

United States District Court,  
D. Minnesota.

**Duane L. KNOPIK,**  
Plaintiff.

v.

**AMOCO CORPORATION; Mobil Corporation; Sinclair Oil Corporation; Unocal Corporation;  
Phillips Petroleum Company; Leggette, Brashears & Graham, Inc.; Braun Intertec Corporation,  
EnecoTech Midwest Inc.; and DPRA Incorporated,**  
Defendants.

No. 97-1134 (MJD/AJB)

**May 4, 2000.**

The owner of patents for removing vapors from contaminated underground areas and for recovering organic liquids from surface of underground water table sued competitors for infringement. On defendants' motions for summary judgment, the District Court, Davis, J., held that: (1) fact issue existed as to validity of first patent, and (2) neither patent was infringed.

Motions granted in part and denied in part.

4,183,407, 4,323,122. Not infringed.

David C. Forsberg, Craig M. Gregersen, Michael J. Kane, Briggs and Morgan, St. Paul, MN, Malcolm L. Moore, Moore & Hanson, Minneapolis, MN, for and on behalf of plaintiff.

J. Thomas Vitt, David E. Bruhn, and Richard W. Murphy, Dorsey & Whitney, Minneapolis, MN, for and on behalf of defendant Mobil Oil Corporation.

Martin R. Lueck, Rita Coyle DeMeules and Diane L. Simerson, Robins, Kaplan, Miller & Ciresi L.L.P. Minneapolis, MN, and Andrew Luger and Becky R. Thorson, Greene Espel P.L.L.P., Minneapolis, MN, for and on behalf of defendant Unocal Corporation.

Michael S. Ryan, Murnane Conlin White & Brandt, St. Paul, MN, for and on behalf of defendant Amoco Corporation.

Felicia J. Boyd, James J. Hartnett, IV and David J. Gross, Faegre & Benson, Minneapolis, MN, for and on behalf of defendant Sinclair Corporation.

James H. Patterson and Sri K. Sankaran, Patterson & Keough, P.A., Minneapolis, MN, for and on behalf of defendant EnocoTech Midwest, Inc.

Stacy A. Broman and Christopher J. Schulte, Meagher & Geer, P.L.L.P., Minneapolis, MN, for and on behalf of DPRA Incorporated.

**MEMORANDUM OPINION AND ORDER**

## INTRODUCTION

Plaintiff brought this action against the named defendants, alleging that each of them has infringed certain patents owned by Plaintiff. The parties have submitted memoranda and accompanying exhibits with respect to their positions on claim construction. Also before the Court are the motions of Amoco Corporation ("Amoco"), Mobil Corporation ("Mobil"), Enecotech Midwest Inc. ("Enecotech") for summary judgment FN1.

FN1. UnoCal Corporation filed a motion for summary judgment as to invalidity with respect to the '407 Patent. Subsequent to the hearing on the motions for summary judgment, UnoCal entered into a settlement with Plaintiff. Amoco filed a notice of joinder in the invalidity motion, thus the Court will address said motion despite UnoCal's settlement. Sinclair Oil Corporation also filed a motion for summary judgment, but has since entered into a settlement with Plaintiff. Therefore, Sinclair's Motion will be dismissed as moot. In addition, Phillips Petroleum Company and Leggette, Brashears & Graham Inc. and DPRA, Inc. have also entered into settlement agreements with Plaintiff.

## FACTS

In 1973, Plaintiff Duane L. Knopik was leasing a gasoline service station from his father-in-law when it was determined that one of the underground gasoline storage tanks had developed a leak. Knopik Declaration para. para. 6-7. Plaintiff was ordered to close the gas station and clean up the gasoline. *Id.* He sought assistance from the local fire marshal and the Minnesota Pollution Control Agency, but neither could provide help in cleaning up the site. *Id.* para. 8. Although Plaintiff had no experience in cleaning up contaminant spills, he was able to develop remediation methods for which he eventually received patents. *Id.*

There are two patents at issue in this litigation. U.S. Patent No. 4,183,407 ('407 Patent) involves an exhaust system and process for the removal of underground contaminant vapors. U.S. Patent No. 4,323,122 ('122 Patent) involves a process for the recovery of organic liquids from underground areas. Both patents generally involve the placement of collector elements below the ground surface, in an area contaminated with undesirable materials, such as gasoline or other fuels. The collector elements are connected to a conduit that extends to the ground surface. A fan or other vacuum source is then connected to the above ground portion of the conduit, which draws air and contaminants through the collector elements and the conduit to the ground surface for recovery or treatment.

Plaintiff filed this action against the named defendants, asserting the infringement of the '407 Patent and the '122 Patent. In response to the allegations contained in the Complaint, certain defendants have moved for summary judgment, arguing that the '407 Patent is invalid or that they have not infringed either the '407 or the '122 Patent.

Prior to making its determination as to the validity of the '407 Patent and whether defendants have infringed the '407 or the '122 Patent, the parties have asked that the Court first construe disputed claim language of each patent.

[1] [2] [3] "A literal patent infringement analysis involves two-steps: the proper construction of the asserted claim and a determination as to whether the accused method or product infringes the asserted claim as properly construed." *Vitronics Corp. v. Conceptronic Inc.*, 90 F.3d 1576 (Fed.Cir.1996). Claim construction is a matter of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed.Cir.1995) *aff'd*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) (citation omitted). To ascertain the meaning of claims, the

Court should first consider the intrinsic evidence of record, which is the patent itself, including the claims, the specification and the prosecution history. *Id.*

[4] [5] The Court begins its analysis by focusing on the words of the claims themselves, both asserted and nonasserted, to define the scope of the patent. *Vitronics*, at 1576. Generally, words in a claim are to be given their ordinary and customary meaning, yet patentees are free to be their own lexicographer. *Id.* If this is the case, the patentee must provide the "special definition" in the specification. *Id.* The specification is a written description of the invention, which description is to be "clear and complete enough to enable those of ordinary skill in the art to make and use it." *Id.* "The specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Id.* The Court must keep in mind, however, that the "specification itself does not delimit the right to exclude. That is the function and purpose of the claims." *Markman*, 52 F.3d at 980. Particular embodiments and examples that appear in the specification generally are not read into the claims. *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed.Cir.1988).

[6] The Court may also consider the prosecution history of the patent, which is of primary significance in understanding patent claims. *Markman*, at 980. "The construction of the patent is confirmed by the avowed understanding of the patentee, expressed by him, or on his half [sic], when his application for the original patent was pending ..." *Id.* ( *citing*, *Goodyear Dental Vulcanite Co. v. Davis*, 102 U.S. 222, 227, 26 L.Ed. 149 (1880)). As with the specification, although the prosecution history can be used to understand the claim, it too cannot enlarge, diminish or vary the limitations in the claim. *Id.*

[7] [8] Usually, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. *Vitronics*, at 1583. However, if the intrinsic evidence alone is not sufficient to resolve an ambiguity, the Court may properly rely on extrinsic evidence. *Id.* Extrinsic evidence refers to evidence that is external to the patent and its file history, such as expert testimony, inventor testimony, dictionaries, and technical treatises and articles. *Markman*, 52 F.3d at 980. This type of evidence is helpful to explain scientific principles, the meaning of technical terms and terms of art, thus the Court may rely on such evidence "to aid the court in coming to a correct conclusion" as to the "true meaning of the language employed" in the patent. *Id.*, (citation omitted). Extrinsic evidence cannot be used to vary or contradict the terms of the claims. *Id.* at 981.

## I. '407 Patent

### A. Claims Construction

This patent consists of only one claim:

1. A process for removing contaminant vapors from contaminated underground areas and comprising the following steps:

- (1) excavating a shaft extending from the ground surface to a point within the contaminated area;
- (2) positioning within said contaminated area a plurality of elongate perforated collection elements;
- (3) connecting said elongate perforated collection elements to the lower end of a conduit having an upper end opening to the atmosphere, with the collection elements and conduit being angularly spaced from each other; and
- (4) exhausting air from the upper portion of said conduit to create less than atmospheric pressure in said conduit and in said collection elements whereby to draw contaminant vapors from the contaminated area into said collection elements and through said conduit to the ground surface.

Plaintiff generally describes the '407 Patent as involving "method claims" rather than apparatus claims. It is Plaintiff's position that the '407 Patent covers any device or apparatus that provides a channel or flow path for fluids, including contaminant vapors.

## **1. "Removing"**

[9] The parties disagree as to the meaning of the term "removing contaminate vapors from contaminated underground areas" as used in paragraph 1 of the '407 Patent. Plaintiff argues the term means an operation or use of the claimed process for an extended period of time for the purpose of eliminating all or substantially all the contaminants from a contaminated site. Defendants, on the other hand, argue that the term means the removal of any amount of contaminant vapors rather than all or substantially all of such vapors.

The Court begins its analysis with the ordinary meaning of the word "remove." When a general descriptive term is used in a claim, the dictionary definition generally constitutes the ordinary and accustomed meaning of the term. *Casler v. U.S.*, 9 U.S.P.Q.2d 1753, 1772 (Cl.Ct.1988). The dictionary definition of "remove" is: "... 1: to change or shift the location, position, station, or residence of ... 4: to get rid of as though by moving ..." WEBSTER'S THIRD NEW INTERNATIONAL UNABRIDGED DICTIONARY ((C) 1961, 1993) at 1921. This definition does not modify the word "remove" with terms like "completely" or "substantially all." Accordingly, the Court concludes that as soon as the process disclosed in the '407 Patent is commenced, one is engaged in practicing the invention. It is not necessary to complete the process before one is said to be practicing the invention.

In addition, the specification does not support Plaintiff's interpretation of "removal". For the Court to read a limitation from the written description into the claim, the inventor must indicate clearly in the specification that the limitation must be imported into the claim to give meaning to the disputed term. *Renishaw PLC v. Marposh Societa' per Azioni*, 158 F.3d 1243, 1249 (Fed.Cir.1998). Plaintiff does not indicate clearly in the specification that he would like to add the limitations "completely" or "substantially all" while interpreting the term "removing." Further, Plaintiff has not provided an explicit definition for the term.

## **2. "Contaminated Underground Areas"**

[10] Plaintiff claims that the phrase "contaminated underground areas" means subterranean area of ground soil. He claims that as numerous references have been made in the specification to soil and soil conditions, the purpose and application of the invention is for removal of volatile contaminants from soil. Defendants argue that the phrase is self-explanatory. They argue there is the requirement for the underground areas to be contaminated. They further argue that the phrase "underground areas" cannot be limited to soil, as the specification contains numerous references to the "contaminated area" without limiting the reference to "soil."

The Court finds that the phrase "contaminated underground area" is unambiguous. In the claim, this phrase is not limited to "soil." Also, the claim unambiguously limits the underground area with the term "contaminated." Thus, the plain language of the claim leads to the Court to conclude that the underground areas are not limited to soil, and that such areas must be contaminated. The specification does not alter this result. Plaintiff makes various references to soil and soil conditions, yet he does not clearly indicate that the underground areas are limited to "soil" or "soil conditions."

## **3. Element 1**

[11] With regard to element 1, Defendants argue that the term "shaft" typically represents a cylindrical, rectangular structure that extends from the ground surface downwardly. Thus, Defendants argue that Plaintiff is wrong when he interprets "shaft" to encompass any hole in the ground, no matter the size or shape. A

horizontal trench is not a shaft. Defendants refer the Court to Figure 1 of the patent which shows the conduit as a single pipe, placed vertically in a shaft. To this, Plaintiff responds that Figure 1 depicts only the "preferred embodiment", but that the language contained in the claim does not limit the patent to the preferred embodiment.

Defendants further argue that this element provides that the shaft is excavated to a point within the contaminated area. Defendants argue that digging a hole to a point requires a specific geometry-which is a cylindrical hole in the ground.

Finally, Defendants argue element 1 limits the claim to a single shaft, not multiple shafts. Plaintiff responds that the claim language does not define the word shaft in any particular way. Relying on the definition in Webster's Third New International Unabridged Dictionary, shaft is simply an opening that extends from the ground surface downwardly to a location below the surface. No particular geometry is required. Nor does the language in element 1 limit the number of shafts in any way.

The dictionary definition of "shaft" is "... 4: any of various long hollow structures: as a(1): a vertical or inclined opening of uniform and limited cross section made for ... ventilating underground workings (2) a passage resembling a mine shaft in structure or function (as in a cave or a pyramid) ..." WEBSTER'S THIRD NEW INTERNATIONAL UNABRIDGED DICTIONARY ((C) 1961, 1993) at 2804. The dictionary definition thus suggests that the ordinary meaning of "shaft" is generally a long hollow structure. The claim adds the limitation to the term "shaft" as requiring this structure to extend from the ground surface to a point within the contaminated area. Thus, combining the ordinary meaning and the claim limitation, the Court concludes that the term "shaft" means a vertical or inclined hollow opening, of uniform and limited cross section, from the ground surface to a point in the contaminated area. Finally, the claim language does refer to a single shaft, not multiple shafts. The claim is thus limited to a single shaft.

#### **4. Element 2**

[12] The parties agree that this element requires two or more collection elements. Defendants generally agree with Plaintiff's description of a "collection element" with the exception that Defendants would interpret "collection element" to be a pipe. Plaintiff responds that a collection element is a device, formed from a piece of pipe or something else and that nothing in the claim language limits the device to be formed specifically from pipe. Thus, "collection element" should be construed to include any device or apparatus having perforations that allow contaminant vapors to enter into the interior of the device or apparatus while preventing substantial soil entry.

The specification explicitly provides the meaning of "collection elements."

Each collection element is characterized by having a wall which defines a closed-end tube which has one end open to a chamber. The wall should be a thickness which will not be crushed under the use conditions herein defined. The wall materials should be selected to make the collection elements crush-resistant and not easily deformable in the use conditions described. Elongate collection elements formed of metal such as iron or steel and rigid plastic are preferred.

'407 Patent, Column 2, Lines 17-19. The specification further provides that the perforations "should be large enough to permit vapor entry but not so large as to permit substantial soil entry." '407 Patent, Column 1, Lines 27-28. Based on this language in the specification, the Court finds that "collection elements" means two or more perforated structures with a wall that defines a closed-end tube that has one end open to a chamber. The perforations in the structure should be large enough to permit vapor entry but not so large as to permit substantial soil entry.

#### **5. Element 3**

[13] Both parties dispute the meaning of the term "lower end." Plaintiff claims that the term "lower end" means below the ground surface and the term "upper end" means opening to the atmosphere above the ground surface. Defendants argue that the term "lower end" means the underground terminal point of the conduit and the upper end means the portion of conduit opening to the atmosphere.

First, the Court looks at the claim language to interpret the meaning of the terms "lower end" and "upper end." The ordinary meaning of the term "end" is "... 1a ... (2): the extreme or last part lengthwise ... the rear end of an automobile> ..." WEBSTER'S THIRD NEW INTERNATIONAL UNABRIDGED DICTIONARY ((C) 1961, 1993) at 748. The Court further notes that limitations to the term "end" are found in the claim language. The claim provides that the collection elements are connected to the "lower end" of the conduit. The collection elements are located within the contaminated area and this contaminated area is located underground. Combining the limitation in the claim that the collection elements are located underground and the ordinary meaning of the term "end", the Court concludes that the term "lower end" means the extreme or last part of the conduit located underground.

The Defendants would like the Court to construe the term "lower end" as a specific "point" located underground. The Court refuses to add the limitation of a specific "point." The Court believes that the issue of whether a specific "point" is the "lower end" is a question of fact, which should be decided during the infringement analysis.

The meaning of the term "upper end" is straight forward. The claim provides the limitation that the "upper end" opens to the atmosphere. Hence, the Court concludes that the term "upper end" must be construed to mean the portion of the conduit opening to the atmosphere.

[14] Both parties dispute the meaning of the term "conduit." Plaintiff construes the term to mean any device or apparatus providing a channel or flow path for fluids including the contaminant vapors. Defendants argue that the "conduit" is a single channel, generally a pipe, placed in the shaft in a generally vertical position.

The Court construes the term "conduit" by looking at the claim language, the ordinary meaning of the term "conduit", and the specification. The claim provides for "a conduit", hence the Court agrees with the Defendants that the claim language provides for only one "conduit." The ordinary meaning of the term "conduit" is "... 1: a natural or artificial channel through which water or other fluid passes or is conveyed ..." WEBSTER'S THIRD NEW INTERNATIONAL UNABRIDGED DICTIONARY ((C) 1961, 1993) at 474. In the specification, the Court finds that Plaintiff has explicitly provided in the '407 patent that his invention can be practiced without the use of a pipe as a conduit, and that the shaft itself can act as the conduit. '407 Patent, Column 4, Lines 14-18. From the ordinary meaning of the term and the limitation in the specification, the Court concludes that the term "conduit" means a channel through which the contaminant vapors are conveyed; the conduit may be a pipe in the shaft or the shaft itself.

The Court refuses to add the limitation that the "conduit" has to be vertical. This limitation is not found in the ordinary meaning of the term, neither is it explicitly provided for in the specification. However, as the conduit may be a pipe in the shaft or the shaft itself, it follows that the orientation of the conduit must be consistent with the shaft. Thus, one end must be open to the air while the other end is located to a point below the surface, in the contaminated area.

[15] Both parties dispute which portions of the invention have to be angularly spaced from each other. The Plaintiff claims that there is only one angular relationship-that the conduit is angularly disposed from the collection elements. The Defendant argues that the patent calls for two angular relationships-the angle between the conduit and collection elements and the angle between the collection elements.

The Court begins its analysis with the claim language. The claim provides that "... the collection elements and conduit being angularly spaced from each other..." '407 Patent, Column 4, Lines 59-61. This claim

language can be read as providing for only one angular relationship between the collection elements and the conduit.

However, the specification contradicts such a reading. In the summary of the invention portion of the specification—as opposed to the description of the preferred embodiment—Plaintiff writes:

The number, length and location with respect to each other of the elongate perforated collection elements *is an important aspect of the invention*. There should be at least two collection elements to provide effective recovery of contaminant vapors from the contaminated area.... The collection elements should be angularly disposed with respect to one another for effective vapor recover. That is, they should not be substantially parallel but should be spaced apart at an angle, preferably of at least 20 ~and most preferably of at least 30.~ The preferred embodiment is in a radial array, although other configurations e.g. fan or wing shapes may be equally useful and may actually be required to avoid ground obstructions.

'407 Patent, Column 1, Lines 61-66 and Column 2, Lines 8-16 (emphasis added). Thus, the specification informs the reader that the placement of the collection elements is an important aspect of the invention, and to that end, the collection elements are not to be parallel, that they should be angularly spaced from each other. Although Plaintiff used the word "should" rather than "must", the language of the specification nonetheless instructs the reader that the collection elements are arranged at an angle from one another. Because of the ambiguity between the claim language and the specification language, the Court will consider the file history.

The Defendants argue that the prosecution history of the '407 Patent is pertinent both as intrinsic evidence in construing the claim and in the context of prosecution history estoppel. "Prosecution history estoppel serves as a limit on the scope of claims by excluding any interpretation of the claim language that would permit the patentee to assert a meaning for the claim that was disclaimed or disavowed during prosecution in order to obtain claim allowance." *Zenith Labs., Inc. v. Bristol-Myers Squibb Co.*, 19 F.3d 1418, 1421 (Fed.Cir.), *cert. denied*, 513 U.S. 995, 115 S.Ct. 500, 130 L.Ed.2d 409 (1994). Arguments made during prosecution must be viewed in context, however. *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 824 (Fed.Cir.1992); *See also*, *Southwall Technologies, Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1580 (Fed.Cir.) *cert. denied*, 516 U.S. 987, 116 S.Ct. 515, 133 L.Ed.2d 424 (1995) (When a court applies the doctrine of prosecution history estoppel to limit the scope of equivalents, a close examination must be made as to, not only what was surrendered, but also the reason for such a surrender). It is the position of the Defendants that the prosecution history of the '407 Patent supports its interpretation of Element 3.

Originally, Plaintiff filed a total of five claims. Claim 1 was an apparatus claim, Claim 5 was a method claim and Claims 2-4 were dependent claims from Claim 1. Kane Declaration, Ex. A. The original claims refer to the orientation of the collection elements three times. For example, Application Claim 1 required that the collection elements be angularly disposed from the conduit and from each other. Application Claim 4 required that the collection elements be disposed in a radial array. Application Claim 5 required that the collection elements and the conduit be angularly spaced from each other. Plaintiff argues that as illustrated in Application Claims 1 and 4, he knew what language was necessary to require that the collections elements themselves be angularly disposed from each other. Since Application Claim 5, which eventually became Claim 1 of the '407 Patent, uses different language, the claim language that "the collection elements and conduit [be] angularly spaced from each other" cannot be interpreted to require an angular relationship between the collection elements.

[16] The doctrine of "claim differentiation" cannot be used to broaden claims beyond the scope that is supported by the specification. *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 541 (Fed.Cir.1998) (citations omitted). Because the specification supports a narrower interpretation, resort to the language of the canceled claim is inappropriate. *Id.*

Claim 5 of the Application claims was rejected by the Patent Office under 35 U.S.C. s. 103 as unpatentable over U.S. Patent No. 4,026,355 issued to Johnson, et al. ("Johnson reference") in view of U.S. Patent No. 166,357 issued to Gray (the "Gray reference"). Kane Decl. Ex. A, KN 010655. The Johnson reference discloses the use of a number of vertically placed, parallel pipes to remove methane gas from landfills. The Gray reference discloses a fire hydrant in which multiple groundwater collection elements are arranged in a radial array about a common collection point. In light of the Johnson reference and the Gray reference, the patent examiner found:

All the claimed features of Applicant's invention as set forth in the above claims are disclosed by Johnson et al except a manifold and angularly perforated collection elements. Gray shows a manifold and perforated collection elements angularly extending therefrom. As both references are directed to the removal of underground fluids, it would be obvious to one skilled in the art to modify Johnson et al to include a manifold and collection elements extending therefrom in a radial array as shown by Gray.

Id.

Plaintiff argues that during the prosecution history of the '407 Patent, he did not distinguish his invention over the Johnson reference because his invention required a radial array. Instead, he distinguished his invention from Johnson by asserting that the Johnson invention required the removal of methane for commercial purposes and that air should not be drawn into the underground area, while his invention provides for the replacement of vapors with air. Kane Decl., Ex. A, KN 010645. He then distinguished Gray by noting that the Gray invention teaches the removal of water, but does not teach the removal of vapors. Id. at KN 010646. Plaintiff also argued that it would be improper to combine the Gray and Johnson references by stating:

There is no indication in either reference of the desirability of making such a combination of references. In fact, it would appear by Johnson et al's disclosure that such a combination would be unwarranted since the modification of Johnson et al's equipment to include a radial array would drastically alter his equipment and process.

Id.

However, as in the summary of invention included in the '407 Patent specification, Plaintiff described his invention as "... a plurality of perforated collection elements angularly disposed from the conduit and each other...." Sankaran Decl., Exh. D (Amendment After Final Action, dated February 6, 1979) at pages 2-4. He further stated that the method involves "... positioning the collection elements within the contaminated area in a radial display...." Id. In reading the prosecution history of the '407 Patent, it is clear that the patent examiner also understood the invention to include a radial array. *See*, Kane Decl. Ex. A, KN 010655.

The Court also notes that while Plaintiff did not assert the argument that his invention requires a radial array, he also did not assert that his invention could include a configuration that involves parallel collection elements. Rather, the entire prosecution history involves discussion, on the part of the examiner and Plaintiff, of an invention with collection elements that are angularly disposed from each other. Because the file history is consistent with the specification language requiring the collection elements be angularly spaced from each other, the Court interprets Element 3 of Claim 1 as requiring two angles—an angle between the conduit and collection elements and an angle between each of the collection elements.

## **B. Defendants' Motion for Summary Judgment on Invalidity of '407 Patent**

[17] Defendants assert that they are entitled to summary judgment on the claims that they have infringed the '407 Patent on the basis that such patent is invalid. Defendants argue that as Plaintiff conceived of and reduced to practice the claimed invention more than one year prior to the patent application, the patent is



invalid. 35 U.S.C. s. 102(b). The critical date for assessing the validity of the '407 Patent is November 7, 1976-one year prior to the date he filed the application for the patent.

Defendants argue that as early as 1974, Plaintiff had commercialized the use of the soil vent system in the ordinary course of his business, Fuel Recovery Company. Thereafter, he installed soil vent systems at sites in Browerville, Austin and in Northeast Minneapolis. Defendants also point out that during the course of the prosecution of the '407 Patent, the Patent Examiner rejected all five claims as obvious under 35 U.S.C. s. 103 in light of existing patents. In response, Plaintiff distinguished these patent references from his invention by filing a Rule 131 Affidavit with the PTO. In this Affidavit, Plaintiff stated that he had "reduced the device and method of his invention to practice well prior to June 30, 1975 [the date the Johnson patent application was filed] ..." Kane Decl. dated 1/6/99 Ex. M. He then went on to describe the "experimental device" used prior to June 30, 1975. Id. p. 2.

Defendants argue that as Plaintiff's invention was placed in the public use or on sale in this country more than one year prior to the filing of the application for patent, the patent is invalid. 35 U.S.C. s. 102(b). One of the purposes of this statute is to prevent an inventor from exploiting the commercial value of his patent while deferring the beginning of the statutory term of the patent. *Petrolite Corp. v. Baker Hughes, Inc.*, 96 F.3d 1423, 1425 (Fed.Cir.1996). Defendants argue the repeated installations and use of the soil vent system more than one year prior to the application were both public and commercial use as contemplated under Section 102(b).

Plaintiff concedes that certain soil vent systems were installed beginning in 1973 at his gas station in Forest Lake, in Browerville, Lowery Avenue in Minneapolis and at Austin, Minnesota. Plaintiff argues, however, that these uses were experimental in that he was not able to determine if the system had worked. It wasn't until he conducted an experiment in his home with a 55 gallon barrel in the spring of 1977. After this experiment proved that his soil ventilation system worked did he file an application for a patent. Experimental use is an exception to Section 102(b). *Baxter International, Inc. v. Cobe Laboratories, Inc.*, 88 F.3d 1054, 1060 (Fed.Cir.1996). Defendants respond that prior installations were not experimental, as Plaintiff was paid for his services for the Browerville, Lowery Avenue and Austin sites. To this, however, Plaintiff asserts he was not compensated for his services, rather he billed an hourly fee to cover the cost of the compressor that he was leasing to run the ventilation system.

The Court has thoroughly reviewed the evidence submitted on the issue of invalidity and finds that genuine issues of material facts exist as to whether the Browerville, Lowery Avenue and Austin sites constitute public and commercial use as contemplated under Section 102(b). Accordingly, on the issue of validity, summary judgment will be denied.

### **C. Mobil and Enecotech's Motions for Summary Judgment on the Issue of Infringement.**

Mobil utilizes independent consultants to recommend, design and install vapor remediation systems used at its sites. *Gallagher Aff.* para. 6. At a site in Anoka, Mobil utilized the services of Leggette, Brashears, & Graham ("LBG") to perform soil vapor extraction tests. The design of the LBG vapor extraction wells did not involve multiple collection elements arranged in a radial array. Rather, a shaft was dug 24 feet into a contaminated area, a single, vertical pipe was placed in the shaft, the bottom ten feet of which was plastic pipe with slotted holes, and a fan or exhaust system attached to the top of the pipe to draw the vapor. This system is referred to as a single "straw" method.

Mobil consultants have also used a method it refers to as the "trench" method. This method involves digging a relatively shallow trench in contaminated soil, placing a slotted pipe horizontally in the trench, connecting the slotted pipe to a vertical pipe that opens to the outside air, usually in an "L" configuration, and connecting a blower or other suction device to the end of the vertical pipe to draw vapors into the horizontal pipe and up through the vertical pipe.

Mobil also acknowledges that at some sites, multiple vapor extraction "straws" or "trenches" are connected above ground to a header, which is then connected to a single blower or other suction device. Gallagher Aff. para. 1-4, Exs. 4 and 5. The typical multiple straw systems involves the use of several parallel vertical pipes, and the typical multiple trench method involves the use of parallel horizontal pipes. *Id.* Enecotech also uses straw and trench systems as well as multiple straw and trench systems. *See*, McManamon Declaration.

Mobil and Enecotech seek summary judgment that the single straw and trench methods and the multiple straw and trench methods do not infringe the '407 Patent.

Mobil argues that the single straw and trench methods do not infringe the '407 Patent, as these devices do not utilize multiple collection heads. Element 2 of the '407 Patent requires more than one collection head. Plaintiff agrees that the '407 Patent requires more than one collection element and thus concedes that the single straw and trench methods do not infringe the '407 Patent. Plaintiff does not withdraw his claims as to the multiple straw and trench systems.

[18] Mobil asserts that the multiple straw and trench systems do not infringe the '407 Patent because Element 3 requires that a plurality of collection elements be connected together to the lower end of a single conduit. Mobil further argues that Element 3 requires that the collection elements be at an angle from each other, not substantially parallel. This interpretation is consistent with the Court's construction of the Claim language. Thus, the Court finds that the multiple straw and trench systems do not literally infringe the '407 Patent.

[19] [20] The Defendants argue that there is also no infringement based on the doctrine of equivalents. Under the doctrine of equivalents, "a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention." Warner-Jenkinson Company, Inc. v. Hilton Davis Chemical Co., 520 U.S. 17, 117 S.Ct. 1040, 1045, 137 L.Ed.2d 146 (1997) ( *citing*, Graver Tank Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 70 S.Ct. 854, 94 L.Ed. 1097 (1950)). An accused device will be found to have infringed patent claims, when such device performs substantially the same overall function or work, in substantially the same way, to produce substantially the same result as the claimed invention. Graver Tank, 339 U.S. at 608, 70 S.Ct. 854. The doctrine cannot be used to enlarge or extend the scope of claims. *Dolly*, 16 F.3d at 398. Nor can it be used to embrace a structure that is specifically excluded from the scope of the claims. *Id.*, at 400.

As discussed previously in this memorandum opinion, the specification of the '407 Patent clearly teaches the public that the "number, length and location with respect to each other of the elongate perforated collection elements is an important aspect of the invention" and that the collection elements should not be substantially parallel. '407 Patent, Column 1, Lines 61-63 and Column 2, Lines 10-13. This is so even though Plaintiff had put into use a device similar to Mobil's multiple straw method when he installed a system in Austin in 1975, a system that utilized collections elements that were parallel to each other. Knopik Dep.Ex. 10. The Court finds it significant that although Plaintiff clearly was responsible for an installation involving parallel collection elements, the specification of the '407 Patent teaches the general public not to use parallel collection elements. The Court also finds significant that at no time during the prosecution history did Plaintiff notify the PTO of the configuration he utilized in the Austin installation. A review of the entire prosecution history shows that both the PTO and the Plaintiff understood the invention to include collection elements angularly disposed to each other.

Where a patentee has claimed an invention narrowly, "there may not be infringement under the doctrine of equivalents in many cases, even though the patentee might have been able to claim more broadly. If it were otherwise, then claims would be reduced to functional abstracts, devoid of meaningful structural limitations

on which the public could rely." Sage Products, Inc. v. Devon Industries, Inc., 126 F.3d 1420, 1424 (Fed.Cir.1997). If Plaintiff intended his invention to include parallel collection elements, he could have referred to such system in the specification. Instead he did just the opposite. He explicitly stated that parallel systems should not be used. The law is clear that "as between the patentee who had a clear opportunity to negotiate broader claims but did not do so, and the public at large, it is the patentee who must bear the cost of its failure to seek protection for this foreseeable alteration of its claimed structure." Id. at 1425. Under the circumstances present in this case, the Court finds that Plaintiff cannot now claim that parallel systems infringe the '407 Patent under the doctrine of equivalents.

## **II. '122 Patent**

### **A. Claim Construction**

This patent involves one independent claim and one dependent claim.

1. A process for recovering organic liquids such as gasoline from the surface of the water table in underground areas, said process comprising the following steps:

- (1) providing an opening in the ground from the ground surface to a point beneath the upper surface of the water table;
- (2) positioning within said opening a conduit having a lower end in fluid-tight relationship with a collection head having a closed liquid impermeable lower end portion, an open upper end fitted onto the lower end of said conduit, and a liquid permeable wall portion intermediate said liquid impermeable lower end portion and said upper end;
- (3) positioning said collection head so that the liquid permeable wall portion is just above the surface of the water table and the liquid impermeable lower end portion of said collection head is just below the surface of the water table;
- (4) connecting the upper end of said conduit to an inlet of a collection vessel having a vapor outlet to permit the removal of air and other gaseous materials but not substantial amounts of liquid from said vessel; and
- (5) exhausting air and other gaseous materials from said vessel through said vapor outlet to create less than atmospheric pressure in said vessel whereby to draw organic liquids from the surface of the water table through said conduit into said vessel.

2. The process of claim 1 also including the step of removing gaseous organic vapors from the materials exhausted from said vessel.

#### **1. Element 2**

[21] [22] The parties dispute the meanings of the terms "conduit" and "collection head" as used in Element 2.

Plaintiff construes the term "conduit" to mean any device providing a flow path for fluids from below ground to above the ground surface. Defendants argue that "conduit" is a pipe having a generally vertical orientation with its upper end above ground and its lower end below ground in the area of the water table.

The Court construes the term by looking at the ordinary meaning of the claim language and the specification. The ordinary meaning of the term "conduit" is "... 1: a natural or artificial channel through which water or other fluid passes or is conveyed ..." WEBSTER'S THIRD NEW INTERNATIONAL UNABRIDGED DICTIONARY ((C) 1961, 1993) at 474. Plaintiff did not define "conduit" any differently

in the specification. Accordingly, "conduit" is construed to mean a channel through which liquids are conveyed.

The Court refuses to add the limitation that "conduit" has to be a pipe or that it has to be generally vertical. The Defendants claim that the term "conduit" must be limited to a pipe as Plaintiff makes repeated references in the specification to that the fact that the "conduit" is a pipe. *See e.g.*, Column 3, Lines 21, 32, and 50; Column 4, Lines 23, 26, 29, and 35. However, these references describe only a particular embodiment of the invention and will not be read into the claim. The Court also refuses to add the limitation that the "conduit" has to be generally vertical. This limitation is not found in the ordinary meaning of the term and it is not explicitly provided for in the specification.

The parties also dispute the meaning of "collection head." Plaintiff claims that collection head should be interpreted as including a lower end portion, an upper end portion, and an intermediate, liquid permeable portion. Any structure that includes these three elements would come within the scope of "collection head." The Defendants claim that the term should be construed to mean a separate, relatively small three-part component of the claimed process, to be fitted or connected to the lower end of the conduit. The three parts are a liquid impermeable lower end portion, a fitted upper end, and a liquid permeable wall portion intermediate to said impermeable lower and upper end portions.

The meaning of this term is clearly defined in the claim language and supports Plaintiff's interpretation. The claim provides for "... a collection head having a closed liquid impermeable lower end portion, an open upper end fitted onto the lower end of said conduit, and a liquid permeable wall portion intermediate said liquid impermeable lower end portion and said upper end...." '122 Patent, Column 6, Lines 2-7.

[23] Finally, as to Element 2, the parties dispute the meaning of the term "positioning." Plaintiff claims that the term means to place or situate, to put in proper position. The Defendants disagree with this broad construction by the Plaintiff. They claim that the term has a more specific meaning due to the limitations put forth in the patent claim.

The Court uses the ordinary meaning of the term "positioning" and the limitations contained in the claim to construe the term. The root of this term is "position." The ordinary meaning of "position" is-"... to put in a or the proper position: PLACE, SITUATE...." WEBSTER'S THIRD NEW INTERNATIONAL UNABRIDGED DICTIONARY ((C) 1961, 1993) at 1770. The claim provides for the following limitation regarding the "position"-"... positioning said collection head so that the liquid permeable wall portion is just above the surface of the water table and the liquid impermeable lower end portion of said collection head is just below the surface of the water table...." '122 Patent, Column 6, Lines 8-12. From this language, the Court concludes that the positioning is limited such that the liquid permeable wall portion of the collection head is just above the water surface and the liquid impermeable portion is just below the water surface.

## **2. Element 4**

[24] The last disputed term is "collection vessel." Plaintiff argues that the term means any structure capable of receiving the fluids removed from below the ground. The Defendants disagree with Plaintiff's broad interpretation of the term. They claim that the term means a relatively large tank that is able to withstand vacuum pressure and it should include an inlet and a vapor outlet.

The Court construes this term by considering the ordinary meaning of the term "vessel", and the limitations provided in the claims and the specifications. The ordinary meaning of "vessel" is "... 2 a: a hollow and usu. cylindrical or concave utensil ... for holding something and esp. a liquid: a receptacle of tight construction sometimes as distinguished from one ... of slack or open construction...." WEBSTER'S THIRD NEW INTERNATIONAL UNABRIDGED DICTIONARY ((C) 1961, 1993) at 2547. The claim contains the limitation that the "collection vessel" has an inlet connected to the conduit and a vapor outlet. '122 Patent,

Column 6, Lines 13-17. The specification further provides that the vapor outlet is connected to the exhaust means. '122 Patent, Column 2, Lines 2-4. Using the ordinary meaning and the limitations from the claims and specification, the Court concludes that the term "collection vessel" means a hollow utensil of tight construction, with an inlet connecting to the conduit and a vapor outlet connected to the exhaust means.

The Court refuses to read into the term the limitations that the vessel has to be a relatively large tank and capable of withstanding vacuum pressures. The Defendants obtain these limitations from the drawings and the specifications. *See*, Defendant's Joint Memorandum with respect to Claim Construction, page 32. Particular embodiments and examples that appear in the specification are generally not read into the claims. *Constant*, 848 F.2d at 1571, 7 U.S.P.Q.2d at 1064. The requirement of a relatively large tank is obtained from Figure 1. However, Plaintiff clearly states in his patent that the drawing is a preferred embodiment of his invention. '122 Patent, Column 3, Lines 7-9. In addition, the limitation of a tank capable of withstanding vacuum pressures is also found in the portion of the specification where Plaintiff is describing a preferred embodiment of his invention. '122 Patent, Column 4, Lines 10-14. As the limitations requested by the Defendants are obtained from the preferred embodiments described in the patent, the Court refuses to read these limitations into the definition of the term "collection vessel."

### **B. Mobil and Enecotech's Motions for Summary Judgment for Noninfringement of the '122 Patent**

Mobil argues that it has not infringed the '122 Patent. Mobil asserts that in removing gasoline floating in free product, its consultants do not attempt to skim the gasoline from the top of the water table with vacuum extraction. Rather, a technique is used to pump both the gasoline and water from the ground using a submersible pump. *Gallagher Aff.* para. 17. Further, Mobil's device does not include a collection head that is connected to a conduit, or that is positioned just at the surface of the water table. Instead, the vapor extraction line has approximately 20 feet of well screen to allow for the collection of vapors. Finally, Mobil asserts that it does not employ a device that has a collection vessel that collects liquid gasoline. Rather, its device has a vapor extraction line that is connected to a condensate separator, which is intended to collect water that condenses out of the vapor stream. *Id.* para. 18, Ex. 2. Mobil thus argues that the accused device does not infringe the '122 Patent as Elements 2-5 are not met.

Through his expert Dr. Sandor C. Csallany, Plaintiff asserts that Mobil does utilize a device that infringes Claim 1 of the '122 Patent. He asserts that the device does have a collection head as defined in the '122 Patent: the well screen is liquid permeable and the cap at the end of the slotted screen is liquid impermeable. The upper portion of the liquid permeable portion is attached to a liquid permeable well casing, or the conduit, which is in turn connected to a vacuum line. *Csallany Decl.* para. 13. Dr. Csallany further asserts that the collection head is placed relative to the water table "which every hydrologist knows fluctuates, such that at various times the water level is substantially at junction between the liquid permeable and impermeable portions of the collection head." *Id.* He further asserts that disposing a collection head within the expected normal limits of fluctuation will result in the collection head being "positioned" as required in Element 3.

[25] The Court finds that Mobil has not infringed Claim 1 of the '122 Patent. As previously noted above, the language of the claim is very specific with respect to the positioning of the collection head. It must be so positioned that the "liquid permeable wall portion is just above the surface of the water table and the liquid impermeable lower end portion of said collectionhead is just below the surface of the water table." The *Gallagher Aff.*, Ex. 2 and the declaration of Dr. Csallany both establish that the device utilized by Mobil does not have a collection head that is so positioned.

Nor does Mobil's device infringe under the doctrine of equivalents. Mobil's device pumps both water and gasoline out of the ground, rather than skim the water table to remove only gasoline.

In support of its motion for summary judgment as to noninfringement of the '122 Patent, Enecotech has

submitted the declaration of its Regional Vice President Steve McManamon. Mr. McManamon generally describes two approaches it has used for remediating groundwater contamination. McManamon Decl. para. 5. One approach utilizes a pipe that is perforated and liquid permeable at the lower end, with no liquid impermeable lower end portion. *Id.* The second approach involves an unperforated pump-receiving sump that is attached to the perforated portion of vertical pipe, which extends above and below the surface of the water table. *Id.* Neither approach involves the positioning required in Element 3 of Claim 1 of the '122 Patent. *Id.*

Plaintiff has not put forth any evidence refuting the declaration of Mr. McManamon. Accordingly, summary judgment as to noninfringement of the '122 Patent to Enecotech is appropriate.

IT IS HEREBY ORDERED that:

1. Unocal's Motion for summary judgment as to invalidity of '407 Patent [Docket No. 112], to which Amoco Corporation has joined [Docket No. 98] is DENIED.

2. Mobil Corporation's Motion for Summary Judgment as to Noninfringement of the '407 Patent and the '122 Patent [Docket No. 122] is GRANTED.

3. Enecotech Midwest's Motion for Summary Judgment as to Noninfringement of the '407 Patent and the '122 Patent [Docket No. 126] is GRANTED.

4. Sinclair Oil Corporation's Motion for Summary Judgment [Docket No. 130] and DPRA's motion of joinder [Docket No. 134], are dismissed as moot.

5. Amoco Corporation's Motion to Strike is denied as moot [Docket No. 148].

6. Sinclair's Motion to Strike Declaration of Sandor C. Csallany is DENIED.

D.Minn.,2000.

Knopik v. Amoco Corp.

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