaintiff's proposed construction for claim 12 is "tortured and narrow" and that there is no "one-for-one correlation between examples in the specifications and any specific claim." (Civ. No. 14-1482, D.I. 220 at 28-30) Defendants argue that the Norco sale anticipates claims 12 and 25. (*Id.* at 30-32)

1. Standards

a. Anticipation

Under 35 U.S.C. § 102(b), "[a] person shall be entitled to a patent unless the invention was patented or described in a printed publication in this or a foreign country . . . more than one year prior to the date of the application for patent in the United States."¹² The Federal Circuit has stated that "[t]here must be no difference between the claimed invention and the referenced disclosure, as viewed by a person of ordinary skill in the field of the invention." *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). In determining whether a patented invention is explicitly anticipated, the claims are read in the context of the patent specification in which they arise and in which the invention is described. *Glaverbel Societe Anonyme v. Northlake Mktg. & Supply, Inc.*, 45 F.3d 1550, 1554 (Fed. Cir. 1995). The prosecution history and the prior art may be consulted if needed to impart clarity or to avoid ambiguity in ascertaining whether the invention is novel or was previously known in the art. *Id.* The prior art need not be *ipsissimis verbis* (i.e., use identical words as those

¹² The '874 patent has a priority date before March 16, 2013, therefore, pre-AIA § 102 applies.

recited in the claims) to be anticipating. *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716 (Fed. Cir. 1984).

An anticipation inquiry involves two steps. First, the court must construe the claims of the patent in suit as a matter of law. *Key Pharms. v. Hercon Labs Corp.*, 161 F.3d 709, 714 (Fed. Cir. 1998). Second, the finder of fact must compare the construed claims against the prior art. *Id.* A finding of anticipation will invalidate the patent. *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 147 F.3d 1374, 1378 (Fed. Cir. 1998).

b. Experimental use

“[T]he on-sale bar applies when two conditions are satisfied before the critical date. First, the product must be the subject of a commercial offer for sale. . . . Second, the invention must be ready for patenting.” *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 67 (1998). The party asserting invalidity “must [] prove the facts underlying both prongs of the *Pfaff* test by clear and convincing evidence.”¹³ *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1352 (Fed. Cir. 2002). “Whether a product was placed on sale under § 102(b) is a question of law based upon underlying factual determinations.” *KeyStone Retaining Wall Sys., Inc. v. Westrock, Inc.*, 997 F.2d 1444, 1451 (Fed. Cir. 1993) (citations omitted).

“Nevertheless, an inventor who seeks to perfect his discovery may conduct extensive testing without losing his right to obtain a patent for his invention—even if such testing occurs in the public eye. The law has long recognized the distinction

¹³ In the instant case, defendants presented arguments that the Norco sale anticipates the relevant claims before plaintiff asserted its experimental use defense. In their December 14, 2016 declaration, defendants’ experts Scott Schaefer, PhD (“Schaefer”) and Jerry Rau (“Rau”) included a section on “Commercial nature of pre-critical date sales and readiness for patenting” (Civ. No. 14-1482 D.I. 187, ¶¶ 17-26) Schaefer and Rau noted “[w]e have included this section here out of an abundance of caution, but we believe the conclusions we reach here can also be derived from a review of the documentation without the benefit of expert testimony on the subject.” (Civ. No. 14-1482 D.I. 187, ¶ 17 n.10) The court agrees.

between inventions put to experimental use and products sold commercially.” *Pfaff*, 525 U.S. at 64. In order to determine whether public use or sale is experimental, the Federal Circuit has catalogued a nonexhaustive list of objective factors that include:

(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.

Electromotive Div. of Gen. Motors Corp. v. Transportation Sys. Div. of Gen. Elec. Co., 417 F.3d 1203, 1213 (Fed. Cir. 2005) (citations omitted). These factors “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.” *Id.* “In determining the purpose of the alleged experimental use, objective evidence indicating a purpose for such testing and experiment is generally preferred. An inventor’s subjective intent is generally of minimal value.” *In re Smith*, 714 F.2d 1127, 1135 (Fed. Cir. 1983).

2. Undisputed facts

Plaintiff (and its predecessors) sells nondestructive furnace tube inspection services¹⁴ (“FTIS”) to clients in the petrochemical industry. (See, e.g., Civ. No. 14-1482, D.I. 198, ex. J at 1 (February 14, 2003 quotation for Norco services)) In connection with FTIS, plaintiff obtained the ‘874 patent, which includes “color-coded strip chart[s]” shown in figures 3 and 4. (‘874 patent, 3:55; 3:59; figure 3 (wall thickness readings); figure 4 (inside radius readings)) For example, the ‘874 patent describes the strip chart

¹⁴ Plaintiff uses “FTIS” in connection with “furnace tube inspection services” as well as a “furnace tube inspection system.”

in figure 3: “computer 102 is programmed to generate a strip chart 300 in which all of the wall thickness readings for a plurality of time intervals are plotted across a plurality of horizontal strips. The wall thickness readings are plotted successively in time from left-to-right and bottom-to-top.” (‘874 patent, 9:66-10:4) The ‘874 patent also includes figure 8, which is “a colorized chart . . . , which shows the composite data markers in relation to an adaptive threshold that may be used to identify the locations of the furnace bends.” (‘874 patent, 4:11-14)

On August 30, 2002, one of the inventors of the ‘874 patent, Phil Bondurant (“Bondurant”), sent himself an e-mail containing an attached Microsoft Word document, entitled “FTISPatent.doc,” that contained a disclosure about FTIS. (Civ. No. 14-1482, D.I. 186, ex. 1) This document contains text describing an invention¹⁵ related to FTIS and includes three figures that are similar¹⁶ to figures 3, 4, and 8 of the ‘874 patent. (*Id.*; see also ‘874 patent, figures 3, 4, and 8)

In a February 14, 2003 quotation for services to be delivered at a refinery in Norco, Louisiana (“first Norco quotation”), plaintiff’s predecessor described its FTIS services as “fairly new to the commercial marketplace,” having been developed “approximately five (5) years” before and now employing a “second generation” FTIS

¹⁵ For example, the document begins with:

This invention describes a method to analyze and display data collected from an autonomous furnace tube inspection system. In particular, the invention provides a processing and display methodology that allows a large data set of wall thickness and radius information that was collected by an autonomous inspection tool to be correlated with the physical structure of the furnace tube and to quickly determine the location of defects within the data set.

(Civ. No. 14-1482, D.I. 186, ex. 1 at 3)

¹⁶ The court notes that, in the August 30, 2002 document, “figure 1” corresponds to “figure 3” in the ‘874 patent, “figure 2” corresponds to “figure 4” in the ‘874 patent, and “figure 3” corresponds to “figure 8.” By “correspond,” the court notes that the data contained in these figures is similar, employs the same units of measurement, uses the same scale on the axes, and includes the same notations identifying tube sections (e.g., “1x”).

sensor known as the “FTIS Intelligent Pig.” (Civ. No. 14-1482, D.I. 198, ex. J at 1) The first Norco quotation describes the reporting to be delivered as follows:

A “Field” Inspection Report can be supplied on site within 8 hours after the data is collected and analyzed. The inspection report will provide 2-Dimensional (2D) color graphics of all individual piping coil segments, return bends, and cross-over piping. Piping segments containing wall thinning, corrosion, broad area pitting, erosion, and bulging which exceed the client’s specified threshold level will also be provided. . . .

A “Final” Inspection Report will . . . be professionally bound. . . . [and] the client will also receive an electronic copy of the report, drawings, images, and raw data on Compact Disk (CD). This data will also be archived at QUEST for use in future comparison inspections.

(*Id.* at 6-7) The first Norco quotation resulted in the first part¹⁷ of the Norco sale, which was delivered in two parts and documented in the two separate Norco Reports dated February 17-23, 2003 and March 3-7, 2003. (Civ. No. 14-1482, D.I. 187, ex. 8 and 9; D.I. 185, ex. A at 2-3)

The first Norco Report provides an explanation of the process employed by plaintiff’s then current FTIS. (Civ. No. 14-1482, D.I. 187, ex. 8) After the inspection of the furnace by the “FTIS™ Intelligent Pig” is completed and “[o]nce the ultrasonic data is processed, it is then stored for downloading to the data station at the end of the inspection.” (*Id.* at 3)

The data analysis computer is a rugged, Pentium®-based portable computer that utilizes the Windows NT®/XP® system. This computer is provided with the custom FTIS application software. The FTIS software enables the operator to configure the FTIS tool, download data from Flash RAM, and process and display collected data.

. . .

The FTIS software package allows operator control and configuration of the FTIS tool from within a fully menu driven graphical user interface. The FTIS software also provides

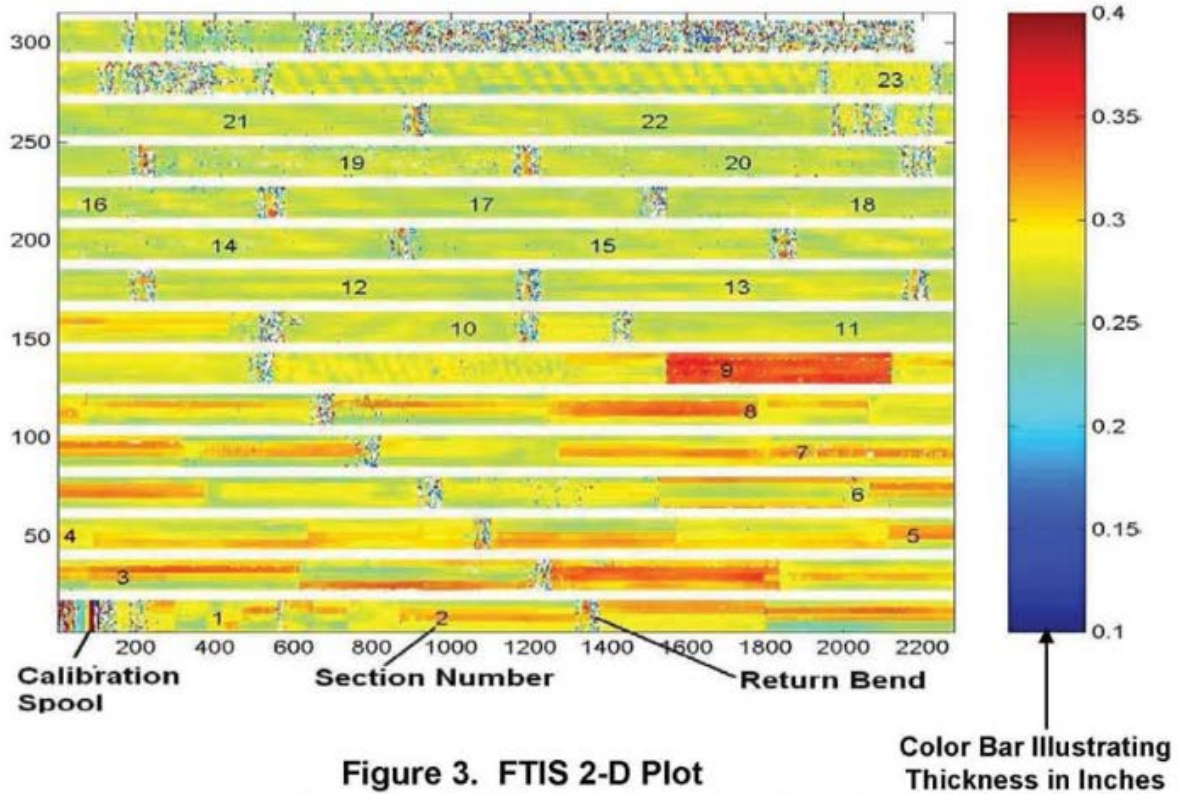
¹⁷ The second part of the Norco sale is documented in a separate quotation dated March 6, 2003, after the first report had been completed. (Civ. No. 14-1482, D.I. 198, ex. K)

analysis, display, and reporting capability. Displays consist of tabular, cross-sectional, and color surface plots of the data.

(*Id.* at 3-4) With respect to “2D Modeling,”

QUEST has designed custom software, which allows 2-Dimensional (2D) viewing of the “entire” piping coil (refer to Figure 3). The color bar to the right represents a range of wall thickness in inches. The piping coil data begins in the bottom left corner and moves to the right. It then moves up one row and repeats the left to right motion throughout the length of the inspection. Over a mile of piping can be presented on a single plot.

(*Id.* at 4) In summarizing the project, plaintiff explained that “[e]ach pass was broken down into 23 sections for easy identification and tracing,” e.g., sections numbered 1-9 “refer to the piping located in the Radiant portion of the pass.” (*Id.* at 7) According to plaintiff, “[e]ach pipe section number was located between two return bends. Each section number has its own unique identifier for ease in locating flaws detected during the inspection” (*Id.* at 8) Figure 3 is a 2-dimensional viewing of the inspection data, organized by “Section Number” and identifying “Return Bends.”



(*Id.* at 4) The second Norco Report, dated March 3-7, 2003, contained descriptions of the tubing, identified by section numbers. (Civ. No. 14-1482, D.I. 187, ex. 9 at 8) The strip charts in the second Norco Report were similar to the first report but used hash marks to identify bends in the tubes.

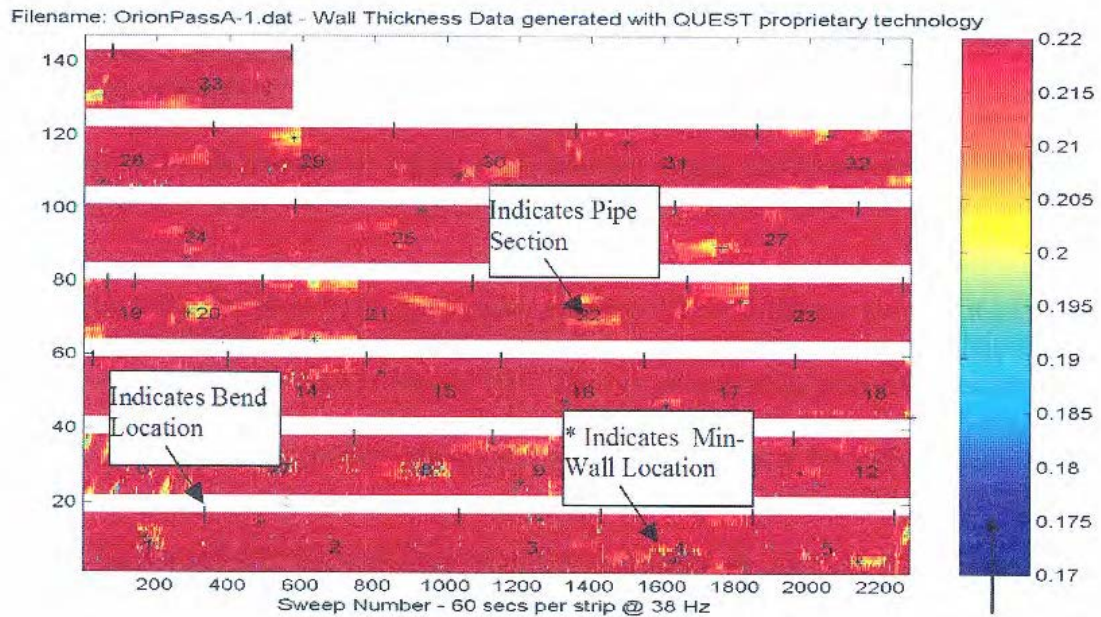


Figure 3. FTIS 2-D Plot

Color Bar Illustrating Thickness in Inches

(*Id.* at 4)

For these two projects, plaintiff was paid \$31,160 and \$40,900 respectively, for a total of \$72,060. (Civ. No. 14-1482, D.I. 185, ex. A at 4) The Norco Reports include color-coded strip charts showing wall thickness data and identifying furnace tube sections. (Civ. No. 14-1482, D.I. 187, Ex 8 at 16, 20, 24, 29, 33, 37, 45, 49, 53, 57, and 61; ex. 9 at 15, 20, 25, 30, 35, 40, 46, and 51) The strip charts state that the “Wall Thickness Data [are] generated with QUEST proprietary technology,” but the word “confidential” does not appear anywhere in the Norco Reports. (*Id.*) The Norco sale involved using a computer, ultrasonic sensors, and a computer readable medium. (Civ. No. 14-1482, D.I. 185, ex. A at 7-96)

On December 19, 2003, Bondurant and Robert De Lorenzo (“De Lorenzo”) prepared an invention disclosure for “FTIS Post Processing and Display.” (Civ. No. 14-1482, D.I. 186, ex. 2) This invention disclosure includes color images matching figures

1-3 in Bondurant's August 2002 disclosure. (*Id.*) The text of the invention disclosure contains minor edits from Bondurant's August 2002 document. (Civ. No. 14-1482, D.I. 186, ex. 5) Plaintiff filed the provisional patent application that led to the '874 patent on June 1, 2004. ('874 patent, cover) Therefore, for § 102(b) purposes, the critical date is June 1, 2003. (Civ. No. 14-1482, D.I. 185 at 3; D.I. 195 at 9)

3. Analysis – the Norco sale as § 102(b) prior art

a. Commercial sale

Plaintiff contends that the Norco sale was not a commercial sale, because “[c]ontemporaneous documents, inventor testimony, and other testimony firmly establish that [plaintiff’s] Norco sale was experimental.” (Civ. No. 14-1482, D.I. 195 at 8) In support of this eleventh-hour contention, plaintiff presented declarations dated December 28, 2016 from DeLorenzo and Bondurant (collectively “the inventors”) (Civ. No. 14-1482, D.I. 202) and from its experts. For example, Caligiuri and Souri opined that the Norco sale was experimental, because “[w]hen companies are developing new technologies, they will often test experimental prototypes for clients and underwrite a portion of the cost while charging the client part of the cost of the experiment.” (Civ. No. 14-1482, D.I. 197, ex. A at ¶ 24) Despite the significance of the § 102(b) statutory bar to the validity of the '874 patent, Caligiuri and Souri, in their November 4, 2016 rebuttal expert report on validity, expressed no opinion about the question of whether the Norco sale was “on sale” within the scope of the statute.¹⁸ (Civ. No. 14-1482 D.I. 187, ex. 15,

¹⁸ Defendants also point out that the inventors, during their respective depositions, had not indicated that the Norco sale was experimental. (Civ. No. 14-1482, D.I. 185 at 4-5) While these statements may not be the “smoking gun” that defendants assert them to be (primarily because they are answers to compound questions (see, e.g., Civ. No. 14-1482, D.I. 220 at 3-4)), the Norco sale has been at the forefront of defendants’ invalidity contentions, and plaintiff has been on notice since as early as 2015 that the Norco sale may be prior art. (See, e.g., Civ. No. 14-1482, D.I. 99 at ¶¶ 16-20 (denying a preliminary injunction based upon likely invalidity of the '874 patent in light of the Norco sale))

¶ 74 (“We note that there may be some question as to whether these alleged sales were actually ‘sales’ in the U.S. for purposes of 102(b), but our report does not address that question.”)) The conclusory, three-paragraph declaration of Caligiuri and Souri simply points to the declaration by the inventors and provides little insight into the *Electromotive* factors. (Civ. No. 14-1482, D.I. 197, ex. A at ¶¶ 23-26)

The bulk of plaintiff’s *Electromotive* analysis is, therefore, based upon the inventors’ declaration. Defendants do not dispute the inventors’ subjective intent as evidenced by their declaration, but the declaration provides little objective evidence of experimentation. See *In re Smith*, 714 F.2d 1127, 1135 (Fed. Cir. 1983) (“An inventor’s subjective intent is generally of minimal value.”).

Nonetheless, in light of the undisputed facts in the record, the inventors’ declaration is useful in evaluating the *Electromotive* factors. For example, the inventors state that “[a] ‘sale’ of the Quest product is simply a contract to perform an inspection. . . . At no point during or after an inspection does anyone other than Quest personnel have access to the FTIS product, including the tool and the software that is involved in any analysis.” (Civ. No. 14-1482, D.I. 202 at ¶ 2) Defendants do not dispute this fact, and the court notes that in the Norco sale, plaintiff was in control of the product, the software, and the performance of the method steps, which is the second *Electromotive* factor “(2) the amount of control over the experiment retained by the inventor.” *Electromotive*, 417 F.3d at 1213.

The inventors explain that “there was no way for us to fully test and experiment with the tool (hardware and software) other than to run it at full sized refineries,” because “[a]t the time we only had a very small section of pipe, something around 50 feet at our facility in Kent [, Washington].” (Civ. No. 14-1482, D.I. 202 at ¶ 6) The first *Electromotive* factor “(1) the necessity for public testing” appears to weigh in favor of plaintiff, but every independent claim of the ‘874 patent refers to “displaying inspection

data.” (’874 patent, 16:24; 17:16; 18:27-28; 19:19; 19:54; 20:17; 20:42) Despite the fact that the ’874 patent does not claim the sensor hardware, the inventors rely on the hardware as their motivation for public testing:

[W]e were still experimenting and had not yet produced that size tool. We did not want to produce the full size Quest FTIS tool until we knew what we were doing worked, both in hardware and in software. We knew when designing the tools that it would be too expensive for every size to have unique hardware. For that reason, we waited to produce other tools until we knew we had a fully functional model in smaller sizes. By March 2003 we still hadn’t made it up to the 8” tool, as we remained focused on testing and perfecting the smaller tools at the time. We knew that if we could get the smaller tools to provide consistent data, and if that data proved useful and accurate, we could then scale up production. While we were still testing and experimenting, we did not want to spend resources on tools whose designs might be changed as a result of our trial inspections.

(Civ. No. 14-1482, D.I. 202 at ¶ 13) Public testing may have been necessary for plaintiff’s hardware (i.e., sensors), but there is evidence in the record that plaintiff tested software for “displaying inspection data” on datasets collected from earlier projects.¹⁹ The necessity of public testing does not weigh in favor of an experimental sale.

The next factor, “(3) the nature of the invention,” does not weigh in favor of an experimental sale. The invention involves the display of inspection data,²⁰ and the August 2002 invention disclosure documents include a display of inspection data that is similar to the display of data found in the Norco Reports. A comparison of these two sets of strip charts does not suggest that plaintiff had made substantial changes of any kind to the display of inspection data between August 2002 and February 2003.

(*Compare* Civ. No. 14-1482, D.I. 186, ex. 1, figure 1, *with* D.I. 187, ex. 8 at 16) Two

¹⁹ The invention disclosure in Bondurant’s possession in August 2002 indicates that aspects of the display software had been “coded and tested on a variety of data sets.” (Civ. No. 14-1482, D.I. 186, ex. 1 at 5)

²⁰ If the invention claimed in the ’874 patent included the sensors that required so much testing, that would swing these factors in favor of an experimental sale, but the ’874 patent claims are directed to displaying the inspection data.

related factors are “(4) the length of the test period” and “(10) whether the invention reasonably requires evaluation under actual conditions of use,” and while these factors may apply to the sensors, they do not appear to apply to the “displaying inspection data” invention in the ‘874 patent.

There are four experimentation factors, which include “(7) whether records of the experiment were kept; (8) who conducted the experiment; . . . (11) whether testing was systematically performed; [and] (12) whether the inventor continually monitored the invention during testing.” There is no evidence that the inventors kept records or even identified what they were doing as experiments. Moreover, inventor Bondurant (the primary software developer) was not present at the Norco site, nor was it his practice to be on site; even in the intervening years, he has “never been on a job.” (Civ. No. 14-1482, D.I. 185, ex. C at 61:15) Inventor De Lorenzo explained how he and Bondurant worked together:

Q. Okay. How would you integrate with [Bondurant] -- if you were making a change out on the job, how would, if he was working with the source code as well, how would you keep him updated as to what changes you were making in the code?

A. Okay. Again, changes I was making to the code were more aesthetic, font changes, header changes. Phil was responsible -- well, he was the one writing the more core algorithms to do the mapping to the geometry and some of the more complex processing of the data.

Q. Are those what you in the code call “functions”?

A. They would be functions.

Q. Okay. So Phil Bondurant was the one who would write the functions and then you would make I would call “field changes,” changes in the field to improve the look of it or perhaps meet a client’s specific demand for information?

A. Yes.

Q. Okay. Now, what -- was sort of the mother code kept on Phil’s computer?

A. The core algorithms were kept on Phil’s computer and he would back them up to the local server as he saw the need to do that. Once he had made some improvements, he would release that of his own volition.

(Civ. No. 14-1482, D.I. 185, ex. E at 13:12-14:8) De Lorenzo, who was on site as part of FTIS, made aesthetic formatting changes to the reports, and Bondurant, who worked on the “more complex processing of the data,” was not present during data collection and released software updates “of his own volition.” These undisputed facts indicate that – as it relates to the invention in the ‘874 patent – Bondurant is the relevant inventor. Bondurant was not present to conduct regular testing or to continually monitor the invention during testing. De Lorenzo, the co-inventor, was unaware of any schedule for experimenting with the data or improving the invention (displaying inspection data) while he was on the Norco job. Based upon an undisputed record, factors seven, eight, eleven, and twelve all weigh against an experimental sale.

There are four customer-facing factors, and these are “(5) whether payment was made; (6) whether there was a secrecy obligation; . . . (9) the degree of commercial exploitation during testing; . . . and (13) the nature of the contacts made with potential customers.” Plaintiff was paid for the Norco sale, and there is no evidence that plaintiff offered Norco a discount or made Norco aware of any alleged experimental nature of the FTIS service. (See, e.g., Civ. No. 14-1482, D.I. 198, ex. J (Quest Quotation No. 3-03003 for Norco sale)) The inventors point out that plaintiff informed Norco that FTIS was “in [its] second generation of development,” and while this may have been an accurate representation of the state of FTIS at the time, there is nothing in the record that indicates that plaintiff had communicated any experimental nature of plaintiff’s activities while performing on the contract.²¹ (Civ. No. 14-1482, D.I. 202 at ¶ 12; D.I. 187, ex. 10) Moreover, the record is replete with FTIS project quotations that indicate that plaintiff was actively selling FTIS services (and not communicating experimentation

²¹ In fact, the inventors’ declaration states otherwise: “The customers were not involved with any of our decisions to modify either the inspection pig or the code. Those choices were completely our own discretion and done privately by Quest.” (Civ. No. 14-1482, D.I. 202 at ¶ 15)

or confidentiality related to the reports displaying inspection data to clients) prior to the critical date. (Civ. No. 14-1482, D.I. 187, exhibits 5, 6, 7, 11, and 14) The inventors explain that “[t]he inspection reports we did generate were given directly to the refineries. We did not make the reports publicly available, and it is our understanding that refineries [] do not share the reports either.” (Civ. No. 14-1482, D.I. 202 at ¶ 17)

The quotation for the Norco sale contains a boilerplate confidentiality clause that identifies “Proprietary Information” as:

Information contained in the company’s proposal and/or contract or furnished by the company in connection with either, may include information proprietary to QUEST. Neither the proposal, contract, or any information therein, nor any proprietary or trade show secret information pursuant thereto, shall be disclosed to others or used for any purpose as it may also be considered a trade secret without the prior written approval of QUEST’s President.

(Civ. No. 14-1482, D.I. 187, ex. 10 at 11) This clause appears to relate to information about plaintiff and its business practices and, in light of the extensive detail found elsewhere in the quotation, the clause itself does not support plaintiff’s contention that the Norco sale was experimental. Moreover, the Norco Reports that display inspection data (i.e., that relate to the invention claimed in the ‘874 patent) contain strip charts that state that the chart was “generated with QUEST proprietary technology,” but neither the strip charts nor the reports are marked “confidential.” (Civ. No. 14-1482, D.I. 187, Ex 8 at 16, 20, 24, 29, 33, 37, 45, 49, 53, 57, and 61; ex. 9 at 15, 20, 25, 30, 35, 40, 46, and 51) There is no evidence in the record that plaintiff held the Norco client to any secrecy obligation related to the display of inspection data. Therefore, all of the customer-facing factors weigh against an experimental sale.

Of the thirteen *Electromotive* factors, only one (control) weighs in favor of experimental sale, but the remainder weigh against. Several undisputed facts are notable: (1) inventor Bondurant was not on the Norco customer site during data

collection;²² (2) Bondurant scheduled software updates “of his own volition;”²³ (3) plaintiff sold FTIS services at full price without a discount; (4) clients did not know about the experimentation;²⁴ (5) plaintiff did not solicit feedback from clients about the display of the inspection data; and (6) plaintiff made no attempts to keep confidential the display and presentation of the inspection data (i.e., the invention claimed in the ‘874 patent). For these reasons, the Norco sale was not experimental and, therefore, represents a commercial sale under § 102(b).

b. Ready for patenting

An invention may be ready for patenting “in at least two ways: by proof of reduction to practice before the critical date; or by proof that prior to the critical date the inventor had prepared drawings or other descriptions of the invention that were sufficiently specific to enable a person skilled in the art to practice the invention.” *Pfaff*, 525 U.S. at 67-68. “A process is reduced to practice when it is successfully performed. A machine is reduced to practice when it is assembled, adjusted and used. A manufacture is reduced to practice when it is completely manufactured. A composition of matter is reduced to practice when it is completely composed.” *Id.* at 57 n.2 (citing *Corona Cord Tire Co. v. Dovan Chemical Corp.*, 276 U.S. 358, 383 (1928)). Plaintiff asserts claims 1, 12, 13, 24, 25, 30, 33, 37, and 40. (Civ. No. 14-1482, D.I. 180 at 1; Civ. No. 14-1483, D.I. 286 at 1)

²² Nor was it his practice to be on site for FTIS jobs.

²³ His co-inventor, De Lorenzo, was not involved in the software updates, and there does not appear to have been a schedule for experimentation and software releases.

²⁴ The inventors state that “[f]rom job to job the customers could not necessarily tell all the work that was going on behind the scenes, but they knew we were still experimenting and developing the product.” (Civ. No. 14-1482, D.I. 202 at ¶ 14) This statement supports the inventors’ subjective intent to experiment, but it does not point the court to any objective evidence that clients knew about the experimentation.

i. Machine claims

Claims 1 and 40 are the pending machine claims. In order for machine claims to be ready for patenting, a machine must be assembled, adjusted, and used as described in the relevant claims. The first Norco Report describes the FTIS inspection tool, which includes an ultrasonic sensor, a “Position Module [that] houses two axial encoders that record the tool’s axial location within the furnace coil, a roll encoder that tracks spiral rotation (roll), and two accelerometers that record the vertical orientation and unit acceleration.” (Civ. No. 14-1482, D.I. 187, ex. 8 at 2-3) Ultrasonic data is collected, processed, and “it is then stored for downloading to the data station at the end of the inspection.” (*Id.* at 3) The data station runs “custom software, which allows 2-Dimensional (2D) viewing of the ‘entire’ piping coil” in a strip chart shown in “Figure 3. FTIS 2D Plot.” (*Id.* at 4) The first Norco Report documents that Norco representatives used this machine to produce a series of strip charts as found in the report. (*Id.* at 16) The first Norco Report and strip chart provide visual detection of problem areas, such as those in section 1 and section 5 as identified in Pass A. (*Id.* at 15-16) Therefore, the first Norco Report demonstrates that plaintiff assembled, adjusted, and used the FTIS machine as described in claims 1 and 40 to produce the strip charts shown. Claims 1 and 40 were reduced to practice in the FTIS machine at this point and were ready for patenting.²⁵

ii. Process claims

The pending process (method) claims are 12, 13, 33, and 37. Claims 12 and 13 depend on claim 11. (‘874 patent, 17:35-42) Claims 33 and 37 are independent. (*Id.* 19:19-20:8) The strip charts contained in the Norco Reports demonstrate that plaintiff reduced to practice the method steps associated with these claims by performing the

²⁵ Alternatively, Bondurant’s August 2002 invention disclosure was sufficiently specific to enable a person skilled in the art to practice the invention.

methods, therefore, the methods claimed in claims 12, 13, 33, and 37 were ready for patenting at the time of the Norco sale.

iii. Article of manufacture claims

Claims 24, 25, and 30 recite a “computer-readable medium,” which is an article of manufacture. *In re Beauregard*, 53 F.3d 1583, 1584 (Fed. Cir. 1995) Claims 24 and 25 claim the article of manufacture that performs the methods (respectively) in claims 11 and 12. (‘874 patent, 17:16-38; 18:26-49) The manufacture of claims 24 and 25 was completely manufactured when plaintiff completed the software that generated the strip charts and performed the method in claims 11 and 12. Claim 30 adds the requirement of a “composite data marker,” which inventor De Lorenzo acknowledged was in the FTIS software as of August 2002.²⁶ (Civ. No. 14-1482, D.I. 185, ex. E at 77:7-22) In the first Norco Report, the composite data marker identifies a “Return Bend.” (Civ. No. 14-1482, D.I. 187, ex. 8 at 4) In the second Norco Report, the composite data marker is shown as a hash mark that “Indicates Bend Location.”

²⁶ For reasons to be discussed below, the court disregards the later-filed declarations by DeLorenzo and Bondurant that contradict DeLorenzo’s deposition testimony.

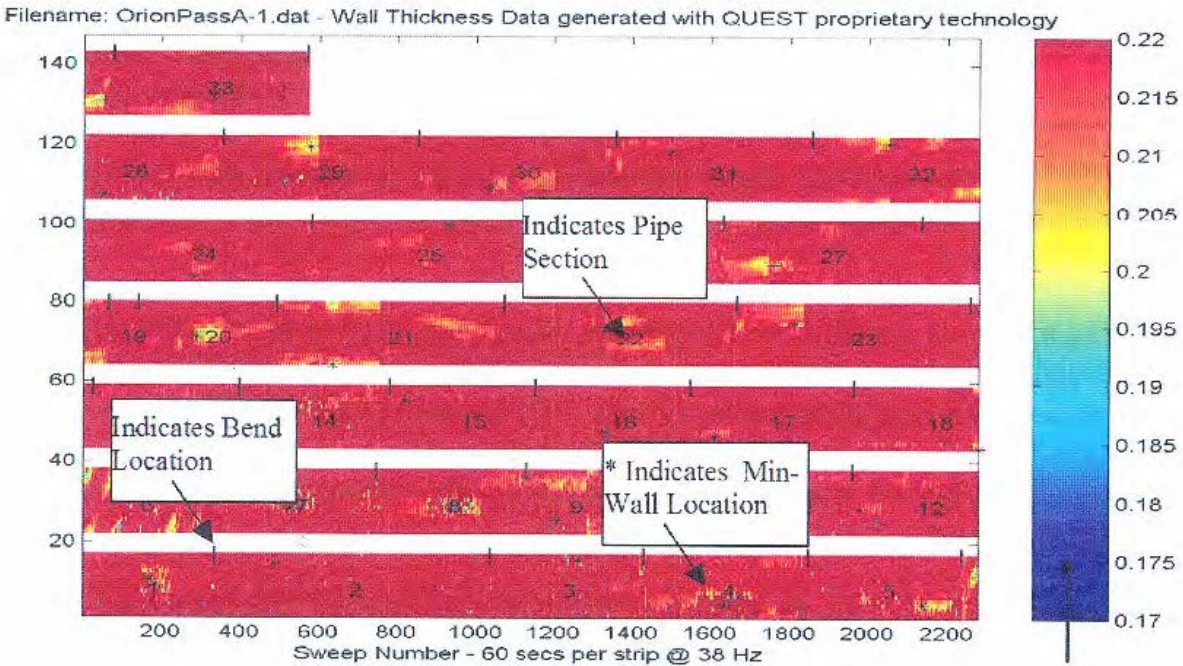


Figure 3. FTIS 2-D Plot

**Color Bar Illustrating
Thickness in Inches**

(Civ. No. 14-1482, D.I. 187, ex. 9 at 4) Plaintiff argues that a factual dispute exists over whether the composite data markers were implemented in the FTIS software for the Norco sale.²⁷ (Civ. No. 14-1482, D.I. 195 at 13-15) Meanwhile, Bondurant’s August 2002 invention disclosure teaches a “composite bend indicator,” which combines “[a]ll six bend detection methods (three indicators for both wall and radius) . . . in a root-mean-square manner to derive a composite bend indicator.” (Civ. No. 14-1482, D.I. 186, ex. 1 at 5) Bondurant’s disclosure explains that:

Figure 3²⁸ is a plot of the composite bend indicator and the adaptive threshold that is used to identify the bend locations within the composite signal. . . . Figures 1 and 2 identify each bend with an ‘x’ above the automatically identified bend and a tube segment number just to the left.

²⁷ This factual dispute centers on the sham affidavits to be discussed with respect to claim 30, below. See *supra* note 26.

²⁸ Which corresponds to figure 8 in the ‘874 patent.

(*Id.*) The presence of composite data markers in both Norco Reports and in Bondurant's August 2002 invention disclosure demonstrates that claim 30 was ready for patenting at the time of the Norco sale.

c. Conclusion

The § 102(b) statutory bar applies to the Norco sale with respect to the asserted claims of the '874 patent, because it was a commercial sale (and not experimental), and the inventions contained within the Norco Reports were ready for patenting.

4. Anticipation by the Norco sale

a. The display limitation

In the Norco sale, plaintiff produced reports containing strip charts. The parties disagree whether strip charts can anticipate a limitation common to the independent claims of the '874 patent (the "Display Limitation").²⁹ For example, plaintiff admits that the Norco sale anticipates five of the six limitations of claim 1, but plaintiff disputes that the Norco sale anticipates limitation "[1-E]," which is the Display Limitation. (Civ. No. 14-1482, D.I. 187, ex. 17 at 1-26) Plaintiff presents a number of arguments that the Norco sale does not anticipate the '874 patent, but (as will be discussed below) these are ultimately questions of claim construction.³⁰ (Civ. No. 14-1482, D.I. 195) The

²⁹ Claims 1, 11, 24, 33, 37, and 40 are the independent claims of the '874 patent.

³⁰ The court construed the Display Limitation as follows: Claims 1 and 40 are system claims that share a common Display Limitation: "**generate a display of at least a portion of said partitioned inspection data arranged to represent said physical geometry of said tube segments**" means "to create a visual representation of at least a portion of the inspection data to depict or portray the arrangement of the tube segments." (Civ. No. 14-1482, D.I. 137 at ¶ 5) Claim 11 is a method claim, and claim 24 is an article of manufacture claim for performing the method of claim 11; these claims share a common Display Limitation: "**generating a display of at least a portion of said partitioned inspection data arranged to represent said physical geometry of said tube segments,**" which means "creating a visual representation of at least a portion of the inspection data to depict or portray the arrangement of the tube segments." (*Id.*) The Display Limitation of method claim 33 is "**generating a two dimensional or three-dimensional representation of at least a portion of said**

common characteristic of these limitations is that plaintiff's no anticipation argument centers around the construction of the term "represent" in each Display Limitation.

b. Claim construction

With respect to the Display Limitation, plaintiff's experts opine that the representation of the inspection data must be to scale, represented in units of dimensional measure, and oriented in such a way so that the data is organized as the tubes would be arranged in a schematic diagram. (Civ. No. 14-1482, D.I. 197, ex. A at ¶¶ 9-22) Defendants argue that this issue was addressed at claim construction. (Civ. No. 14-1482, D.I. 185 at 13-14) Defendants contend that:

The claims of the '874 patent expressly cover 2D Piping Coil Layout images; thus, when these images appeared in the Norco Sale, the Display Limitation was practiced and the claims were fully anticipated. Quest tried and failed to convince the Court to narrow the meaning of 'Display Limitation.' Thus, based on the uncontested facts, the logic of the preliminary injunction ruling and the Court's *Markman* opinion, the Norco Sale anticipates the '874 patent. The Display Limitation is met by the Norco Report, which was a product of the Norco Sale, because it contains 2D Piping Coil Layout Images identical to those claimed in the '874 patent.

(*Id.* at 13) Plaintiff argues that "this is an improper reading of the court's claim construction order, and, as this court well knows, it would be an error to have decided this issue in the claim construction order." (Civ. No. 14-1482, D.I. 195 at 11) Plaintiff avers that "the court simply declined to rule [at claim construction] that [plaintiff]

inspection data arranged to represent a physical geometry of a plurality of said tube segments," which means "creating a two dimensional or three-dimensional visual representation of at least a portion of the inspection data to depict or portray the arrangement of the tube segments." (*Id.*) Claim 37 is a method claim that has a Display Limitation: "**generating a two-dimensional or three-dimensional representation of said inspection data collected from a plurality of said tube segments, said data arranged to represent a physical geometry of said tube segments,"** which means "creating a two dimensional or three-dimensional visual representation of the inspection data collected from a plurality of said tube segments to depict or portray the arrangement of the tube segments." (*Id.*)

disclaimed strip charts. Failing to find literal disclaimer is not the same as finding that all claims must include strip charts.” (*Id.* at 11-12 (emphasis omitted)) At claim construction, the court concluded “that the applicant did not disclaim strip charts as described in example 1.”³¹ (Civ. No. 14-1482, D.I. 137 at ¶ 11)

Plaintiff’s experts, Caligiuri and Souri, summarize their opinion:

Strip charts do not represent the physical geometry of the furnace because the inspection data are plotted to represent the passing of time, . . . because . . . the inspection data from a single furnace tube may be displayed over multiple horizontal strips. As such, this display of inspection data does not depict or portray the arrangement of tube segments in the furnace. These time-based strips are arranged in parallel horizontal strips, as may be the furnace tube segments, but this is only a superficial resemblance that is confusing and misleading because each strip does not represent the physical geometry of any given tube segment and is not in correct orientation to the tube segments around it. The time strips do not depict or portray any particular furnace tube segment. In fact each horizontal strip of the strip chart represents a completely arbitrary amount of time with essentially no relation to the physical geometry of the actual tubes

(Civ. No. 14-1482, D.I. 197, ex. A at ¶ 9) Caligiuri and Souri opine that, for tubing arranged as in figure 1A of the ‘874 patent, “the strip chart artificially split[s] the inspection data [and] . . . places the data in a different orientation.” (*Id.* at ¶ 12) Caligiuri and Souri explain that time-based strip chart data leads to identified tube segments, the lengths of which are “of all different values” and are “in the wrong direction” in relation to each other. (*Id.* at ¶¶ 14-15)

Despite plaintiff’s efforts to generate an issue of material fact, the court is unable to discern one. These are many of the same arguments plaintiff presented at

³¹ In a footnote, plaintiff re-argues its contention that “strip charts were surrendered and effectively disclaimed when language was added to overcome a rejection based on strip charts in prior art.” (Civ. No. 14-1482, D.I. 195 at 12 n.5) The court declines to reconsider these arguments.

preliminary injunction³² and during claim construction. The dispute is ultimately over construction of the “represent” terms. Defendants argue that there is no need to construe this term.³³ (Civ. No. 14-1482, D.I. 185 at 13) Plaintiff (through its experts) argues that the Norco strip charts cannot anticipate the independent claims for several reasons: (1) a single tube segment cannot be displayed over multiple lines, and strip charts display tube segments over more than one line; (2) the claims require a display of the “physical geometry of any given tube segment,” but strip charts only display the time a sensor is within the tubes and not geometry; (3) the claims require displayed strips to be “in correct orientation to the tube segments around it;” and (4) charts displaying inspection data must be to the scale of the physical dimensions of the tube segments.³⁴ (Civ. No. 14-1482, D.I. 197, ex. A at ¶¶ 9-15)

Plaintiff does not identify any support in the specification to justify reading these limitations into the claims. Moreover, plaintiff’s limited argument consists primarily of citation to case law. (Civ. No. 14-1482, D.I. 195 at 11-13) Plaintiff then re-argues that applicant disclaimed strip charts, pointing to language in the specification that “the average speed and the instantaneous speed can vary significantly in view of the fact that the inspection tool does not progress through the furnace at a constant rate.” (’874

³² For example, at the preliminary injunction, “[t]he court conclude[d] that there is nothing in the specification or claims of the ’874 patent that requires the inventive system to perform or look exactly like Quest’s latest commercial iteration of its FTIS, so long as the inspection data can be displayed in a way that suggests data markers representing the physical geometry of the furnace.” (Civ. No. 14-1482, D.I. 99 at ¶ 20)

³³ At claim construction, defendants proposed that “represent” means “to serve as a sign or symbol, to portray by pictorial art: delineate, depict.” (Civ. No. 14-1482, D.I. 119, ex. A at 1) Plaintiff argued that “represent” did not need to be construed separately from the context within which it appears. (*Id.*)

³⁴ The court infers these limitations from Caligiuri and Souri’s explanations of why the Norco strip charts cannot anticipate the independent claims. (Civ. No. 14-1482, D.I. 197, ex. A at ¶¶ 7-22; ex. B at ¶¶ 78-82)

patent, 5:3-6) However, earlier in the same paragraph, applicant explains that time-based data collection is a preferred embodiment:

Preferably, the inspection tool collects the data at a predetermined time-based rate (although the inspection tool could alternatively collect the data using a position-based collection system in which data is collected when the inspection tool has progressed a predetermined distance). Using a time-based collection system, the data density is determined by the data collection rate and the speed at which the inspection tool progresses through the furnace.

(‘874 patent, 4:60-67) Souri opined that this part of the specification means that time-based strip charts are “unhelpful because it could lead to an incorrect decision as to which tube segment needs to be replaced.” (Civ. No. 14-1482, D.I. 198, ex. D at 107) This is directly contradicted by the specification, which teaches that, “the data analyst will analyze strip chart 300 and/or strip chart 400 in conjunction with a mechanical drawing of the physical layout of the furnace to provide hints as to where the bends or ends of the tube segments should be located.” (‘874 patent, 11:1-5)

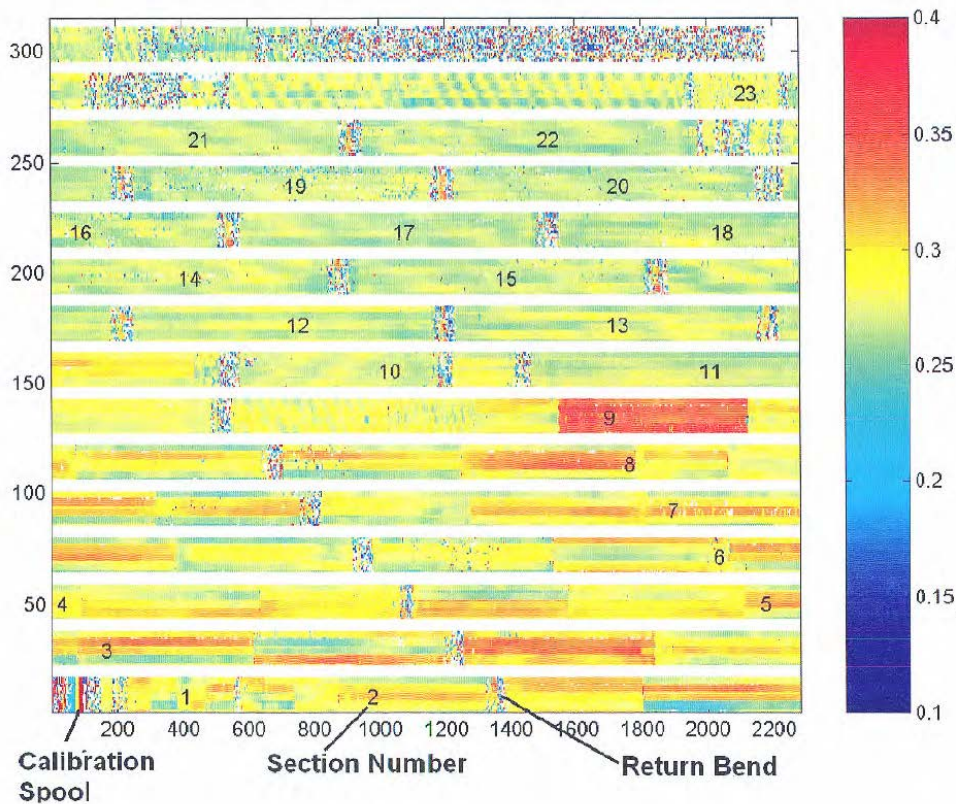
The court concludes that nothing in the specification or claims of the ‘874 patent limits the inventive system to specific embodiments.³⁵ Similarly, the ‘874 patent does not require the inventive system to perform or look exactly like plaintiff’s latest commercial iteration of FTIS, so long as the inventive system creates “a visual representation of at least a portion of the inspection data to depict or portray the arrangement of the tube segments” within the plain and ordinary meaning of these terms.

³⁵ Nor are the claims limited solely to the displays depicted in figures 5, 6, and 9 of the ‘874 patent.

c. Anticipation

i. Claims 1, 11, 24, 33, and 37

The pending independent claims are 1, 11, 24, 33, 37, and 40. Defendants argue that independent claims 1, 11, 24, 33, and 37³⁶ are anticipated by the Norco sale. (Civ. No. 14-1482, D.I. 185 at 5-8) For these claims, the only dispute is over the Display Limitations. (*Id.*) Defendants have identified the strip charts produced as part of the Norco sale as anticipating the Display Limitations. The following strip chart of wall thickness data was produced as part of “Pass L” from the first Norco project:



(Civ. No. 14-1482, D.I. 187, ex. 8 at 61) This is one of twelve such charts produced in the first Norco Report.

³⁶ Plaintiff argues the remaining independent claim (40) separately.

The second Norco project produced a slightly different type of chart, as shown in figure 3 from the report:

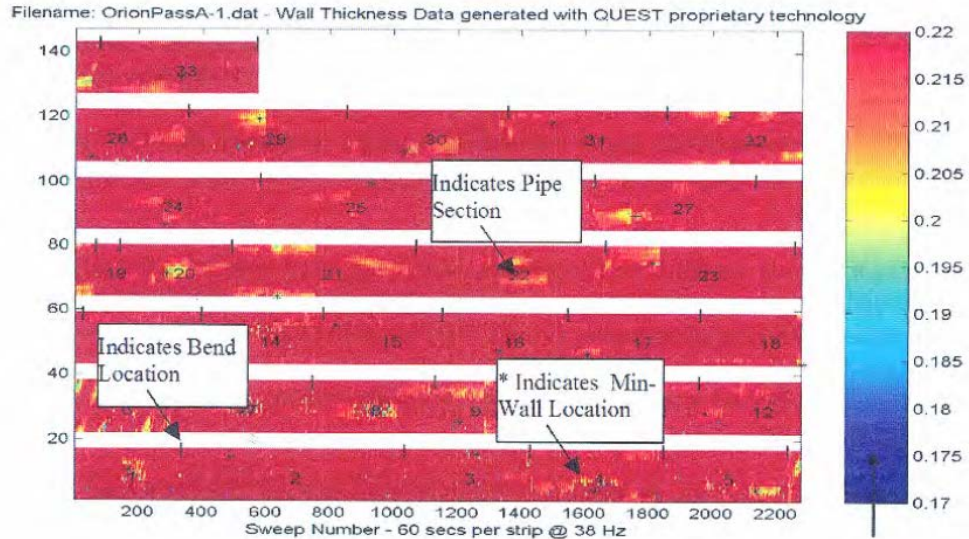


Figure 3. FTIS 2-D Plot

Color Bar Illustrating Thickness in Inches

(Civ. No. 14-1482, D.I. 187, ex. 9 at 4) The second Norco project produced eight strip charts labeled passes A-H.

In response to the strip charts from the Norco Reports, plaintiff contends that defendants rely on “an improper reading of the court’s claim construction order” and, under its experts’ proper reading of the claims, the Norco sale does not anticipate the “arranged to represent the physical geometry” limitations, thereby raising a genuine issue of material fact and precluding summary judgment.³⁷ (*Id.* at 11-13) The alleged factual disputes revolve around a straw man argument in which plaintiff contends (without citation) that “[d]efendants . . . stat[e] that distance can be inferred from time.” (*Id.* at 12)

³⁷ Plaintiff requests reconsideration of claim construction, in which the court determined that applicant had not disclaimed strip charts. (Civ. No. 14-1482, D.I. 195 at 11-12 & n.5)

Ultimately, plaintiff's factual dispute returns to claim construction: "Quest's experts believe that to 'depict or portray the arrangement of the tube segments' requires a reference to **physical** dimensions that are not present in strip charts."³⁸ (*Id.* at 13 (emphasis in original)) This is a question that the court has already addressed (above) with respect to claim construction. With the claim construction resolved, there are no genuine issues of material fact as to whether the Norco sale anticipates the "generate a display of at least a portion of said partitioned inspection data arranged to represent said physical geometry of said tube segments" limitations. Therefore, the court concludes that, under § 102(b), the Norco sale anticipates claims 1, 11, 24, 33 and 37 of the '874 patent.

ii. Claim 13

Defendants argue claim 13 with the independent claims, because plaintiff has based its no anticipation argument solely on claim 13 depending on claim 11 and plaintiff's argument that the Norco sale does not anticipate the Display Limitation in claim 11. (Civ. No. 14-1482, D.I. 185 at 12; see *also* D.I. 187, ex. 17 at 48) Plaintiff presents no arguments in response. There are no genuine issues of material fact with respect to anticipation of claim 13 by the Norco sale, therefore, claim 13 is invalid.

iii. Claims 12 and 25

Defendants argue that claims 12 and 25 are invalid under § 102(b) as anticipated by the Norco sale. (Civ. No. 14-1482, D.I. 185 at 21-23; D.I. 220 at 26) Plaintiff contends that the proper construction of claims 12 and 25 "narrowly require displays such as that shown in Figures 5, 6, and 9 of the '874 patent."³⁹ (Civ. No. 14-1482, D.I.

³⁸ Plaintiff's experts did not express an opinion about how a person of ordinary skill in the art would read the relevant claim language in light of the specification, nor did they identify any specific parts of the specification that support this requirement of physical dimensions. (See Civ. No. 14-1482, D.I. 197, ex. B at ¶¶ 79-83)

³⁹ The court has rejected this construction.

195 at 24 (citing Civ. No. 14-1482, D.I. 197, ex. B at ¶ 78-98; D.I. 198, ex. E)) However, plaintiff's argument is based entirely on its proposed (narrow) construction of claims 12 and 25, and the remainder of plaintiff's arguments revolve around questions of claim construction that the court has already addressed.⁴⁰ Nothing in plaintiff's brief identifies any specific factual disputes with respect to the Norco sale.⁴¹

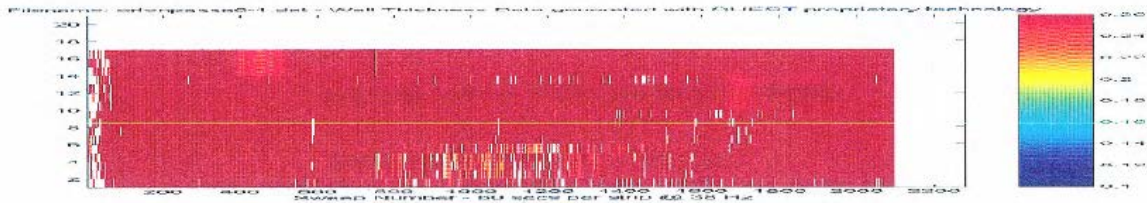
The court has construed the relevant claim term "wherein said display is comprised of a two-dimensional or three-dimensional representation of one or more stacked tube segments of said furnace" to mean "inspection data from one or more of the stacked tube segments is displayed in two or three dimensions." Defendants presented unrebutted evidence that the Norco sale anticipates claims 12 and 25 in a "one stacked tube segment"⁴² configuration.⁴³ (Civ. No. 14-1482, D.I. 220 at 31-32) Defendants identify a two-dimensional display of segment 34, which is a 6-inch diameter tube segment in the convection section stack documented in the second Norco Report.

⁴⁰ For example, in the claim chart, plaintiff's experts respond to defendants' invalidity assertions with "we disagree" followed by no explanation. (Civ. No. 14-1482, D.I. 187, ex. 17 at 45-47) In the one identified dispute with respect to claim 12, plaintiff's experts opine that the claim construction requires display of physical dimensions. (*Id.* at 46-47)

⁴¹ Plaintiff argues that "there is no genuine issue of material fact" with respect to dependent claims 12 and 25, but that there is "a dispute of fact" between the experts with respect to independent claim 11 upon which claim 12 depends. (Civ. No. 14-1482, D.I. 195 at 25-26)

⁴² This is the "one" in the "one or more of said stacked tube segments of said furnace" found in claim 12. ('874 patent, 17:37-38)

⁴³ Defendants AutoSketch argument is not appropriate for summary judgment. The experts disagree whether the AutoSketch drawing displays inspection data. (See Civ. No. 14-1482, D.I. 220 at 31; *compare* D.I. 187 at ¶¶ 44-46, 70-81 *with* D.I. 187. ex. 15 at ¶ 85)



F52-01B Pass A 6inch Radiant Pipe Section

(Civ. No. 14-1482, D.I. 187, ex. 9 at 16; see also ex. 9 at 20, 26, 31, 36, 41, 47, 52)

Moreover, in any of the strip charts in the Norco Reports, inspection data from one or more of the stacked tube segments is displayed in two-dimensions.⁴⁴

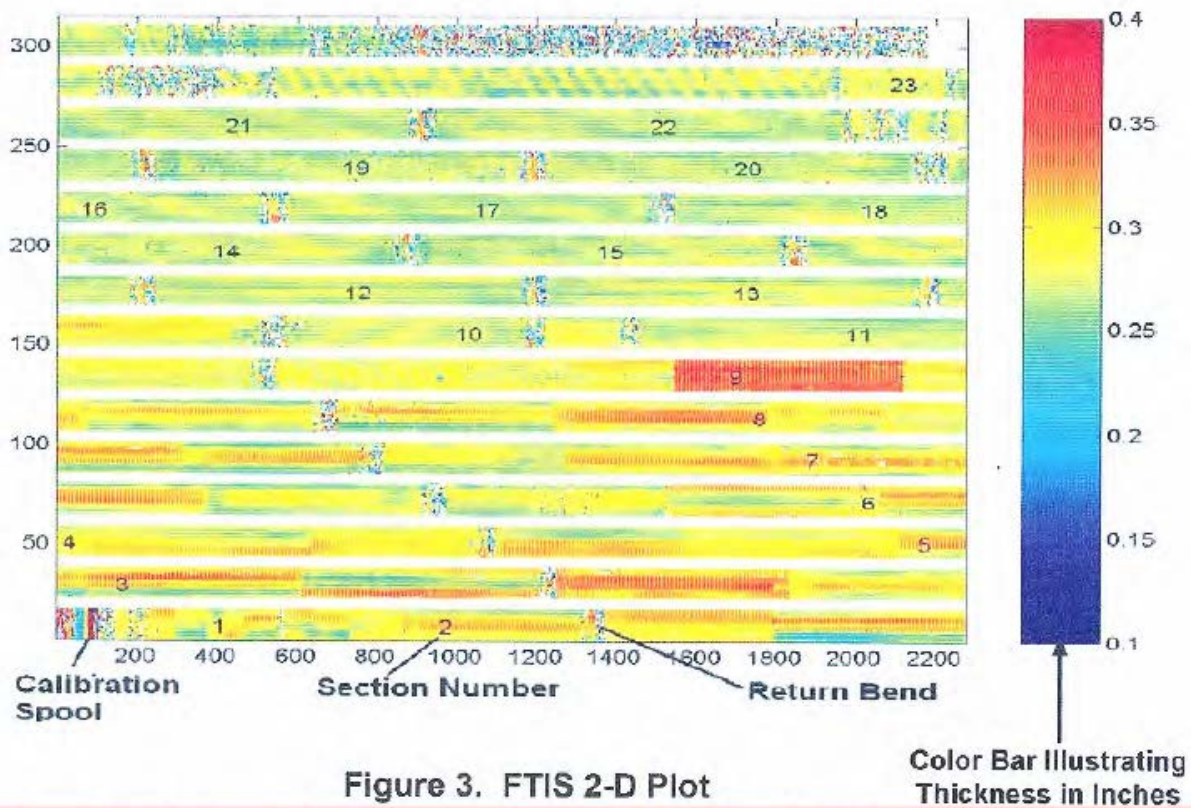


Figure 3. FTIS 2-D Plot

Color Bar Illustrating Thickness in Inches

⁴⁴ “[W]hatever would infringe if subsequent will anticipate if prior.” *In re Slayter*, 276 F.2d 408, 411 (C.C.P.A. 1960).

(Civ. No. 14-1482, D.I. 187, ex. 8 at 4) Figure 3 from the first Norco Report (depicted above) includes a two-dimensional display of inspection data of 23 tube segments. Therefore, claims 12 and 25 are invalid as anticipated by the Norco sale.

iv. Claim 27

Plaintiff does not assert claim 27, but claim 30 (which is asserted), depends on claim 27. Defendants argue claim 27 with the independent claims, because plaintiff has based its no anticipation argument solely on claim 27 depending on claim 24 and plaintiff's argument that the Norco sale does not anticipate the Display Limitation in claim 24. (Civ. No. 14-1482, D.I. 185 at 12; see *also* D.I. 187, ex. 17 at 52) The court has found claim 24 anticipated by the Norco sale. Plaintiff presents no arguments in response. There are no genuine issues of material fact with respect to anticipation of claim 27 by the Norco sale, therefore, claim 27 is invalid.

v. Claim 28

Plaintiff has not asserted claim 28.⁴⁵ Claim 30 (which is asserted) depends on claim 28, which depends on claims 27 and 24. Plaintiff's experts had argued that claim 28 is not anticipated by the Norco sale, because the Norco sale does not anticipate the Display Limitation of claim 24 (upon which claim 28 depends). (Civ. No. 14-1482, D.I. 187, ex. 17 at 53) Defendants argue that the Norco sale anticipates the Display Limitation in claim 24 and that claim 28 is also anticipated by the Norco sale. (Civ. No. 14-1482, D.I. 185 at 12) The court has found claims 24 and 27 anticipated by the Norco sale. Plaintiff presents no responsive arguments in its brief. There are no genuine issues of material fact whether the Norco sale anticipates claim 28, therefore, claim 28 is invalid.

⁴⁵ Defendants argue invalidity of claim 28 in a footnote. Despite defendants' contention that it is necessary to resolve the validity of claim 28, the validity of (asserted) claim 30 does not hinge on the validity of claim 28.

vi. Claim 30

Claim 30 recites “[t]he computer-readable medium of claim 28, wherein each of said data markers comprises a composite data marker derived from a plurality of individual data markers.” (‘874 patent, 19:4-6) Claim 28 recites:

The computer-readable medium of claim 27, wherein sensor data is also collected from said furnace, said sensor data comprising a plurality of sensor readings collected by one or more auxiliary sensors selected from the following group: an axial encoder, an accelerometer, a roll encoder, a gyroscope, an inertial navigation system, and combinations thereof.

(*Id.* at 18:59-65) Claim 27 claims “[t]he computer-readable medium of claim 24, wherein said inspection data comprises a plurality of inspection readings selected from the following group: wall thickness readings of said furnace, inside radius readings of said furnace, and combinations thereof.” (*Id.* at 18:54-58) The claims refer to “inspection data” and “sensor data,” and claim 30 is limited to articles of manufacture that collect both sets of data and that perform the method of “generating a plurality of [composite] data markers each of which identifies a location of a physical feature of said furnace.” (*Id.* at 18:32-33) For example, the specification describes that “composite data markers: . . . identify the locations of the furnace bends.” (*Id.* at 12:61-63) Claim 30 teaches that the composite data marker is “derived from a plurality of individual data markers.” (*Id.* at 19:5-6) The specification indicates that individual data markers are “based upon the detection of various ‘data clues’ in the inspection data and/or sensor data.” (*Id.* at 15:56-68)

Defendants deposed DeLorenzo (one of plaintiff’s 30(b)(6) witnesses) who acknowledged that a “composite bend indicator” existed in plaintiff’s FTIS source code in August 2002 and was present in the software during the Norco sale.

Q. Okay. Now, take a look at Line No. 42 back on Page 8350 -- 550 on Exhibit No. 128.

A. Yep.

Q. Is this calculation that follows what you guys have referred to as a composite data marker?

A. I believe that was the intent of that -- of what this comment is, so yes.

Q. So if I am correct in putting your answers together, as of roughly August 28th, 2002, your software allowed you to utilize and give to your customers these displays that had composite data markers in them, correct?

A. That's correct.

Q. And did you actually do so for various customers? Were there some of these where you utilized the automatic composite data marker function?

A. We attempted it and we did both the automatic and the kind of auto assisted, so yes, we did use it.

Q. Okay. All right. And you started doing both the automatic and the data operator assisted at least as of this time, August of '02, correct?

A. Yes, that's how that graphic was generated.

(Civ. No. 14-1482, D.I. 185, ex. E at 77:2-22)

Plaintiff argues that the relevant “portions of code [defendants] rely on were commented out (and thus not used).” (Civ. No. 14-1482, D.I. 195 at 13) Plaintiff contends that the “testimony [] was elicited without giving the witness full access to the code, including vitally relevant sections of the code. . . . This resulted in confused and inaccurate testimony regarding the date and use of sections of the source code.” (*Id.* at 14 (citing Civ. No. 14-1482, D.I. 200 at ¶¶ 3-19 (DeLorenzo declaration))) Relying on declarations from the inventors, plaintiff argues that “[a]nalysis of the full source code inarguably demonstrates that the Norco sale did not use composite data markers.” (*Id.*) Plaintiff asserts that the source code places an “X” at the composite data marker and the Norco Reports do not contain such marks, therefore, the source code was not present at the time.⁴⁶ DeLorenzo opines that he would have given a more accurate

⁴⁶ Plaintiff presents this argument for the first time in its brief.

answer about the availability date⁴⁷ if he had been given the full section of code. (Civ. No. 14-1482, D.I. 200 at ¶ 17-18)

Defendants respond that plaintiff selected DeLorenzo, a co-author of the source code, as its 30(b)(6) witness to discuss the “existence, functionality and use of all Quest FTIS software code from 2002 to 2004.” (Civ. No. 14-1482, D.I. 220 at 17-18)

Defendants assert that DeLorenzo prepared for his deposition by reviewing the code and instruction manuals and speaking with (co-author) Bondurant. (*Id.*) Defendants contends that plaintiff’s counsel was provided with all the exhibits presented to DeLorenzo. (*Id.*) Defendants argue, based upon a detailed review of the record, that plaintiff’s arguments as presented now are false. (*Id.* at 19-22) Finally, defendants point out that, even if the composite data markers were not used in the Norco sale (as plaintiff now contends), the source code was still present during the Norco project and that is legally sufficient to anticipate claim 30. (*Id.* at 22 (citing *Finjan v. Secure Computing Corp.*, 626 F.3d 1197, 1203-04 (Fed. Cir. 2010)))

Under the sham affidavit doctrine, “a party may not create a material issue of fact to defeat summary judgment by filing an affidavit disputing his or her own sworn testimony without demonstrating a plausible explanation for the conflict.” *Baer v. Chase*, 392 F.3d 609, 624 (3d Cir.2004) (citing *Hackman v. Valley Fair*, 932 F.2d 239, 241 (3d Cir.1991)); see also *Martin v. Merrell Dow Pharms., Inc.*, 851 F.2d 703, 706 (3d Cir.1988) (doctrine applies to contradictions of prior testimony). “When a party does not explain the contradiction between a subsequent affidavit and a prior deposition, it is appropriate for the district court to disregard the subsequent affidavit and the alleged factual issue in dispute as a ‘sham,’ therefore not creating an impediment to a grant of

⁴⁷ Both parties agree that the FTIS source code was produced backwards and that the pages of the source code were in reverse order.

summary judgment based on the deposition.” *Jiminez v. All American Rathskeller, Inc.*, 503 F.3d 247, 254 (3d Cir.2007) (citing *Hackman*, 932 F.2d at 241).

Bondurant and DeLorenzo are the source of a trio of late-breaking declarations. On December 28, 2016, the pair filed a declaration to explain that the Norco sale was, in fact, experimental use. (Civ. No. 14-1482, D.I. 202) On the same day, each filed an individual declaration contradicting DeLorenzo's deposition, explaining the reason for the contradiction, and introducing new arguments as to claim 30 and the composite data marker. (Civ. No. 14-1482, D.I. 200; D.I. 201)

Here, plaintiff produced the source code.⁴⁸ (Civ. No. 14-1482, D.I. 222, ex. 1 at 144:11-145:12) DeLorenzo was the 30(b)(6) witness on this subject, he was prepared, he had time to read the code, he took his time to answer, and he did not speculate. There is nothing in the record to suggest that DeLorenzo was not afforded all the courtesies that any deponent would expect. (See *generally* Civ. No. 14-1482, D.I. 222, ex. 1 at 144:11-145:12) Had DeLorenzo been uncertain about his testimony with respect to the August 2002 source code, he had ample opportunity to correct it, either at the deposition or afterwards. There is no evidence that DeLorenzo sought to make any corrections.

Plaintiff's new arguments related to the composite bend indicator and its absence in the Norco sale lack credibility. Plaintiff was on notice of defendants' intent to use the Norco sale as prior art, and the absence of the "X" marks in the strip charts in both Norco Reports is apparent to the untrained eye. These new arguments conveniently raise an issue of material fact with respect to anticipation and create doubt as to whether the invention of claim 30 had been reduced to practice as of the Norco sale.

⁴⁸ It is unclear who applied the Bates numbers in the backwards fashion. The source code contains "Secure Copy-2" in the upper right hand corner. The court infers that this was printed from a secure computer under the control of plaintiff, with the printing most likely initiated by defendants' experts.

However, there is no evidence in the record that plaintiff ever presented this argument to defendants before its summary judgment answering brief. All the evidence suggests that, before summary judgment, plaintiff was pursuing an altogether different line of argumentation with respect to no anticipation of claim 30.⁴⁹

Meanwhile, there is evidence in the record that, on August 28, 2002, DeLorenzo's co-inventor Bondurant sent himself an invention disclosure for FTIS in which he explained that an "approach to properly associate the FTIS data with the furnace geometry is to algorithmically code [] visual clues to automatically or semi-automatically identify the bend locations in the data set" (Civ. No. 14-1482, D.I. 186, ex. 1 at 4) The disclosure identifies this as a "composite bend indicator":

These visual clues **have been coded and tested** on a variety of data sets and have proven to be a reliable method of bend detection. All six bend detection methods (three indicators for both wall and radius) are combined in a root-mean-square manner to derive a **composite bend indicator**. The periodic peaks in the composite bend indicator identify the locations of the bends.

(*Id.* at 5 (emphasis added)) According to the invention disclosure, the composite bend indicator was in the FTIS code as of August 2002.⁵⁰

DeLorenzo and Bondurant's declarations contradict DeLorenzo's earlier statements, Bondurant's undisputed August 28, 2002 invention disclosure, and plaintiff's prior anticipation arguments. For these reasons, the court disregards the declarations of DeLorenzo and Bondurant (Civ. No. 14-1482, D.I. 200; D.I. 201) as sham affidavits.

⁴⁹ In the claim charts on anticipation by the Norco sale, plaintiff's experts had opined that claim 30 required "using sensor data to create composite data markers, [and] no sensor data was used." (Civ. No. 14-1482, D.I. 187, ex. 17 at 55 (citations omitted))

⁵⁰ While this statement was not made under oath, there appears to be no deceptive intent in a contemporaneous internal document stating that a feature had been coded and tested in the software.

There is no genuine issue of material fact with respect to claim 30, therefore, claim 30 is anticipated by the Norco sale.

vii. Claim 40

The '874 patent distinguishes between inspection data and sensor data. Claim 40 is a system claim. ('874 patent, 20:17-41) Defendants argue that claim 40 is anticipated by the Norco sale, citing statements from the Norco Reports as evidence that the system was programmed to perform the steps as outlined in the claim. (Civ. No. 14-1482, D.I. 185 at 25-26) A key limitation of claim 40 is that the computer be programmed to “analyze said sensor data and generate a plurality of data markers based upon said analysis of said sensor data” (*Id.* at 20:25-26) Plaintiff responds that by the Norco sale, it was not using sensor data to locate bends in the furnace and was instead using the ultrasonic sensors (the inspection data) to do this. (Civ. No. 14-1482, D.I. 195 at 15-16) Defendants argue that DeLorenzo “testified that axial encoder data was used to track location and to set data markers at bends.” (Civ. No. 14-1482, D.I. 220 at 23 (citing Civ. No. 14-1482, D.I. 222, ex. 1 at 109:21-110:11)) This testimony is not readily apparent from the record,⁵¹ and defendants have not demonstrated that there is no genuine issue of material fact with respect to anticipation of claim 40. Therefore, the court denies summary judgment of anticipation of claim 40.

5. Obviousness

Defendants also move for summary judgment of obviousness with respect to the asserted claims. (Civ. No. 14-1482, D.I. 185 at 26-28) Defendants present no arguments directed to specific claims, let alone the remaining asserted claim 40. (*Id.*) Plaintiff moves for summary judgment of non-obviousness with respect to all asserted

⁵¹ Defendants have cited to page 132, but the record submitted to the court is incomplete and is missing pages 129-136. Absent these missing pages, the court declines to speculate as to their content.

claims and presents argument in support.⁵² (Civ. No. 14-1482, D.I. 195 at 26-38) As with defendants, plaintiff does not address its arguments to any specific claim. (*Id.*) The court finds no basis to grant summary judgment for either party.

6. Section 101

Defendants move for summary judgment of invalidity for failing to claim patent eligible subject matter under § 101, arguing the independent claims together under claim 1. (Civ. No. 14-1482, D.I. 185 at 28) Plaintiff responds that claim 1 is not a representative claim. (Civ. No. 14-1482, D.I. 195 at 40)

a. Standard

Section 101 defines patent-eligible subject matter as “any ... process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. The Supreme Court has long held that § 101 contains an important implicit exception. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, _ U.S. __, 132 S.Ct. 1289, 1293 (2012). “Laws of nature, natural phenomena, and abstract ideas are not patentable.” *Id.* (internal quotation marks, brackets, and citations omitted). The purpose of these exceptions is to protect the “basic tools of scientific and technological work.” *Id.* Defendants argue that the ‘874 patent is directed to an abstract idea and is, therefore, patent-ineligible.

In *Alice*, the Supreme Court endorsed a two-step “framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, _ U.S. __, 134 S.Ct. 2347, 2355 (2014). First, the court must determine if the claims at issue are directed to a patent-ineligible concept. *Id.* If the answer is no, that ends the matter and the defendants’ motion is denied. *See, e.g., Enfish, LLC v.*

⁵² Plaintiff manages to work in arguments about secondary considerations as well as teaching away. A true feat, given that not a single claim limitation is discussed in the twelve page discourse.

Microsoft Corp., 822 F.3d 1327, 1337 (Fed. Cir. 2016) (determining at step one that the claims were not directed to an abstract idea and, therefore, not discussing step two). If, however, the answer is yes, then the court must “determine whether the additional elements transform the nature of the claim into a patent-eligible application.” *Alice*, 134 S.Ct. at 2355.

b. Analysis

The remaining valid (and asserted) independent claim is claim 40. Claim 40 recites:

A system for displaying inspection data collected from a furnace with a specified physical geometry, wherein said furnace comprises a plurality of tube segments interconnected by a plurality of bends so as to allow stacking of at least a portion of said tube segments, said system comprising:

a storage device for storing said inspection data and sensor data collected from said furnace; and

a computer programmed to:

analyze said sensor data and generate a plurality of data markers based upon said analysis of said sensor data, wherein each of said data markers identifies a location of a physical feature of said furnace so as to correlate said inspection data to said physical geometry of said furnace;

partition said inspection data at said data markers;

generate a display of at least a portion of said partitioned inspection data arranged to represent said physical geometry of a plurality of said tube segments and enable visual detection of a problem area comprising one or more of said tube segments; and

wherein said sensor data comprises a plurality of readings collected by one or more auxiliary sensors selected from the following group: an axial encoder, an accelerometer, a roll encoder, a gyroscope, an inertial navigation system, and combinations thereof.

(‘874 patent, 20:17-41) In the claim charts on anticipation, the parties identified claim 40 as having six separate limitations numbered “40[A]-[F].” (Civ. No. 14-1482, D.I. 187, ex. 17 at 62-67)

Under step 1, defendants argue that claim 40 should be argued with claim 1, which is “directed to a system . . . for displaying inspection data.” (Civ. No. 14-1482, D.I. 185 at 32) Defendants parse claim 1 (which is supposed to be the same as claim 40) into two limitations “the Partitioning Step and the Display Step.” (*Id.*) Defendants do not explain how these are the sole limitations to the claim, nor do defendants reconcile these two broad limitations with the six identified limitations in claim 40. Plaintiff argues that defendants’ “reductionist simplicity obscures the underlying complexity of the ‘874 Patent, and fails to address its innovative solution to problems arising in the field.” (Civ. No. 14-1482, D.I. 195 at 39)

Defendants compare the so-called Partitioning Step and the Display Step (separately) to case law. Comparisons are necessary in this area of § 101 jurisprudence, and “both [the Federal Circuit] and the Supreme Court have found it sufficient to compare claims at issue to those claims already found to be directed to an abstract idea in previous cases.” *Enfish*, 822 F.3d at 1334. However, defendants ignore the instruction in *Enfish* that “the ‘directed to’ inquiry applies a stage-one filter to claims, considered in light of the specification, based on whether ‘their character as a whole is directed to excluded subject matter.’”⁵³ *Id.* at 1335 (citing *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed.Cir.2015)).

Here, defendants’ step 1 analysis with respect to claim 1 is insufficient to establish the most basic “directed to” inquiry under the relevant case law.⁵⁴ Despite the numerous differences between claims 1 and 40, defendants break the six limitations of claim 40 into the same two pieces as claim 1 and individually compare these two pieces to different claims in different cases. Moreover, defendants do not discuss the different

⁵³ In other words, defendants should compare the entire claim to one case at a time. The specification should factor into this analysis.

⁵⁴ Defendants do not evaluate the character of claim 1 as a whole in light of the specification. (Civ. No. 14-1482, D.I. 185 at 32-36)

types of data collected and the sensor limitations.⁵⁵ At no point do defendants evaluate the character of claim 40 as a whole in light of the specification. Defendants have failed to provide a legally-sufficient argument as to why claim 40 is directed to an abstract idea, therefore, summary judgment under § 101 is denied.

C. Infringement

Plaintiff moves for summary judgment of infringement of claims 13, 25, 33, and 37 by defendant, Clean Harbors (Civ. No. 14-1482, D.I. 179), and for summary judgment of infringement of claims 12, 24, and 33 by defendant Cokebusters. (Civ. No. 14-1483, D.I. 285) Clean Harbors moves for summary judgment of noninfringement of claims 13, 25, 33, and 37. (Civ. No. 14-1482, D.I. 189) Cokebusters moves for summary judgment of noninfringement of claims 30 and 40 and for summary judgment of no willfulness. (Civ. No. 14-1483, D.I. 290)

Claim 40 is the only remaining valid claim, therefore, plaintiff's motions are denied and Clean Harbor's motion is granted. Cokebusters' motion is granted with respect to claim 30. With respect to claim 40, Cokebusters argues that plaintiff's expert admitted that Cokebusters performs the sensor steps in claim 40 manually and not automatically. (Civ. No. 14-1483, D.I. 304 at 10) Plaintiff's expert opines that Cokebusters' source code demonstrates that the accused product satisfies these automatic claim limitations. (Civ. No. 14-1483, D.I. 288 at ¶¶ 155, 172) This is a genuine issue of material fact best left to a jury. Similarly, Cokebusters moves for summary judgment of no willfulness, arguing that "even accepting this extremely convoluted chain of events as true, not a single factual allegation supports the proposition that Cokebusters (even if it knew about the patent) ever believed it may

⁵⁵ Claim 1 is limited to "inspection data" and claims devices for collecting that inspection data. Claim 40 recites the collection of both "sensor data" and "inspection data" and claims specific types of sensors. Under step 1, these differences could dramatically change the "directed to" analysis.

infringe the '874 Patent.” (Civ. No. 14-1483, D.I. 304 at 12) Given the difficulty the parties have in explaining their dispute, this “extremely convoluted chain of events” is best left to a jury. Cokebusters’ motions for summary judgment of noninfringement of claim 40 and no willfulness are denied.

IV. CONCLUSION

For the foregoing reasons, the court grants defendants’ motion for summary judgment of invalidity of claims 1, 11, 12, 13, 24, 25, 27, 28, 30, 33, and 37 of U.S. Patent No. 7,542,874 (Civ. No. 14-1482, D.I. 184; Civ. No. 14-1483, D.I. 293), denies defendants’ motion for summary judgment of invalidity of claim 40 of U.S. Patent No. 7,542,874 (Civ. No. 14-1482, D.I. 184; Civ. No. 14-1483, D.I. 293), denies plaintiff’s motion for summary judgment of validity of claims 12 and 25 of the '874 patent (Civ. No. 14-1482, D.I. 183; Civ. No. 14-1483, D.I. 289), denies plaintiff’s motions for summary judgment of infringement of the '874 patent by defendants (Civ. No. 14-1482, D.I. 179; Civ. No. 14-1483, D.I. 285), grants Clean Harbors’ motion for summary judgment of noninfringement (Civ. No. 14-1482, D.I. 189), grants in part and denies in part Cokebusters’ motion for summary judgment of noninfringement (Civ. No. 14-1483, D.I. 290), and denies Cokebusters’ motion for summary judgment of no willfulness (Civ. No. 14-1483, D.I. 290).

An appropriate order shall issue.