United States District Court,
D. Delaware.

The PROCTER & GAMBLE COMPANY,
Plaintiff and Counterclaim Defendant.
v.
PARAGON TRADE BRANDS, INC,
Defendant and Counterclaimant.

No. Civ.A. 94-16 LON

Dec. 30, 1997.

Disposable diaper manufacturer brought suit against competitor, alleging infringement of two patents, and competitor counterclaimed for infringement of another patent. The District Court, Longobardi, Senior District Judge, held that: (1) competitor's diapers literally and by doctrine of equivalents infringed patent for diaper with barrier leg cuff (BLC); (2) competitor's diapers literally infringed patent claiming improvement over BLC patent; (3) both of those patents were valid, despite claims of anticipation and obviousness; (4) manufacturer was entitled to lost profits damages on approximately 8% of competitor's infringing sales during damages period, and reasonable royalty of 2% of net sales price on remaining 92% of infringing sales; (5) manufacturer was entitled to enhanced damages for competitor's willful infringement of second patent; (6) none of manufacturer's accused diapers infringed claims of patent for high-absorbency diaper; (7) claims of that patent at issue were invalid as anticipated or obvious in light of prior patent; and (8) that patent was unenforceable due to inequitable conduct in patent application process.

Ordered accordingly.

5,098,423. Not Infringed.

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James M. Mulligan, Jr. of Connolly Bove, Lodge & Hutz, Wilmington, DE, of counsel, Stephen B. Judlowe, Dennis J. Mondolino, Porter F. Fleming, Michael F. Hurley of Hopgood, Calimafde, Kalil & Judlowe, New York City, for Paragon Trade Brands, Inc.

OPINION

LONGOBARDI**, Senior District Judge.**

I. NATURE AND STAGE OF THE PROCEEDINGS

This suit is an action for patent infringement between two giants in the infant disposable diaper industry. Plaintiff and counterclaim defendant The Procter & Gamble Company ("P & G"), is the largest disposable diaper manufacturer in the United States, selling its products under the brand names of "Pampers" and "Luvs." Defendant and counterclaim plaintiff Paragon Trade Brands, Inc. ("Paragon") FN1 is the largest manufacturer of "private label" disposable diapers in the country. Private label producers manufacture diapers which are sold under brand names selected by retailers, rather than under those of the manufacturers. Collectively, the products manufactured by these two companies comprise over 50% of the disposable diaper industry.

FN1. Paragon began its life as part of the Weyerhaeuser Company. [Tr. at 620]. Paragon officially became a

separate company in 1993. [Tr. at 621]. For ease of reference, because Paragon is generally chargeable with actions of its predecessor, the Court will use "Paragon" to refer to the actions of both Paragon and Weyerhaeuser.

P & G commenced this action on January 20, 1994. It alleges that Paragon manufactures and sells products which infringe two P & G patents, Lawson U.S. Patent No. 4,695,278 (the "Lawson patent") and Dragoo U.S. Patent No. 4,795,454 (the "Dragoo patent"). These patents relate to advancements in the barrier leg cuff feature of disposable diapers which help prevent the leakage of waste material from the leg openings of the diapers. Through its answer and counterclaim, Paragon denies that its products infringe the Lawson and Dragoo patents and seeks a declaratory judgment that these patents are invalid, unenforceable and not infringed by its products.

Paragon also brings a counterclaim for infringement of Pieniak U.S. Patent No. 5,098,423 (the "Pieniak patent"). The Pieniak patent relates to advancements in the absorbent core of disposable diapers which enable manufacturers to reduce the bulk of the diapers for improved fit and comfort. P & G denies infringement of the Pieniak patent and asserts affirmative defenses and a counterclaim seeking a declaratory judgment that the Pieniak patent is invalid, unenforceable, and not infringed by P & G.FN2

FN2. In its answer, Paragon also asserted a counterclaim for violation of the federal antitrust law and the Washington Consumer Protection Act. In a Memorandum Opinion and Order dated March 28, 1996, this Court granted P & G's motion for summary judgment and dismissed this counterclaim.

This Court conducted a thirteen day bench trial from February 3, 1997 through February 20, 1997. Post-trial briefing was completed on May 12, 1997, and this Court heard oral argument in this case on October 22, 1997. This Opinion represents the Court's findings of facts and conclusions of law with respect to all issues necessary to resolve this dispute. The Court's discussion is divided into two parts. First, the Court will address the issues related to the Lawson and Dragoo patents. The second part of the discussion will focus upon the Pieniak patent.

The Court has jurisdiction over the subject matter of the claims and counterclaims in this action pursuant to 28 U.S.C. s.s. 1331 and 1338(a). Venue is proper in this district under 28 U.S.C. s.s. 1391 and 1400(b).

II. THE LAWSON AND DRAGOO PATENTS

A. *Technological Background*

The technology at issue in this case involves infant disposable diapers. The beginning of this industry can be traced back to 1965, when P & G introduced the first commercially successful disposable diaper which was sold under the brand name of "Pampers". Prior to that time, disposable diapers accounted for approximately one-half of one percent of the total market. [Tr. at 187]. Most of the diapers in use in this country at that time employed a two-piece system consisting of a cloth diaper with an outer garment. *Id.; see* [Plaintiff's Trial Exhibit ("PTX") 18, 19]. The outer garment was generally made of plastic and was colloquially referred to as "rubber pants." [Tr. at 187]. The cloth diaper was placed between the baby's legs, wrapped around the baby's waist, and safety pinned together. *Id*. at 187-88. The cloth diaper itself contained no waterproof barrier, and thus, the "rubber pants," placed over the cloth diaper, acted as the ultimate barrier to contain waste. *Id*. at 188.

The diaper market was revolutionized in 1965 with the introduction of the Pampers disposable diaper. One witness testified that this product is considered by some independent analysts as one of the most successful

commercial products in the history of soft goods. *Id*. at 193. The 1965 Pampers was a unitary diaper, consisting of a waterproof backsheet, a liquid pervious topsheet, and a disposable core between these two layers. *Id*. at 189; *see* [PTX 20, 23]. The disposable core consisted of plies of creped tissue paper called waddings. [Tr. at 189]. The core was rectangular in shape, sixteen inches long and twelve-and-a-half inches wide. *Id*. at 190. The product was z-folded FN3 widthwise at the crotch to a width of approximately from four-and-a-quarter to four-and-a-half inches, to permit the product to fit reasonably between the baby's legs. *Id*.

FN3. A z-fold is formed by folding each side of the diaper in the shape of a "z."

The next major innovation in the disposable diaper industry occurred in the mid-1970s, with the invention of the hourglass-shaped disposable diaper with an absorbent core. *Id*. at 194; *see* [PTX 21, 25, 26]. In addition to the new shape, this diaper also introduced the concept of the elastic leg band on the side of the absorbent core. *Id*. This product also consisted of a flexible flap between the absorbent core and the elastic, which enabled the leg of the baby to move freely without causing distortion or displacement of the diaper. *Id*. A major objective of these changes was to reduce the amount of leakage from the leg openings of the diaper caused by gaps which tended to develop between the diaper and the baby's body as a result of the semi-rigid nature of the absorbent body. *See* [PTX 25, at 1:22-28].

In 1984, P & G instituted a project to develop a disposable diaper which would better contain runny bowel movements or "runny BMs." [Tr. 782-84, 827-39]. In 1985, Michael Lawson, an engineer at P & G, suggested adding a second barrier cuff to the then-present diaper structure described above. *Id*. at 784-85. This concept of the second barrier cuff or "barrier leg cuff" ("BLC") FN4 forms the basis of the Lawson patent. In its preferred form, the Lawson diaper consists of liquid impermeable BLCs, which are designed to contain all waste material, both liquid and solid, in the pocket created between the inside edges of the BLCs and the absorbent core. *Id*. at 211, 794; *see* [PTX 1025].

FN4. The barrier leg cuff feature has also been referred to in the industry as "flaps," "side flaps," "inner leg gathers," "ILGs," "standing leg gathers," and "SLGs."

Mr. Lawson was not alone in the mid-1980s in deciding to use a second barrier cuff to improve the containment properties of the diaper. Kenneth Enloe, an inventor working for Kimberly-Clark which sells diapers under the brand name of "Huggies", also decided to add a BLC to the basic structure disclosed by the prior art diapers, and obtained United States Patent No. 4,704,116 for this innovation (the "Enloe patent"). *See* [PTX 28]. Unlike the BLCs in the Lawson and Dragoo diapers, however, the Enloe patent describes the use of a liquid pervious material for the BLCs. [Tr. at 208]; *see* [PTX 28]. In the diaper described by the Enloe patent, the BLC acts as a strainer which retains the solid fetal material on the inside, but allows liquid waste to pass through to be absorbed by the absorbent core. [Tr. at 211].

Given the similarities of the Lawson and Enloe inventions, Kimberly-Clark brought suit in the Western District of Washington (the "Seattle litigation") against P & G to resolve the priority of invention issue between the Lawson and Enloe patents pursuant to 35 U.S.C. s. 291. Kimberly-Clark also asserted that P & G's diapers infringed the Enloe patent. The court concluded that Enloe had priority of invention over Lawson, and, as a result, it held invalid several claims in the Lawson patent. [DTX 184, para.para. 89-90]. The court also concluded that P & G's diapers did not infringe the Enloe patent. *Id*. para.para. 21-52. The Court of Appeals for the Federal Circuit affirmed the district court's decision on priority and invalidity. Kimberly-Clark Corp. v. Procter & Gamble Distrib. Co., 973 F.2d 911, 917 (Fed.Cir.1992).FN5

FN5. The court's finding of non-infringement was vacated on appeal after the parties entered into a

settlement agreement as to that issue. Kimberly-Clark Corp. v. Procter & Gamble Distrib. Co., 973 F.2d 911, 914 (Fed.Cir.1992).

The Dragoo patent is directed to improving and modifying the performance of the Lawson invention. [Tr. at 239]. Jerry Dragoo was one of the P & G employees responsible for testing diapers made pursuant to the Lawson patent. *Id*. at 872-74. Upon performing a leak load study, in which prototype diapers were placed on babies and loaded with synthetic urine, Dragoo discovered that the Lawson diapers leaked at the legs. *Id*. at 874-75. Mr. Dragoo determined that the leakage resulted from a phenomenon known as wicking. *Id*. at 875% Wicking occurs when the material itself moves fluid by capillary action. *Id*. at 875-76. In the diapers implementing the Lawson invention, wicking occurred along the hydrophilic topsheet,and permitted liquid waste to get outside the pocket created by the BLCs because the topsheet extended laterally beyond the BLCs to the side edge of the diaper. *Id*. at 240, 876. Mr. Dragoo's solution to this problem, which forms the basis for his patent, was to extend each BLC to the side edge of the diaper and to terminate the topsheet at a point inside of the side edge of the diaper. *Id*. at 240.

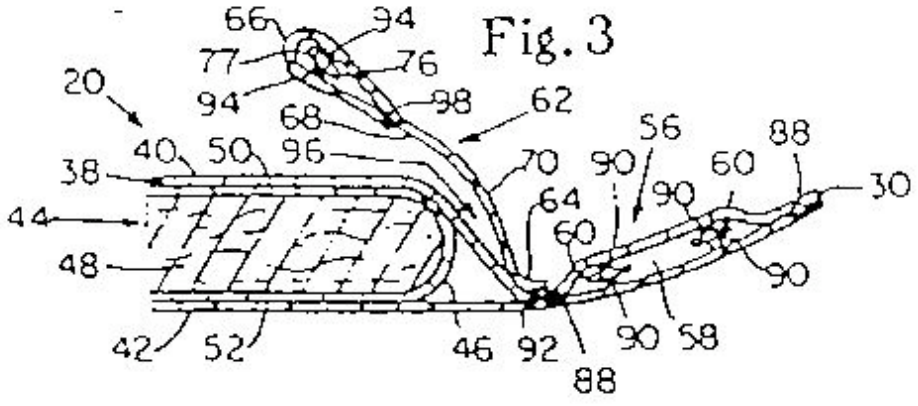
Paragon first implemented the BLC feature into its Ultra line of diapers in March of 1991. [Docket Item ("D.I.") 259, para. 1]. Since November 1991, all of Paragon's Ultra diapers contain BLCs and are alleged to infringe the Lawson and Dragoo patents. [D.I. 242, s. 4, para. 19].FN6

FN6. In Paragon documents, the BLC feature is referred to as "inner leg gathers" or "standing leg gathers." There is no dispute that these three terms are synonymous.

B. ***The Lawson Patent***

The Lawson patent, entitled "Absorbent Article Having Dual Cuffs," describes an integral or unitary disposable absorbent article, such as a diaper, consisting of five elements, a liquid pervious topsheet, a liquid impervious backsheet, an absorbent core, an elastically contractible gasketing cuff, and a BLC. [PTX 1, at 2:3-8]. Reproduced below is Figure 3 of the Lawson patent which depicts a cross-sectional view of the diaper in the crotch region. FN7

FN7. For a description of the numbers corresponding to each element of the Lawson diaper, *see* [PTX 1], the Lawson patent.



According to the specification, the Lawson invention addresses a problem in the containment characteristics of the prior art diapers: the leakage of body exudates out of the gaps between the diaper and the wearer's leg or waist on to the wearer's clothing because the exudates are not immediately absorbed within the article. [PTX 1, at 1:19-64]. In an effort to solve this problem, the Lawson invention employs a BLC which acts as a further restraint against the leakage of body exudates. *Id*. at 1:50-52.

The patent describes the BLC as a "flexible member" that is secured by an adhesive or glue bond to the topsheet between the side edge of the absorbent core and the flap elastic members of the gasketing cuff. *Id*. at Fig. 3, 4:52-58, 8:59-61; [Tr. at 215-16]. The patent further describes the BLC as having a "proximal edge" and a "distal edge," which define the height of the BLC. [PTX 1, at 8:59-61]. The proximal edge of the BLC is the bottom edge of the BLC and is the point of the BLC that is secured to the topsheet in the construction depicted in the Lawson patent. *Id*. at Fig. 3, 4:56-58. The distal edge is the upper edge of the BLC and is unattached to any other portion of the diaper. *Id*. at Fig. 3. The distal edge is spaced away or lifted up from the surface of the topsheet by a "spacing elastic member" or "spacing means." *Id*. at 4:58-65, 10:56-61. In other words, an elastic member is assembled into the diaper in a stretched position and is allowed to contract when the diaper is cut. [Tr. at 225]. The contraction of the elastic member causes the distal edge of the barrier cuff to rise perpendicularly or nearly perpendicularly to the topsheet. *Id*. at 225, 230-31. The spacing means causes a "channel" to be formed along the entire inboard surface FN8 of the BLC. [PTX 1, at 4:65-67, 10:28-30].

FN8. The patent defines "inboard" as the direction toward the centerline of the diaper. [PTX 1, at 9:16-20].

When the diaper described by the Lawson patent is in use, the BLC presses against the inner thigh and the perineum of the wearer in the crotch region, and the buttocks in the back waist region. *Id*. at 2:18-21. Body exudates which are not immediately absorbed by the absorbent core contact the barrier cuff prior to reaching the gasketing cuff and are contained and held within the channel until the diaper is removed from the wearer. *Id*. at 2:22-27, 8:68-9:1.

The specification of the Lawson patent describes a variety of materials that can be used for the BLC, but indicates that, in its preferred form, the BLC is made using a "liquid impermeable" material. [PTX 1, at 9:8-12]. In the Seattle litigation against Kimberly-Clark, the Lawson claims describing absorbent articles with generic BLCs, i.e., the claims that do not limit or prescribe the type of material for the BLC, were invalidated over the Enloe patent. [DTX 184, para. 89-90]. Consequently, P & G was forced to surrender coverage of its independent claims describing a generic BLC feature. Thus, each of the claims at issue in this case contains a limitation on the BLC material; the claims at issue each describe an absorbent article "wherein said barrier cuff is liquid impermeable."

1. ***Claims at Issue***

The claims at issue in the Lawson patent are claims 17, 21, 27 and 28. These are all dependent claims, and as such, necessarily incorporate by reference all of the elements of the claim(s) from which they depend. AMP. Inc. v. Fujitsu Microelectronics, Inc., 853 F.Supp. 808, 828 (M.D.Pa.1994), *appeal dismissed,* 47 F.3d 1180, 1995 WL 25292 (Fed.Cir.1995). Claim 17 of the patent is dependent from claim 5. Claim 5 describes:

5. An integral, disposable absorbent article having a front waist region, a crotch region and a back waist region, said absorbent article comprising:

a liquid pervious topsheet;

a liquid impervious backsheet associated with said topsheet;

an absorbent core disposed between said topsheet and said backsheet;

an elastically contractible gasketing cuff disposed adjacent each longitudinal edge of the absorbent article in at least the crotch region;

a barrier cuff disposed adjacent each of said gasketing cuffs, each of said barrier cuffs having a proximal edge and a distal edge, said proximal edge disposed laterally inboard of said gasketing cuff;

a spacing means associated with each said barrier cuffs, for spacing said distal edge away from the top surface of said topsheet, whereby a channel is formed to improve the containment characteristics of the article.

[PTX 1, at 14:48-68]. Claim 17 provides: "17. The integral disposable absorbent article of claim 5 wherein said barrier leg cuff is liquid impermeable." *Id*. at 15:35-36.

Claim 21 of the patent is dependent from claim 19. Claim 21 adds to claim 17 the requirement that the proximal edge of the BLC must be disposed in the flexible side flap of the gasketing cuff between the absorbent core and the flap elastic members of the gasketing cuff. *Id*. at 15:50-16:10. Claims 27 and 28 are dependent from claim 26. Claims 27 and 28 differ from claim 17 in that they do not require that the spacing means form a channel. *Id*. at 16:49-51. Another difference between claim 27 and claim 17 is that claim 27 requires that the proximal edge of the BLC be disposed "adjacent" to, as opposed to "inboard" of, the gasketing cuff. *Id*. at 16:43-44. For purposes of the issues raised in this case, there are no material differences between claims 21, 27, and 28, and claim 17.

2. ***Arguments of the parties***

a. ***Infringement***

P & G asserts that all of Paragon's Ultra diapers which have included the BLC feature during the damages period directly infringe claims 17, 21, 27, and 28 of the Lawson patent. P & G contends that, alternatively, the accused diapers infringe these claims under the doctrine of equivalents.

Needless to say, Paragon denies that its products infringe the Lawson patent, either literally or under the doctrine of equivalents. Paragon contends that none of its accused diapers contain a BLC that is "liquid impermeable," as required by each of the Lawson claims at issue. Paragon asserts as a matter of claim construction that "liquid impermeable" means "impossible for liquid to flow through." According to Paragon, because its BLC is not totally and completely impervious to liquid body exudates, none of the accused diapers literally infringe the Lawson patent. With respect to the doctrine of equivalents, Paragon asserts that P & G is barred by the doctrine of prosecution history estoppel from expanding the definition of "liquid impermeable" in such a manner that it covers the BLCs in the accused diapers. Paragon also contends that there is no infringement by equivalency, because the BLCs in the accused diapers do not perform the same function or achieve the same result as a liquid impermeable BLC.

P & G disputes Paragon's asserted construction of the term "Liquid impermeable." Relying on the specification of the Lawson patent, P & G contends that a "liquid impermeable" BLC retards the movement of liquid through the BLC thereby making the diaper more leakage resistant. P & G argues that the BLCs in the accused diapers act like a dam to prevent liquid from escaping outside the BLC to the side edges of the diaper, and therefore, the accused diapers literally infringe the Lawson claims at issue. P & G asserts that,

alternatively, the BLCs in Paragon's diapers are substantially liquid impermeable, and thus, these diapers would infringe under the doctrine of equivalents if literal infringement is not found.

b. ***Invalidity***

Paragon charges that the Lawson claims are invalid as anticipated by the Enloe patent under 35 U.S.C. s. 102(e), contending specifically that the Enloe patent teaches the use of liquid impervious BLCs. Paragon also asserts that Mr. Enloe previously conceived and constructively reduced to practice disposable diapers containing liquid impervious BLCs, relying on Mr. Enloe's initial invention disclosure and initial patent application. Paragon therefore contends that these documents evidence that the Lawson patent is invalid as anticipated by a prior invention pursuant to 35 U.S.C. s. 102(g).

Paragon also contends that the Lawson claims are invalid as obvious under 35 U.S.C. s. 103. In making this argument, Paragon relies on the Enloe patent, Beckestrom U.S. Patent No. 4,490,148, and Japanese Utility Model No. 41-18359.

C. ***The Dragoo Patent***

The Dragoo patent claims an improvement over the Lawson invention. The Dragoo patent recognizes that despite the effectiveness of Lawson diapers at containing body exudates, the hydrophilic topsheet in this structure permitted liquid to wick and leak under and beyond the BLC to the edges of the diaper, where it can come into contact with the clothing of the wearer. [PTX 33, at 1:27-30, 62-68]. The Dragoo patent describes a diaper consisting of the same five elements as that described by the Lawson patent. Id. at 2:31-44. Reproduced below is Figure 2 of the Dragoo patent which depicts a cross-sectional view of the crotch region in the preferred embodiment of the Dragoo patent.FN9

FN9. For a description of the numbers corresponding to each element of the Dragoo diaper, *see* [PTX 33], the Dragoo patent.

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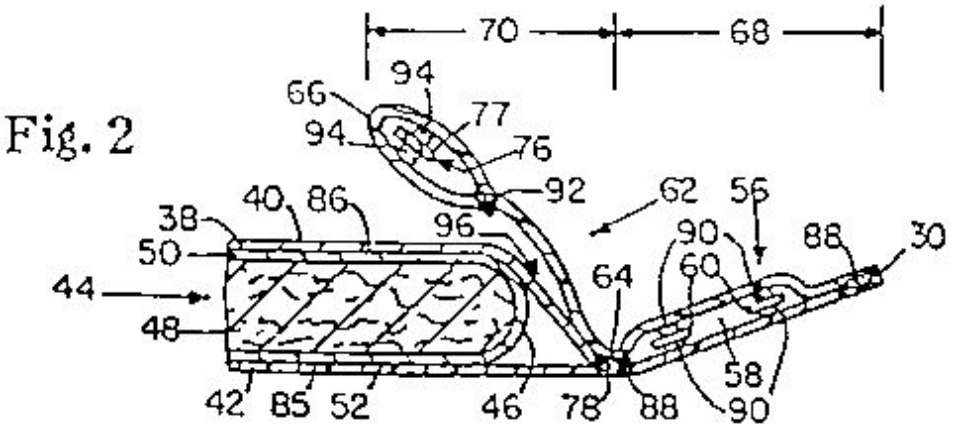


Mr. Dragoo solved the problem of wicking by sealing the BLC to the backsheet at the proximal edge or the side edge of the diaper, extending the BLC material all the way to the edge of the diaper so that the BLC

and the backsheet comprise the gasketing cuff, and terminating the topsheet inboard of the edge of the diaper. Id. at 2:57-3:2.

Like the Lawson patent, the Dragoo patent employs a liquid pervious topsheet which readily permits liquid penetration. Id. at 7:56-59. In the patent's preferred embodiment, the topsheet extends widthwise beyond the side edges of the absorbent core in the crotch region, and terminates inboard of and adjacent to the proximal edge of the BLC. Id. at 8:39-57.

In Dragoo's preferred embodiment, the BLC is a flexible member which consists of a flap portion and a channel portion. Id. at 10:42-45. The Dragoo BLC is hydrophobic, and, in its preferred form, is also liquid impermeable. Id. at 12:65-67. The flap and channel portions of the BLC are preferably comprised of a unitary member, but the flap portion may be formed by a different piece of material secured to the channel portion. Id. at Fig. 2, 11:7-10.

The channel portion of the BLC comprises the portion of the BLC between the proximal and distal edges and defines the length of the channel. Id. at 11:52-55. The proximal edge in the preferred embodiment is formed by securing a segment of the BLC to the backsheet by a seal means, such as an adhesive bead. Id. at Fig 2., 5:49-53. The flap portion of the BLC extends outwardly from the proximal edge to the outside or longitudinal edge of the diaper where it is again joined with the backsheet such that the gasketing cuffs are formed by the flap portion of the BLC and the backsheet. Id. at Fig. 2, 10:67-11:6.

In Dragoo's preferred embodiment, the topsheet is secured inwardly adjacent of the proximal edge of the BLC. Id. at Fig. 2, 8:57-63. Because Dragoo terminated the topsheet inboard of the proximal edge and sealed the proximal edge to the backsheet, the proximal edge of the BLC forms a leakage-resistant seal which prevents wicking underneath and beyond the BLC to the edges of the diaper. Id. at 17:1-9.

1. ***Claims at Issue***

The claims at issue in the Dragoo patent are claims 1, 3, 17, 18, and 21. Claim 1 of the Dragoo patent provides:

1. A unitary disposable absorbent article comprising: an absorbent core have [sic] a garment surface and a body surface;

a liquid impervious backsheet positioned adjacent said garment surface of said absorbent core;

an elastically contractible gasketing cuff disposed adjacent to an edge of the absorbent article;

a hydrophobic barrier cuff having a proximal edge and a distal edge, said barriercuff disposed adjacent said gasketing cuff;

spacing means operatively associated with said barrier cuffs for spacing said distal edge away from the liquid-receivig [sic] surface of the absorbent article so as to cause said barrier cuff to stand up;

seal means positioned along said proximal edge for adjoining said proximal edge to the absorbent article so as to provide a leakage-resistant seal along said proximal edge; and

a liquid pervious topsheet positioned adjacent said body surface of said absorbent core, said topsheet extending outwardly toward and terminating inwardly of said proximal edge, whereby liquids are generally prevented from wicking underneath and beyond said barrier cuff to the edge of the absorbent article.

Id. at 17:42-66. Claim 3 is dependent from claim 1 and requires the BLC to be liquid impermeable. Id. at 18:1-2.

Independent claim 17 is substantially similar to claim 1. Claim 17 differs from claim 1 only in three respects. First, claim 17 requires the BLC to have a flap portion and a channel portion. Second, claim 17 does not require a seal means positioned at the proximal edge, but instead requires an attachment means for attaching the flap portion of the BLC to the edge of the absorbent article. Third, the positioning of the topsheet is defined differently in claim 17. With respect to these differences, claim 17 requires:

an elastically contractible gasketing cuff disposed adjacent to a pair of oppositely disposed edges of the absorbent article, each of said gasketing cuffs comprising a gasketing flap and a flap elastic member;

a hydrophobic barrier cuff having a flap portion and a channel portion comprising a proximal edge and a distal edge, said barrier cuff disposed adjacent said gasketing cuff;

. . . . .

attachment means positioned adjacent the edge of the absorbent article for associating said flap portion of said barrier cuff with said gasketing flap so as to provide a leakage-resistant seal along the edge of the absorbent article; and

a liquid pervious topsheet positioned adjacent said body surface of said absorbent core, said topsheet extending outwardly toward and terminating inwardly of the oppositely disposed pair of edges of the absorbent article....

Id. at 20:3-25. Claim 18 is dependent from claim 17, and adds to claim 17 a seal means positioned along the proximal edge for joining the proximal edge to the gasketing flap. Id. at 20:28-31. Claim 21 is dependent from claim 19, which is dependent from claim 18. Claim 21 requires the flap portion of the BLC to be liquid impermeable and the BLC and the gasketing cuff to be integral. Id. at 20:32-33, 37-38.

2. ***Arguments of the Parties***

a. ***Infringement***

P & G contends that Paragon's Ultra diapers which include the BLC feature literally infringe claims 1, 3, 17, 18, and 21 of the Dragoo patent. P & G does not contend that the accused diapers infringe these claims under the doctrine of equivalents.

Paragon denies that its diapers infringe the Dragoo patent. Paragon argues that each of the Dragoo claims requires that the topsheet terminate laterally inboard of the proximal edge of the BLC. According to Paragon, the topsheet in the accused diapers extends laterally beyond the proximal edge of the BLC, and thus, none of the diapers infringe the Dragoo patent.

P & G disputes both of these arguments. P & G contends that an alternative embodiment of the Dragoo patent describes a diaper in which the topsheet extends laterally outboard of the proximal edge of the BLC, provided that the BLC has a flap portion which forms a leakage-resistant seal at the side edge of the diaper. P & G also contests Paragon's assertion as to the location of the proximal edge in the accused diapers, contending that the topsheet terminates inboard of the properly located proximal edge. The parties also dispute as a matter of claim construction, the term "proximal edge," as defined by the Dragoo patent.

b. ***Invalidity***

Paragon contends that each of the Dragoo claims at issue is invalid. In support of this contention, Paragon argues that: 1) the Dragoo claims are anticipated and obvious over the Lawson patent; 2) the Dragoo claims are anticipated and obvious over Beckestrom U.S. Patent No. 4,490,148 and Japanese Utility Model No. 41-18359; and 3) the Dragoo claims do not qualify for patentability.

D. ***Infringement***

1. ***Legal Standard***

[W]hoever without authority makes, uses or sells any patented invention, within the United States during the term of the patent therefor, infringes the patent.

35 U.S.C. S 271 (1984 & Supp.1995). According to the Federal Circuit, the "issue of infringement raises at least two questions: (1) what is patented, and (2) has what is patented been made, used or sold by another." Fromson v. Advance Offset Plate, Inc., 720 F.2d 1565, 1569 (Fed.Cir.1983); *see also* Rawlplug Co. v. Illinois Tool Works, Inc., 11 F.3d 1036, 1041 (Fed.Cir.1993); ZMI Corp. v. Cardiac Resuscitator Corp., 844 F.2d 1576, 1578 (Fed.Cir.1988); American Standard Inc. v. Pfizer Inc., 722 F.Supp. 86, 92 (D.Del.1989). Thus, the resolution of the issue of infringement is a two-step process. First, a court must determine the scope of the claims of the patent. Mobil Oil Corp. v. Amoco Chemicals Corp., 779 F.Supp. 1429, 1442 (D.Del.1991), *aff'd,* 980 F.2d 742, 1992 WL 279125 (Fed.Cir.1992). Then, once the scope of the claims is ascertained, the court must determine whether the defendants allegedly infringing activity falls within the scope of the claims. *Id*. Claim construction is a question of law. Markman v. Westview Instruments, Inc., 517 U.S. 370, 116 S.Ct. 1384, 1387, 134 L.Ed.2d 577 (1996); Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 866 (Fed.Cir.1985); Fromson, 720 F.2d at 1569; Mobil, 779 F.Supp. at 1442. The determination of whether a patented invention has been made, used or sold by another is a question of fact. Fromson, 720 F.2d at 1569. A plaintiff must establish infringement by a preponderance of the evidence. Phillips Petroleum Co. v. United States Steel Corp., 673 F.Supp. 1278, 1344 (D.Del.1987), *aff'd,* 865 F.2d 1247 (Fed.Cir.1989).

a. ***Claim Construction***

[5] In construing the meaning of patent claims, a court must consider three sources: the claim language, the patent specification, and the prosecution history. 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). A court may also hear and consider expert testimony, including evidence of how those skilled in the art would interpret the claims. *Id*.

1) ***Claim language***

[6] [7] The initial step in claim construction is an examination of the language of the claims at issue. Stiftung v. Renishaw PLC, 945 F.2d 1173, 1177 (Fed.Cir.1991); American Standard, Inc. v. Pfizer Inc., 722 F.Supp. 86, 92 (D.Del.1989). The patent claims are what defines the right to exclude others from making the invention. Markman, 52 F.3d at 980. A patent claim typically has three parts: 1) the preamble; 2) the transition; and 3) the body. 3 Donald S. Chisum, *Chisum on Patents* s. 8.06[1][b] (1997). The preamble is "an introductory phrase that may summarize the invention, its relation to the prior art, or its intended use or properties." *Id*. It may also constitute a limitation on a claim. *Id*. The transition is a phrase containing a term such as "comprising" that serves to connect the preamble to the body of the claim. *Id*. The third part of a patent claim, the body, is composed of the recitation of the elements and limitations that "define the product or process to be encompassed within the patent monopoly." *Id*.

[8] The words of a claim are normally given their ordinary and accustomed meaning, unless it appears from the specification and prosecution history that the inventor used them differently. In re Paulsen, 30 F.3d 1475, 1480 (Fed.Cir.1994). In this regard, the Federal Circuit has recently stated that:

[T]he focus in construing disputed terms in claim language is not the subjective intent of the parties to the patent contract when they used a particular term. Rather the focus is on the objective test of what one of ordinary skill in the art at the time of the invention would have understood the term to mean.

Markman, 52 F.3d at 986.

2) *The specification*

[9] [10] The patent specification contains a written description of the invention that enables one of ordinary skill in the art to make and use the invention. Markman, 52 F.3d at 979. It is "the single best guide to the meaning of a disputed term." Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996). The description of terms in the specification "may act as a sort of dictionary, which explains the invention and defines terms used in the claims." Markman, 52 F.3d at 967. "[W]ords must be used in the same way in both the claims and the specification.' " ZMI Corp., 844 F.2d at 1580 (quoting Autogiro Co. of America v. United States, 181 Ct.Cl. 55, 384 F.2d 391, 397 (1967)).

[11] [12] [13] The specification cannot be used, however, to add extraneous limitations into a claim. Hoganas AB v. Dresser Indus., Inc., 9 F.3d 948, 950 (Fed.Cir.1993). Extraneous limitations are those that would be added into a claim from the specification "wholly apart from any need to interpret what the patentee meant by particular words and phrases" in the claims. *Id*. As stated plainly by the Federal Circuit, "claims are not to be interpreted by adding limitations appearing only in the specification." Electro Medical Sys. S.A. v. Cooper Life Sciences, Inc., 34 F.3d 1048, 1054 (Fed.Cir.1994). On the other hand, when a particular interpretation of the terms of a claim would exclude the preferred embodiment described in the specification from the scope of the claim, such an interpretation "is rarely, if ever, correct and would require highly persuasive evidentiary support." Vitronics, 90 F.3d at 1583.

3) *The prosecution history*

[14] [15] The prosecution history, which is the record of the proceedings in the Patent and Trademark office, cannot enlarge diminish or vary the limitations in the claims but should be utilized to interpret the meaning of language used in the patent claims. Markman, 52 F.3d at 980. The prosecution history limits permissible claim construction to exclude any interpretation that was disclaimed during the prosecution of the patent. Southwall Tech., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed.Cir.1995).

4) *Extrinsic evidence*

[16] [17] Extrinsic evidence such as expert testimony, dictionaries and learned treatises can be used, at the court's discretion, "for the court's understanding of the patent, [but] not for the purpose of varying or contradicting the terms of the claims." Markman, 52 F.3d at 981. When intrinsic evidence alone is sufficient to resolve the ambiguity in a disputed claim term, it is improper to rely on extrinsic evidence. Vitronics, 90 F.3d at 1583.

b. *Comparison of Claims with Accused Products*

1) *Literal infringement*

[18] Once the scope of the claims is ascertained, the Court must determine whether the defendant's allegedly infringing activity falls within the scope of the claims. Mobil Oil Corp. v. Amoco Chemicals Corp., 779 F.Supp. 1429, 1442 (D.Del.1991), aff'd 980 F.2d 742, 1992 WL 279125 (Fed.Cir.1992). If every limitation of a claim is found in the accused device, it is literally infringed. Uniroyal, Inc. v.. Rudkin-Wiley Corp., 837 F.2d 1044, 1054-55 (Fed.Cir.1988).

2) *Doctrine of equivalents*

[19] Under the doctrine of equivalents, an accused product may still infringe even if literal infringement does not exist. Courts developed the doctrine of equivalents to protect the patentee from competitors who "make unimportant and insubstantial changes and substitutions to the patent which, though adding nothing, would be enough to take the copied matter outside the claim," thereby depriving him of the benefit of his invention. Graver Tank & Mfg. Co., Inc. v. Linde Air Products Co., 339 U.S. 605, 607-08, 70 S.Ct. 854, 855-56, 94 L.Ed. 1097 (1950).

[20] The United States Supreme Court recently reaffirmed the viability of and clarified the doctrine of equivalents in Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co., 520 U.S. 17, 117 S.Ct. 1040, 137 L.Ed.2d 146 (1997). The Court held that the determination of infringement under the doctrine of equivalents should be made as an objective inquiry on an element-by-element basis. Id. 520 U.S. at ----, 117 S.Ct. at 1054. Thus, the determination of equivalence must be applied to the individual elements of the claims at issue, not to the invention as a whole. Id. 520 U.S. at ----, 117 S.Ct. at 1049. The touchstone of this inquiry is "[d]oes the accused product or process contain elements identical or equivalent to each claimed element of the patented invention." Id. 520 U.S. at ----, 117 S.Ct. at 1054.

[21] [22] An elemental equivalency analysis involves an assessment of the substantiality of differences between the accused product and the element in question at the time of infringement. Id. 520 U.S. at ----, 117 S.Ct. at 1053-54. A patentee may prove equivalence under this analysis by demonstrating that the substituted element in the accused device performs substantially the same function in substantially the same way to produce substantially the same result as the element at issue, or by proof of insubstantial differences between the substitute element and the claim element. Id. 520 U.S. at ----, 117 S.Ct. at 1054 ("An analysis of the role played by each element in the context of the specific patent claim will ... inform the inquiry as to whether a substitute element matches the function, way and result of the claimed element, or whether the substitute element plays a role substantially different from the claimed element.") Infringement under the doctrine of equivalents is a question of fact. *See* id. 520 U.S. at ----, 117 S.Ct. at 1053.

2. *Discussion-Lawson Infringement*

There is no dispute that the accused diapers contain most of the elements of each of the claims at issue in the Lawson patent. It is undisputed that the accused diapers are integral disposable diapers having a front waist region, crotch region and back waist region, and include a liquid pervious topsheet; a liquid impervious backsheet associated with the topsheet; an absorbent core between the topsheet and the backsheet; an elastically contractible gasketing cuff adjacent to each side edge of the diaper and the absorbent core; a BLC with a proximal edge disposed inboard of and adjacent to the gasketing cuff in the side flap; and a spacing means which forms a channel by spacing the distal edge of the BLC away from the topsheet. *See* [Tr. 279-88, 295-97, 479-81].

The only element in dispute is the limitation contained in all four of the Lawson claims at issue which requires the BLC to be "liquid impermeable." The parties disagree as to both the meaning of this term and whether the BLCs in the accused Paragon diapers fall within the scope of this element.

a. *Claim Construction*

[23] Relying on the Lawson specification, P & G asserts that the term "liquid impermeable" means that the BLC will contain liquid and solid waste during wearing by retarding the movement of liquids through the BLC. Paragon counters that this term must be defined according to its ordinary or dictionary definition because the patent does not evidence that this claim limitation has a special meaning to one of ordinary skill in the art. Citing the dictionary definition of "impermeable," Paragon asserts that "liquid impermeable"

means impossible for liquid to flow through.

The Court agrees with PEG that the inventor's definition of "liquid impermeable" is clear from reading the patent specification. The purpose of the Lawson BLC is to contain body exudates that are not immediately absorbed by the absorbent core in the central portion of the diaper. [PTX 1, at 2:17-31]. Regarding the use of a "liquid impermeable" material for the BLC, the Lawson specification provides:

the barrier cuff may be rendered liquid impermeable so as to prevent the strikethrough of body exudates. A liquid impermeable barrier cuff *retards the movement of liquid through the barrier cuff thereby making it more leakage resistant*. The barrier cuff may be rendered liquid impermeable in any manner well known in the art such as selectively treating the barrier cuff, entreating the barrier cuff, or by securing a separate material to the barrier cuff.

Id. at 10:47-55 (emphasis added).FN10

FN10. The specification further provides that a particularly preferred material is manufactured by the Crown Zellerbach Company and known as Celestra. *Id*. at 9:10-12. Celestra is a hydrophobic, spunbonded, untreated polypropylene material. [Tr. 218, 221-222, 459-60].

[24] It is a well-settled tenet of patent law that a patentee may act as his own lexicographer. Vitronics, 90 F.3d at 1582. Although the words used in a patent are generally interpreted according to their ordinary meaning, a court will construe terms used in a patent in accordance with a special meaning, provided that the special definition of this term is clearly stated in the specification. *Id*. It is clear from reading the Lawson specification that a BLC is "liquid impermeable" if it "retards the movement of liquid" from the central portion of the diaper above the absorbent core through the BLC to the edges of the diaper. There is nothing in the patent specification or the file history which contradicts this definition. Because this term is clearly defined in the patent specification, the Court may not resort to extrinsic evidence, such as the dictionary definition of "impermeable," to vary the definition provided in the specification. Accordingly, the Court construes the term "liquid impermeable," as it describes the BLC feature, to mean a material which is designed to prevent the strikethrough of body exudates by retarding the movement of liquid body exudates through the BLC to the outer portion of the diaper.

b. *Literal Infringement*

[25] The accused Paragon diapers employ a BLC that is made of a hydrophobic, spunbonded, nonwoven polypropylene material. [Tr. at 1648-49]. The term "nonwoven" describes the structure of the material. A nonwoven material is one in which the strands that comprise the material are not interweaved or intermingling. [Tr. at 332]. The term "spunbonded" refers to the manner in which the material was manufactured. In a spunbonded material, the fabric is formed by a spinning process and the fibers are consolidated together by a bonding process. [Tr. at 333]. The term "hydrophobic" refers to a materials propensity to be wetted when it comes in contact with a liquid. [Tr. at 328-31]. A hydrophobic material is one that is not readily wetted by liquid, but tends to repel liquid with which it comes in contact. [Tr. 328-31, 554]. Although the hydrophobicity of a material has an effect on the permeability of that material, the fact that a material is hydrophobic does not necessarily mean that that material is also liquid impermeable. [Tr. at 339-40].

The testimony of several of Paragon employees and statements in Paragon's own documents support the conclusion that the BLCs employed in the accused diapers are liquid impermeable, given this Court's construction of that term. Gloria Huffman, a diaper designer at Paragon, described the Paragon BLCs as acting like a "dam" which is supposed to hold liquid in the region of the absorbent core and to retard liquid

from seeping out the edges of the diaper. [Tr. 492-93]. Ms. Huffman testified via deposition as follows:

Question: What is the purpose of the ILG FN11, what is its function in Paragon's diapers?

FN11. Inner leg gather.

Answer: Actually, it is supposed to retard the liquid from seeping out the edges of the diaper.

. . . . .

Question: And so liquid coming from the absorbent core, if it flows outwardly, will hit the inside of the ILG, the inside wall of the ILG?

Answer: We hope so.

. . . . .

Question: But your design is an attempt to hold the liquid in the region of the absorbent core; correct?

Answer: Yes.

Question: You are trying to prevent it from escaping the side margins of the diaper; correct?

Answer: Right.

Question: That's why it's the inside face of the ILG that's acting like a dam; correct?

Answer: Yes. I think the height acts like a dam.

. . . . .

Answer: Well, the ILG is like a dam. We hope that it retards the liquid enough to give the absorbent core a chance to absorb the liquid rather than have it seep out.

[Tr. 492-93, 498]. Likewise, Stephen Geimer, outside counsel for Paragon, stated that he understood the accused Paragon diapers to include liquid impermeable BLCs. [Tr. 697].

The testimony of these witnesses is supported by Paragon's own documents which describe its BLCs as "moisture-proof" and "waterproof" and creating a "snug-fitting seal." [PTX 624, at K021025, K021031]. The documents further provide that the Paragon BLC "totally repels moistures" and "traps urine and feces." *Id*. at K021030. Paragon's documents also contrast its BLCs with "hydrophilic" cuffs. According to these documents, the diapers employing a hydrophilic cuff permit moisture to "escape[ ] through and under" the BLC,' while in the Paragon diaper with its hydrophobic BLC, moisture is totally blocked. *Id*. at K021032.

Moreover, P & G's expert, Richard Moran, conducted a series of *ex parte* tests which provide further support for the conclusion that the BLCs employed in the accused diapers are liquid impermeable.FN12 Although these tests, because they were conducted *ex parte,* are of limited probative value, Wagoner v. Barger, 59 C.C.P.A. 1213, 463 F.2d 1377, 1382 (1972) ("the results of tests made by one party ... without notice to, an in the absence of, the other party ... [are] for that reason alone entitled to little or no weight"); *accord* In re Newman, 782 F.2d 971, 974 (Fed.Cir.1986), this Court finds that the tests bear sufficient indicia of reliability such that they need not be entirely disregarded. P & G recorded these tests on

videotape, and the results of the tests were detailed in Mr. Moran's laboratory notebook. Paragon was given full discovery of Mr. Moran's testing; it received both the videotape, including outtakes, and the notebook. Paragon also deposed Mr. Moran and questioned him on cross-examination regarding the tests.

FN12. Paragon asserts that these tests were performed on the wrong diapers, asserting that Mr. Moran did not test any Paragon diaper sold during the period of alleged infringement. The parties entered into a stipulation that the damages period for this case was from 1991 to 1994. [Tr. 1214-15]. Paragon cites to the fact that Mr. Moran purchased these diapers in early 1995. [Tr. at 422-23]. Paragon, however, has not asserted or presented any evidence that it changed the material used in its BLCs at the end of the infringement period. In fact, Paragon's expert indicated that the same hydrophobic, spunbonded BLC material has been used in all of Paragon's diapers, with the exception of a few diapers at the early stages of its development of diapers implementing the BLC feature. [Tr. 1648-49]. Accordingly, the Court concludes that the Paragon BLC material tested by Mr. Moran is the same material used in the BLCs in the accused diapers.

[26] Furthermore, the tests were performed on Paragon products, and, because they were recorded on videotape, Paragon could have performed substantially the same tests. *See* IV Charles W. Rivise and A.D. Caesar, *Interference Law and Practice,* s. 664 (1948) ("testimony regarding *ex parte* tests cannot be disregarded if the opposing party had been given an opportunity to witness the tests.... [A] party cannot complain that his opponent's tests were *ex parte,* if he was given samples of the tested material, and did not introduce any evidence as to tests which he was presumed to have made.") (cited in Wagoner, 463 F.2d at 1382). Accordingly, the Court will not entirely disregard Mr. Moran's tests in resolving the issue of infringement. *See* Standard Oil Co. (Indiana) v. Montedison S.P.A., 664 F.2d 356, 376 (3d Cir.1981) (district court did not err in relying on other tests where opposing party was permitted discovery of the persons who performed them and cross-examination at trial).

In a videotaped presentation, Mr. Moran performed a runoff test and a side seal leakage test. [PTX 32]. In the runoff test, the BLC material was placed above an absorbent material on a runoff board, a table slanted at a 45 degree angle. *See id*. Synthetic urine was dropped from a peristaltic pump onto the BLC material. *See id*. A towel placed at the bottom of the runoff board was employed to collect the synthetic urine that "runs off" or does not penetrate through the BLC. *See id*. When Mr. Moran tested the Paragon BLC material, only a small portion of the synthetic urine penetrated. *Id*. In the side seal leakage test, the entire diaper was placed on the runoff board, and synthetic urine was dropped from a peristaltic pump into the diaper adjacent to the inside face of each BLC. *See id*. When Mr. Moran performed this test on a Paragon diaper, none of the synthetic urine leaked through the BLC to the outer edges of the diaper. *Id*.

Additionally, Mr. Moran performed a strikethrough test on the Paragon BLC material. In the strikethrough test, a small amount of synthetic urine was placed into a separatory funnel and then allowed to flow out of the funnel onto the material being tested. [Tr. at 446-47, 462]. If the liquid did not strikethrough the material in 200 seconds, the test was terminated. [Tr. at 447; PTX 31, at 97]. Mr. Moran performed this test on two samples of Paragon BLC material and recorded the results in the laboratory notebook. [PTX 31, at 97]. According to the notebook, "[n]o specification exists for the strikethrough of BLC materials, but the target would clearly be infinity, with the lower limit set at some relatively high value like 60 seconds." *Id*. Mr. Moran testified that although the perfect strikethrough would be infinity, a BLC material exceeding the lower limit would essentially be liquid impermeable in the diaper context "because liquids are not retained in a free form in the disposable diaper for anywhere near that length of time." [Tr. 463-64].

Paragon's sample BLCs performed well above the lower limit set for a suitable BLC material. The notebook indicates that the average strikethrough time for the two samples was 179 and 177 seconds. [PTX 31, at 97]. Mr. Moran's notebook also indicates that the Paragon samples were supplied in very poor condition which

"may have had some modest impact upon the test results." *Id.*

In addition to arguing that the tests should be rejected because P & G conducted them *ex parte,* Paragon raises several grounds on which it claims that the test results should be disregarded as meaningless. First, Paragon contends that the tests should be disregarded because they are not disclosed in the Lawson patent as methods for determining whether a particular material is liquid impermeable. Second, Paragon asserts that the tests do not measure the worst case conditions contemplated by the Lawson patent where runny BMs remain in the channel formed by the BLC for substantial periods of time.

These contentions are without merit. Although, as Paragon points out, the patent does not direct any competitors to perform Mr. Moran's tests (or any test for that matter) to determine if a particular material is "liquid impermeable", the Court has already determined the patent defines a liquid impermeable material as one that retards the movement of liquid body exudates through the BLC. The tests performed by Mr. Moran were clearly designed to determine to what extent a particular material would prevent the strikethrough of liquid exudates, and thus, are probative evidence of whether a particular material is "liquid impermeable" according to the Lawson patent.

Moreover, the fact that the tests did not replicate the worst case scenario for leakage containment is not a proper basis for completely disregarding them. The tests demonstrated that the Paragon BLC tended to prevent leakage of synthetic urine through the BLC material. As Mr. Moran pointed out, urine is much more prone to penetrate the BLC than runny BMs given the differences in viscosity of the two substances. [Tr. at 393-94]. Accordingly, the tests, although of limited probative value because they were conducted *ex parte,* are relevant as an empirical demonstration of the veracity of the statements contained in Paragon's documents and the testimony of its employees that the Paragon BLC is designed to retard or prevent the strikethrough of liquid body exudates.

In response to the evidence that its diapers literally infringe the Lawson patent, Paragon asserts that P & G itself has recognized that the BLC material in the accused diapers, an uncoated, spunbonded, nonwoven material, is not liquid impermeable. Paragon first cites to a February 1, 1993 interdepartmental correspondence which summarizes a meeting regarding the BLC feature. [DTX 1101]. This correspondence compares the performance of a BLC coated with a polyethylene film with that of an uncoated BLC. The document characterizes uncoated cuffs as "liquid pervious," while characterizing cuffs coated with a polyethylene film as "liquid impervious." *Id.* at DL-100416. The reason for this characterization is described in the document's "Summary of Key Learnings" section as follows:

1. Material substitution only (uncoated vs. coated) in an IBLC FN13 configuration results in significantly higher urine leakage, particularly among females at the legs.

FN13. "Improved barrier leg cuff."

2. The mechanism of leakage is believed to be through the cuff material, not under the cuff, and is accelerated even when only slight pressure is applied to a wet cuff.
3. Increasing the hydrophobicity of uncoated cuff materials did not result in significant differences in leakage.

Id. at DL-100412 (footnote added). Paragon also cites to the testimony of William Sedwick, the primary product developer on the BLC project at P & G. Mr. Sedwick testified that a BLC coated with a polyethylene film passes less fluid than an uncoated BLC. [Tr. 148-50].FN14
FN14. Additionally, Paragon asserts that several statements in P & G's "Proposed Findings of Fact and Conclusions of Laws" submitted in the Seattle litigation against Kimberly-Clark confirms that an uncoated

BLC is not liquid impermeable, referring to DTX 209A. DTX 209A is an excerpted version of P & G's Proposed Findings in the Seattle litigation. Pages 6 through 77 of P & G's Proposed Finding are omitted from DTX 209A. Paragon cites to paragraphs 98 and 153 of the Proposed Findings which are contained on the pages omitted from DTX 209A. Accordingly, these statements are not in evidence and will not be considered in resolving the issue of literal infringement.

Given this Court's construction of the term "liquid impermeable," P & G's internal characterizations as to the performance of uncoated BLCs do not establish that the BLCs in the accused diapers fall outside the definition of liquid impermeable. The Court determined that a BLC is liquid impermeable according to the Lawson patent if it is designed to prevent the strikethrough of body exudates by retarding the movement of liquid through the BLC to the outside edges of the diaper. The Court has already rejected Paragon's assertion that a BLC must permit no liquid to flow through it in order to be considered "liquid impermeable." P & G's admissions that an uncoated BLC is less effective than a coated BLC at preventing the strikethrough of liquid body exudates therefore does not conclusively show that the former is not liquid impermeable under the Lawson patent.

Most significantly, Paragon's contention that an uncoated BLC can never be liquid impermeable is directly contrary to the teachings of the Lawson patent. The Lawson patent provides that the BLC material "may be rendered liquid impermeable in any manner well known in the art such as selectively treating [it], untreating [it], or by securing a separate material to [it]." [PTX 1, at 10:51-55]. The Lawson patent cites a material known as "Celestra" in its untreated form as an example of a particularly preferred BLC material. *Id*. at 9:7-12. Like the BLCs in the accused diapers, Celestra is an uncoated, hydrophobic, spunbonded, polypropylene material. [Tr. at 218, 221-22]. Based on these teachings, Mr. Moran testified that the Lawson patent does not require a polyethylene coating to be applied to the BLC material to achieve liquid impermeability:

Q: [D]id Lawson teach in his specifications [sic] that using a plastic film was the only way to provide the liquid impermeability that he wanted?

A. No. He described that as one of the three principal ways....

Q. And what other ways providing liquid impermeability did Mr. Lawson teach in his patent specification?

A. He taught, again, that a material could be added to the non-woven, which was descriptive of what actually took place with the carded non-wovens, where a different finish, hydrophobic finish, was added to the material. Where in the case of Celestra cited as the preferred execution, no treatment whatsoever, no surfactant addition or other addition was required. The naturally hydrophobic polypropylene spunbond was sufficiently liquid impermeable to form an excellent barrier cuff.

[Tr. at 221-22]. The Court agrees with Mr. Moran that the Lawson patent clearly indicates that an uncoated, spunbonded, nonwoven, polypropylene material can constitute a liquid impermeable BLC. The Court accordingly rejects Paragon's assertion that its uncoated BLC is not liquid impermeable based on the findings in P & G study that an uncoated BLC is less effective at leakage prevention than a material coated with a polyethylene film.

The only other evidence presented by Paragon that its BLC is not liquid impermeable was the expert opinion of Peter Zajackowski, the current Vice President for Sales and Marketing for Feminine Care at Paragon. Although Mr. Zajackowski opined that the Paragon BLC is not liquid impermeable, his opinion was based on an erroneous construction of the term "liquid impermeable" as it is used in the Lawson patent. [Tr. 1647-50]. Mr. Zajackowski indicated that he believed the term "liquid impermeable" as used in the Lawson patent "means that no liquid passes through the material." [Tr. at 1647]. The Court, however, has previously

rejected this construction of the term liquid impermeable as incongruous with the clear language of the Lawson patent. See *supra* section II.D.2.a.

Notably, Mr. Zajackowski admits that an uncoated nonwoven material, such as Celestra, falls within Mr. Lawson's definition of "liquid impermeable."

Q. [I]sn't Mr. Lawson giving an example, such as Celestra, of a material that he considers to be under his definition, liquid impermeable?

A. He's using Celestra as a material that he thinks is liquid impermeable.

. . . . .

Q. So you disagree with Mr Lawson's definition of liquid impermeable; correct?

A. Yes, I do.

. . . . .

Q. But Mr. Lawson, when he taught one of ordinary skill in the art how to practice liquid impermeability, did not insist on a plastic film, did he?

A. He did not insist on a plastic film.

[Tr. 1802-04]. Although Mr. Zajackowski's definition of "liquid impermeable" differs from that of the patent, whether the Paragon BLC falls within his definition is not at issue. Mr. Zajackowski admits that the Lawson patent provides a broader definition for the term "liquid impermeable," and that that definition encompasses even those materials which are not coated with a polyethylene film. Thus, the Court rejects Mr. Zajackowski's opinion that the Paragon BLC material is not liquid impermeable.FN15

FN15. The Court also notes that Mr. Zajackowski's opinion is based on tests performed by Paragon that were not disclosed to P & G during discovery. [Tr. at 1650-52].

Based on the foregoing, the Court holds that P & G has demonstrated by a preponderance of the evidence that the BLC employed in the accused diapers is "liquid impermeable" as that term is defined in the Lawson patent. The testimony of Gloria Huffman and Stephen Geimer and the statements contained in Paragon's own documents establish that its BLC was designed to improve the containment characteristics of its diaper by retarding the movement of liquid body exudates through the BLC to the outside edges of the diaper. The tests performed by Mr. Moran, and his opinion based on those tests, provide further support for this conclusion. Paragon has produced no credible evidence that refutes this conclusion. Accordingly, the accused Paragon diapers meet every claim element of each of the claims at issue for the Lawson patent, and, therefore, Paragon has directly and literally infringed the Lawson patent.

c. *Doctrine of Equivalents*

Strictly speaking, the doctrine of equivalents is inapplicable to P & G's claim for infringement under the Lawson patent because the Court has already found literal infringement of the claims at issue. In the interests of providing a complete record, however, the Court will set out the doctrine of equivalents analysis for the Lawson patent.

[27] The sole issue raised by an equivalency analysis is whether the BLC material used in the accused diapers is equivalent to a "liquid impermeable" BLC material. Based on the Court's discussion with respect to literal infringement, the Court concludes that the Paragon BLC is equivalent to a liquid impermeable BLC. Under this Court's construction of that term, a "liquid impermeable" BLC is designed to prevent the strikethrough of body exudates by retarding the movement of liquid body exudates through the BLC to the outer portion of the diaper. The evidence in this case establishes that the Paragon BLC acts like a dam that retards the movement of liquid through the BLC in an effort to give the absorbent core a chance to absorb the liquid. [Tr. at 492-93, 498]; *see supra* section II.D.2.b. The Paragon BLC is designed to form a "soft, snug-fitting seal" which "traps urine and feces." [PTX 624, at K021030-31]. There is no evidence presented that there are any substantial differences between the Paragon BLC and a "liquid impermeable" BLC. Further, Paragon's own attorneys concluded Paragon's diapers infringe the Lawson patent by virtue of the use of a "substantially liquid impermeable" material for the BLC. [Tr. at 594, 695-96]. Accordingly, the Court holds that the Paragon BLC material performs substantially the same function as a "liquid impermeable" BLC in substantially the same way to produce substantially the same result.

[28] [29] Paragon asserts, however, that the doctrine of prosecution history estoppel prevents P & G from establishing that the Paragon BLC is equivalent to a "liquid impermeable" BLC. The doctrine of prosecution history estoppel limits infringement under the doctrine of equivalents by barring recapture by the patentee of subject matter that was surrendered during the prosecution of the patent in order to obtain allowance of the claims. Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1218-19 (Fed.Cir.1995). Thus, this doctrine estops a patentee from recovering on a infringement claim against an otherwise equivalent device, where the patentee was forced to limit the scope his claims during patent prosecution in order to overcome an examiner's rejection based on prior art. *Id*.

Paragon asserts that the decision in the Seattle litigation which invalidated several independent claims in the Lawson patent estops P & G from recovering by equivalency on the theory that the Paragon BLC is equivalent to a "liquid impermeable" BLC. Paragon does not cite, nor can this Court find, any authority for the proposition that a judicial decision on invalidity can give rise to a prosecution history estoppel defense on a subsequent claim for infringement. Moreover, the Seattle decision on invalidity did not require a decision on the permeability issues raised in this case. The Seattle court determined that Kimberly-Clark's Enloe patent is prior art to the Lawson patent. [DTX 184, para.para. 56-58]. Because both of these patents claim the BLC feature, it was undisputed that this finding rendered invalid the independent claims in the Lawson patent which were generic claims for this feature. *Id*. para.para. 89-90. Accordingly, the doctrine of prosecution history estoppel does not bar P & G from claiming infringement under the doctrine of equivalents in this case.

Therefore, if the Court had not found that Paragon's accused diapers literally infringe the claims at issue for the Lawson patent, the Court would find that Paragon's products infringe the Lawson patent under the doctrine of equivalents.

3. ***Discussion-Dragoo Infringement***

Like the Lawson patent, the Dragoo patent describes a diaper containing the conventional diaper elements of a liquid pervious topsheet, a liquid impervious backsheet, an elastically contractible gasketing cuff, and an absorbent core, as well as the BLC feature. There is no dispute that Paragon's accused diapers contain each of these elements. Nor does Paragon dispute that the BLCs in its accused diapers are hydrophobic, as required by the two independent Dragoo claims at issue, claims 1 and 17. The Dragoo infringement dispute instead revolves around the location of the "proximal edge" of the BLC in the accused diapers and the limitation placed on the lateral or widthwise termination point of the topsheet by the Dragoo patent.

a. ***Claim Construction***

1) *The Proximal edge*

Each of the Dragoo claims at issue describes an absorbent article comprising a hydrophobic BLC "having a proximal edge and a distal edge." In layman's terms the proximal edge represents the bottom of the BLC, i.e. the point at which the BLC member is attached to the underlying structure of the diaper. *See* [PTX 33, at Fig. 2, Fig. 3, 4:57-64, 5:49-55]. In Dragoo's preferred embodiment, in which the BLC consists of a channel portion and a flap portion, the proximal edge defines the lateral point from the center of the diaper at which the channel portion ends and the flap portion begins.

The flap portion is contiguous with the channel portion and extends outwardly from the proximal edge of the channel portion....

. . . . .

The channel portion of the barrier cuff comprises that portion of the barrier cuff between the proximal edge and the distal edge and generally defines the channel formed along the diaper.

Id. at 10:68-11:2, 11:52-55.

In Dragoo's preferred configuration, the flap portion of the BLC forms a portion of the Casketing cuff. Specifically, the gasketing cuff comprises the gasketing flap and one or more flap elastic members. *Id*. at 9:5-7, Fig. 2. The flap portion of the BLC forms the top of the gasketing flap, while the backsheet forms the bottom of the gasketing flap. *Id*. at 10:66-11:6, Fig. 2. The channel portion of the BLC is the traditional Lawson BLC. In other words, the channel portion of the BLC defines the channel formed in the diaper which is designed to "form[ ] a barrier to the flow of body exudates as they tend to move or float across the topsheet," and to contain, restrain, and hold these exudates within the diaper until it is removed. *Id*. at 12:58-64. Thus, the channel is designed to contain liquid exudates which flow on the surface of the topsheet that are not absorbed by the absorbent core. *See* [PTX 33, at 47-49]; *see also* [PTX 1, at 39-46]. The channel portion of the BLC is defined by the proximal and distal edges, with the proximal edge representing the bottom of the channel portion and the distal edge representing the top. [PTX 33, at 11:52-55, Fig. 2].

[30] P & G asserts that the term "proximal edge" is further defined, as a matter of law, as the point at which the BLC member is attached to the backsheet. In urging that "proximal edge" contains this additional limitation, P & G relies on the following language in the specification:

The proximal edge of the barrier cuff is formed inboard of the gasketing cuff, preferably between the side edge of the absorbent core and the flap elastic members, by adjoining a segment of the barrier cuff member to the backsheet by a seal means such as an adhesive bead so as to form a leakage resistant seal along the proximal edge to present a barrier to liquid wicking through the topsheet so as to prevent the liquids from wicking underneath the barrier cuffs to the edges of the diaper

[PTX 33, at 4:57-67; Fig. 2]:

Although this language supports P & G's assertion that the proximal edge is defined as the point at which the BLC is attached to the backsheet, later portions of the specification disclose alternate attachments for the proximal edge. For example, in describing methods for joining the proximal edge to the gasketing flap, the specification provides that the claims encompass configurations in which the proximal edge is secured to the backsheet, as well as configurations in which the proximal edge is affixed to "intermediate members which are in turn affixed to the backsheet." *Id*. at 13:49-58.

In addition, as is discussed *infra,* P & G asserts that the Dragoo patent describes alternate configurations in

which the topsheet extends laterally beyond the proximal edge of the BLC. *See id*. at 17:20-26. In these configurations, the topsheet is sealed or attached under the gasketing flap, i.e., between the flap portion of the BLC and the backsheet, and thus, necessarily extends under the proximal edge of the BLC. *Id*. at 17:10-32.

Finally, and most significantly, the claim language used by Dragoo belies P & G's assertion that the "proximal edge" must be formed by sealing the BLC to the backsheet. Specifically, in describing the method of attaching the BLC to the diaper, claim 1 requires the use of a seal means for "adjoining said proximal edge *to the absorbent article*." *Id*. at 17:56-58 (emphasis added). Thus, claim 1 itself does not contain the limitation that the proximal edge must be affixed to the backsheet. It is a fundamental tenet of claim construction that limitations contained in the specification may not be read into the claims. *See, e.g.,* Electro Medical Sys., 34 F.3d at 1054. Accordingly, the Court rejects P & G's assertion that the "proximal edge" is defined, as a matter of law, as the point at which a segment of the BLC is attached to the backsheet.

2) *The lateral termination Point of the topsheet*

Claims 1 and 3 require that the topsheet terminate inwardly of the proximal edge of the BLC. There is no dispute, for purposes of claim construction, with the limitation imposed on the lateral termination point of the topsheet by claims 1 and 3.

[31] Claims 17, 18, and 21 require that the topsheet terminate inwardly of "the oppositely disposed pair of edges of the absorbent article," i.e., the side edges of the absorbent article. *See* [Tr. 320]. The parties agree that these claims require the topsheet to terminate at some point inboard of the edge of the diaper, but do not specify how far inboard. Paragon asserts that, based on arguments made during the prosecution history, claims 17, 18, and 21 require the topsheet to terminate inboard of the proximal edge of the BLC. Specifically, Paragon cites to two references in the prosecution history in which Mr. Dragoo represented to the patent examiner that all of the claims in the Dragoo patent contain the requirement that the topsheet terminate inboard of the proximal edge of the BLC. [DTX 330, at 64 ("Claims 1-26 require liquid impermeable barrier cuffs, a topsheet that extends outwardly toward but terminates inwardly of the proximal edge of the barrier cuff...."), 143-44].

[32] The language employed in the claims is paramount in determining what is covered by a particular invention. Although the prosecution history generally precludes a patent holder from urging a construction disclaimed during patent prosecution, Southwall, 54 F.3d at 1576, arguments made during patent prosecution cannot enlarge, diminish, or vary the limitations in the claims. Markman, 52 F.3d at 980.

The Court of Appeals for the Federal Circuit emphasized this point in Intervet America, Inc. v. Kee-Vet Lab., Inc., 887 F.2d 1050 (Fed.Cir.1989). In that case, a patent issued which claimed a vaccine for a certain poultry disease. During the prosecution of the patent, in an effort to distinguish the patent from the prior art, the prosecuting attorney amended several of the claims to restrict them to a "single vaccination scheme." *Id*. at 1053-54. In his remarks accompanying this amendment, the prosecuting attorney erroneously represented to the patent examiner that all of the claims were restricted to a single vaccination scheme. *Id*. at 1054. Based on these remarks, the trial court construed all of the claims to contain the single vaccination scheme limitation, despite contrary language in the claims themselves. *Id*.

The Federal Circuit reversed, making it clear that limitations appearing only in the prosecution history cannot be read into the claims. *Id*. at 1053-54. The court concluded that the trial judge erred in reading the single vaccination scheme limitation into the claims that were not amended, based solely on the untrue remarks of the applicant's attorney. *Id*. at 1054. The court opined:

When it comes to the question of which should control, an erroneous remark by an attorney in the course of prosecution of an application or the claims of the patent as finally worded and issued by the Patent and Trademark Office as an official grant, we think the law allows for no choice. The claims themselves control.

Id.; see also Viskase Corp. v. American Nat'l Can Co., 947 F.Supp. 1200, 1202 (N.D.Ill.1996).

Notwithstanding Mr. Dragoo's remarks during the prosecution of his patent, it is clear that claims 17, 18, and 21 themselves do not require the topsheet to terminate inboard of the proximal edge. The claims themselves require only that the topsheet terminate "inwardly of the oppositely disposed pair of edges" of the diaper. Additionally, the fact that claim 1 expressly contains the requirement that the topsheet terminate inwardly of the proximal edge negates an intent to similarly limit by implication claims 17, 18, and 21. The Federal Circuit has continually adhered to the rule that " '[w]here some claims are broad and others narrow, the narrow claim limitations cannot be read into the broad.' " Rite-Hite Corp. v. Kelley Co., Inc., 819 F.2d 1120, 1124 (Fed.Cir.1987) (quoting D.M.I., Inc. v. Deere & Co., 755 F.2d 1570, 1574 (Fed.Cir.1985)(alteration in original). Thus, the presence of this express limitation in claim 1 provides further evidence that Mr. Dragoo was mistaken in his remarks to the patent examiner.

Moreover, the specification is directly contradictory to he remarks relied on by Paragon. In describing alternate embodiments of the invention, the specification provides that "[t]he topsheet may thus extend outwardly toward the edge of the diaper, beyond even the proximal edge ... and need only terminate inwardly of the edge ... of the diaper." [PTX 33, at 17:20-25]. In this alternate embodiment, the flap portion of the BLC prevents liquid from leaking as a result of wicking along the topsheet, because the topsheet is encased between the flap portion of the BLC and the backsheet, and the flap portion of the BLC is sealed to the backsheet at the side edge of the diaper. *Id.* at 17:10-31.

Accordingly, the Court concludes that claims 17, 18, and 21 themselves do not contain the limitation urged by Paragon, and that the absence of this limitation in these claims trumps the remarks in the prosecution history to the contrary. Claims 17, 18, and 21 therefore do not require that the topsheet terminate inboard of the proximal edge of the BLC.

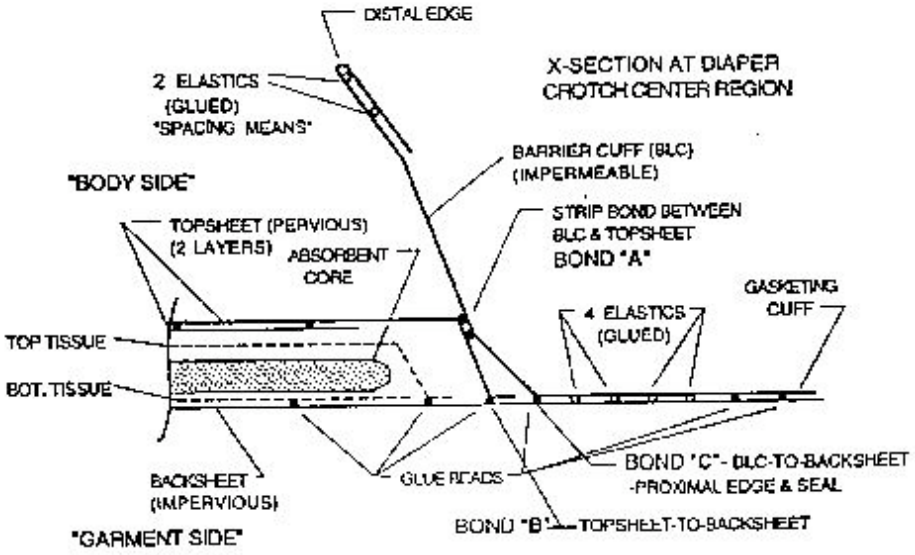
b. ***Literal Infringement***

The accused Paragon diapers consist of an absorbent core disposed between a liquid pervious topsheet and a liquid impervious backsheet. *See* [PTX 1037; DTX 67, 1083, 1086]. These diapers also contain a hydrophobic BLC, and the BLC material extends continuously from the free edge of the BLC to the outer edge of the diaper. [Tr. at 1648-49; DTX 67]. Thus, the BLC material in Paragon's diapers forms not only the BLC, but also forms the top portion of the gasketing cuff. The Paragon BLC accordingly falls within Dragoo's preferred embodiment, i.e., the Paragon BLC has a flap portion and a channel portion. The fact that the accused diapers contain each of these elements is not disputed by Paragon.

1) ***Claim 1***

Claim 1 of the Dragoo patent requires that the topsheet terminate inward of the proximal edge of the BLC. The following is a cross-sectional depiction of the Paragon BLC drawn by P & G's expert Mr. Moran in his laboratory notebook. [PTX 31, at 92].FN16

FN16. The Court recognizes that this drawing is a rough schematic drawing of a cross-section of the Paragon diaper. Based on the other diagrams presented by the parties, [PTX 1037; DTX 67, 68, 69], the Court finds that this depiction is accurate enough to use as a reference for purposes of illustrating this Court's description of the accused diapers. *See* [Tr. at 432-33]; *see also* [DTX 1086].



From the distal edge of the BLC which stands vertically above the diaper, the BLC in the accused diapers extends downward where it is attached by a sonic bond to the topsheet at point A, then continues further downward where is attached by a seal means to the backsheet at point C, and then extends laterally outward and is again sealed to the side of the diaper. *See also* [PTX 1037; DTX 67, 68, 69, 1083, 1086; Tr. 1709, 1785]. The topsheet extends laterally outward of the point at which the sonic bond is formed between it and the BLC, and is sealed to the backsheet at point B, a point which is laterally inboard of the BLC-to-backsheet seal at point C. *See also* [Tr. 318, 1709-10, 1785-86; PTX 1037; DTX 67, 68, 69].

[33] Paragon asserts that point A, where the BLC is sonically bonded to the topsheet, represents the proximal edge of the BLC. Because the topsheet extends laterally outward of point A, according to Paragon, the accused diapers do not literally infringe claim 1. P & G asserts that the proximal edge occurs at point C, where the BLC is first sealed to the backsheet, and the topsheet therefore terminates inboard of the proximal edge.

Because the BLC material in the Paragon diapers extends to the side edge of the diaper, the Paragon BLC consists of a flap portion and a channel portion, as described in the preferred embodiment of the Dragoo invention. The proximal edge thus represents the bottom of the channel portion of the BLC and the bottom of the channel formed in the accused diapers.

In Paragon's diapers, the liquid body exudates not immediately absorbed by the absorbent core which flow or move across the topsheet either penetrate the liquid pervious topsheet at the edges of the absorbent core or are contained above the topsheet at point A until the diaper is removed. [Tr. 456-58; 1798-99]. Given the liquid pervious nature of the topsheet material, the liquid exudates which penetrate the topsheet are permitted to proceed again through the topsheet between points A and B to be contained in the channel

formed by the BLC at the BLC-to-backsheet seal at point C. [Tr. 456-58]. This conclusion is empirically supported by the tests performed by Mr. Moran, which demonstrated that most if not all of the synthetic urine applied to the Paragon diapers was contained at point C. *Id*.

Based on the Dragoo patent's definition of Channel this Court holds that the location of the proximal edge is point C, where the BLC is sealed to the backsheet. As discussed previously, the Dragoo patent defines that "channel" being formed along the inner surface of the channel portion of the BLC between the proximal and distal edges. [PTX 33, at 12:58-60]; *see* [Tr. 431-32, 438]. The channel "forms a barrier to the flow of exudates as they tend to move or float across the topsheet." [PTX 33, at 12:60-62]. The channel further "restains [sic], contains and holds exudates within the diaper until the diaper can be removed." *Id*. at 12:62-64. Although some of the unabsorbed liquid exudates may be held above the topsheet adjacent to the sonic bond at point A, the evidence establishes that a portion of the liquid waste will be contained at the seal between the liquid impermeable BLC and the liquid impervious backsheet. Mr. Moran testified to this effect as follows:

the testing that I conducted ... indicated that there was absolutely no barrier to the flow of liquids through th[e sonic] bond or through the intervening portion of the topsheet....

... [T]he effective result was that the liquids immediately appeared at the seal between the barrier leg cuff and the backsheet and, therefore, I concluded that that was the proximal edge of the barrier cuff, because it channeled the material to that point in the diaper.

[Tr. 457].

The only evidence that Paragon presented that the proximal edge is formed at the sonic bond and the seal between the topsheet at point A was the testimony of its expert Mr. Zajackowski. Although Mr. Zajackowski opined that the sonic bond represented the proximal edge, he did not provide the Court with an explanation as to how he came to this conclusion. [Tr. at 1708-09]. Mr. Zajackowski did, however, admit, that the BLC material continues beyond the sonic bond and is sealed to the backsheet. [Tr. at 1785]. Mr. Zajackowski also indicated in his discussion of the Lawson patent that not all of the liquid body exudates would be contained above the topsheet in the accused diapers. *See* [Tr. 1799]. Notwithstanding his opinion to the contrary, Mr. Zajackowski's admission that at least a portion of the unabsorbed liquid exudates will flow through the topsheet to point C supports the conclusion that this point represents the proximal edge, given the definition of "channel" in the Dragoo patent.

Based on the foregoing, the Court holds that the BLC-to-backsheet seal at point C forms the proximal edge of the BLC in Paragon's accused diapers. The Paragon diapers therefore contain the claim 1 requirements pertaining to the positioning of the topsheet and the proximal edge of the BLC. The topsheet in the accused diapers terminates inward of the proximal edge of the BLC, and a seal means adjoins the proximal edge to the absorbent article and provides a leakage-resistant seal along the proximal edge. In addition, the Paragon diapers prevent the wicking of liquids underneath and beyond the BLC because the topsheet is terminated inward of the leakage-resistant seal at point C. Accordingly, the accused Paragon diapers meet every claim element of claim 1 of the Dragoo patent, and, therefore, Paragon has directly and literally infringed claim 1 of the Dragoo patent.

2) *Claim 3*

Claim 3 is dependent from claim 1 and adds to claim 1 only the requirement that the BLC must be liquid impermeable. This Court has previously concluded that the BLC material employed by the accused diapers is liquid impermeable. Accordingly, the accused Paragon diapers meet every claim element of claim 3 of the Dragoo patent, and, therefore, Paragon has directly and literally infringed claim 3 of the Dragoo patent.

3) *Claim 17*

Given this Court's conclusion that claim 17 does not require that the topsheet terminate inboard of the proximal edge, there is no dispute that the Paragon diapers literally infringe claim 17, regardless of the location of the proximal edge in the accused diapers. Paragon's BLCs have a flap portion and a channel portion. Paragon's diapers employ an attachment means adjacent to the edge of the diaper to attach the flap portion of the BLC to the backsheet, thereby providing a leakage-resistant seal. Paragon's topsheet terminates inboard of the side edge of the diaper. [Tr. at 1788]. Accordingly, the accused Paragon diapers meet every claim element of claim 17 of the Dragoo patent, and, therefore, Paragon has directly and literally infringed claim 17 of the Dragoo patent.

4) *Claim 18*

Claim 18 is dependent from claim 17 and adds only the requirement that a seal means must be positioned along the proximal edge for adjoining the proximal edge to the gasketing flap. This Court has determined with respect to claim 1 that the accused diapers contain this limitation. *See* [Tr. 323-24]. Accordingly, the accused Paragon diapers meet every claim element of claim 18 of the Dragoo patent, and, therefore, Paragon has directly and literally infringed claim 18 of the Dragoo patent.

5) *Claim 21*

Claim 21 is dependent from claim 18 and adds to claim 18 the limitation that the BLC must be integral with the gasketing flap and the flap portion of the BLC must be liquid impermeable. There is no dispute that the BLC is integral with the gasketing flap. *See* [Tr. 324-25]. Additionally, this Court determined in its discussion of infringement of the Lawson patent that BLC material was liquid impermeable. Accordingly, the accused Paragon diapers meet every claim element of claim 21 of the Dragoo patent, and, therefore, Paragon has directly and literally infringed claim 21 of the Dragoo patent.

4. *Conclusion-Infringement*

The Court concludes that Paragon's Ultra diapers which contain the BLC feature directly and literally infringe claims 17, 21, 27, and 28 of the Lawson patent. Alternatively, the Court finds that the accused diapers infringe these claims under the doctrine of equivalents, if literal infringement does not exist.

In addition, the Court concludes that the accused diapers directly and literally infringe claims 1, 3, 17, 18, and 21 of the Dragoo patent.

E. *Invalidity-The Lawson Patent*

1. *Legal Standard*

[34] Each claim of a patent is presumed valid. 35 U.S.C. s. 282. The party asserting invalidity has the burden of proving facts to establish invalidity by clear and convincing evidence. Loctite Corp. v. Ultraseal, Ltd., 781 F.2d 861, 872 (Fed.Cir.1985). The clear and convincing standard of proof is "an intermediate standard which lies between 'beyond a reasonable doubt' and a 'preponderance of the evidence.' " Buildex, Inc. v. Kason Indus., Inc., 849 F.2d 1461, 1463 (Fed.Cir.1988).

Paragon asserts that the claims at issue in the Lawson patent are invalid ad anticipated by a prior patent under 35 U.S.C. s. 102(e), and by a prior invention under 35 U.S.C. s. 102(g). Paragon also contends that the Lawson claims are invalid as obvious under 35 U.S.C. s. 103.

2. ***Anticipation***

[35] [36] [37] [38] [39] [40] Anticipation is a question of fact. Scripps Clinic & Research Foundation v. Genentech, Inc., 927 F.2d 1565, 1576 (Fed.Cir.1991). Invalidity by reason of anticipation "requires that all of the elements and limitations of the claim are found within a single prior art reference." *Id.; see* Verdegaal Bros., Inc. v. Union Oil of California, 814 F.2d 628, 631 (Fed.Cir.1987); Phillips Petroleum Co. v. United States Steel Corp., 673 F.Supp. 1278, 1287 (D.Del.1987), *aff'd* 865 F.2d 1247 (Fed.Cir.1989). "That which would literally infringe if later in time anticipates if earlier than the date of the invention." Lewmar Marine Inc. v. Barient, Inc., 827 F.2d 744 (Fed.Cir.1987). For an invention to be anticipated, there must not be any differences "between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." Scripps, 927 F.2d at 1576. If more than one reference is needed to establish invalidity, then anticipation under s. 102 cannot be found. Continental Can Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1267 (Fed.Cir.1991). The issue of anticipation is best resolved by performing a step-by-step comparison between the prior reference and the asserted claims, keeping in mind at all times that the claims cannot be construed differently for invalidity issues from the construction given them for purposes of the infringement analysis. *See, e.g.,* Beachcombers v. WildeWood Creative Products, Inc., 31 F.3d 1154, 1163 (Fed.Cir.1994); Intervet America, Inc. v. Kee-Vet Lab., Inc., 887 F.2d 1050, 1053 (Fed.Cir.1989).

a. ***Anticipation by Prior Patent***

[41] Under 35 U.S.C. S 102(e), a person is not entitled to a patent for an invention described in a prior patent.FN17 A prior patent discloses all matter described in the specification as well as the claims. 1 Chisum, *supra,* s. 3.06[3]. Paragon asserts that the Enloe patent, the patent at issue with Lawson in the Seattle litigation between P & G and Kimberly-Clark, anticipates each of the claims in the Lawson patent asserted by P & G. FN18 Like the Lawson patent, the Enloe patent claims an improvement over the prior art through the addition of the BLC feature, which Enloe refers to as "side pockets or flaps." [PTX 28, at 2:57-3:18]. Unlike Lawson, however, the Enloe patent teaches the use of fluid pervious flaps which are designed to slow the sideways flow of liquids, and to prevent the sideways flow of solid material. *Id.* at 2:42-47, 4:14-18. According to the patent, the Enloe invention enhances the containment and absorption of body exudates and enhances skin dryness, thereby decreasing the potential for skin irritation by causing an extra layer of material, the BLCs, to be disposed between the absorbent core and the skin of the wearer. *Id.* at 2:42-54.

FN17. Section 102(e) provides in pertinent part:

A person shall be entitled to a patent unless the
invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent....

FN18. There is no dispute that the Enloe patent constitutes prior art for purposes of an invalidity analysis.

There is no dispute that the Enloe patent teaches each of the elements contained in the Lawson claims at issue, with the exception of Lawson's requirement that the BLCs must be liquid impermeable. Paragon contends that although the Enloe claims describe a diaper with liquid pervious BLCs, the Enloe specification also teaches the use of liquid impermeable BLCs. Paragon relies on the fact that the specification provides that the preferred materials for the BLCs is a liquid pervious material. Paragon asserts that this statement suggests that liquid impermeable materials may alternatively be used as BLCs.

Contrary to Paragon's assertion, the Enloe patent not only does not disclose the use of liquid impermeable BLCs, but expressly teaches away from the use of this type of material. The Enloe patent discusses prior art diapers which employ sealing strips of waterproof or liquid impermeable material which form fluid catching seals between the legs of the wearer. *Id*. at 1:50-2:32. According to the patent, the use of waterproof seals to enhance containment resulted in the emergence of other problems, namely, the waterproof flaps caused urine, moisture, and liquid fecal material to collect next to the skin and cause skin irritation. *Id*. at 2:33-41. The Enloe invention claimed an improvement over the prior art in that it teaches the use of fluid pervious BLCs which enhance absorption as well as decrease the potential for skin irritation. *Id*. at 2:42-54.

The passage relied on by Paragon does not amount to a retreat from Enloe's criticism of the use of waterproof materials for the BLCs. The Enloe specification provides:

The flaps [BLCs] are attached to, or formed from [the topsheet], inwardly of [the sides of the diaper]. As can be appreciated, if [the] flaps are formed from [the topsheet], the flaps are the same material as [the topsheet]. However, if the flaps are attached to [the topsheet], the flaps may be made from a different material. The preferred material for [the] flaps is a liquid pervious material.... [The] [f]laps form pockets into which solid fecal material collects and is contained. Alternately, fluidic fecal material is collected by the pockets and is essentially strained allowing the liquid portion to be absorbed by the absorbent pad or body of the garment.

Id. at 4:54-68. This passage certainly does not teach that a waterproof or liquid impermeable material should be used to form the BLCs. At best, this portion of the specification discloses a non-preferred embodiment in which the flaps collect fluidic as well as solid fecal material. The specification does not, however, in any way suggest the use of a material which is designed to prevent the strikethrough of liquid exudates by retarding the movement of liquid through the BLC.

Moreover, two other tribunals have reached the conclusion that the Enloe patent does not disclose the use of liquid impermeable BLCs. In the Seattle litigation, the United States District Court for the Western District of Washington held that the Lawson claims requiring liquid impermeable BLCs are patentably distinct from the Enloe patent, and thus, not anticipated by the Enloe patent. [DTX 184, para. 92]. The Court commented:

No other embodiment of the Enloe flap material is described in the Enloe '116 patent other than material that allows the relevant body exudates, urine and runny BM, to pass readily through the flaps. The patent describes no other mechanism for exudate containment. There is no teaching or suggestion that the invention would work to achieve its described purpose with flaps that are *impervious* to these exudates.

Id. para. 24. Likewise, in an interference proceeding between the Lawson and Enloe patents, the Patent and Trademark Office found that Lawson's liquid impermeable claims were not anticipated by the Enloe patent. [PTX 93, para. 4].

This Court is in agreement with these decisions. The Enloe patent does not disclose, even in a non-preferred embodiment, a diaper which employs liquid impermeable BLCs as that term has been construed by this Court. Accordingly, the Lawson claims at issue each contain an element that is not disclosed by the Enloe patent. The Lawson claims at issue are therefore not invalid as anticipated by the Enloe patent.

b. ***Anticipation by Prior Invention***

Paragon contends that Mr. Enloe's initial patent application and his initial invention disclosure constitute a prior invention which anticipates the Lawson claims at issue under 35 U.S.C. s. 102(g). In his initial invention disclosure, Mr. Enloe indicated that a liquid impervious material could be used to form the BLC,

even though other types of materials are preferred. [DTX 194A, at DL 148354].FN19 Although Mr. Enloe's initial patent application did not claim a specific embodiment requiring liquid impermeable BLCs, it contained a generic claim for the BLCs without a limitation as to the material to be used. Claim 1 of Mr. Enloe's initial application provides:

FN19. The alleged Enloe invention disclosure relied on by Paragon is an appendix attached to Mr. Lawson's reply brief in the *Lawson v. Enloe* interference proceeding. Paragon attempted to introduce this document through several witnesses during trial, but was unsuccessful due to a failure to establish a foundation for its admissibility. Fed.R.Evid. 602. Paragon again tried to introduce this document at the end of its case, and the Court admitted it conditionally giving the parties the opportunity to address the admissibility issue in the briefs. [Tr. at 3419-21]. P & G argues that this document should be excluded on relevancy and hearsay grounds. Given the Court's conclusion that Enloe abandoned any claim he had to a liquid impermeable BLC, the Court will assume arguendo that this document is admissible for purposes of the invalidity issues.

A unitary diaper having a fluid pervious liner, a fluid impervious backing essentially coterminous therewith and an absorbent matrix positioned between said facing and said backing, a waist portion formed by a first and second end of said diaper with fastening means on at least one of said ends for securement about the waist of the baby when the diaper is worn, a crotch portion substantially centrally disposed with respect to said ends, and two essentially symmetrical, oppositely disposed elasticized leg portions with each leg portion generally transversely corresponding to and disposed outwardly from said crotch portion, and *two flaps extending toward each end*.
[DTX 236, at 12] (emphasis added). Claim 2 of Mr. Enloe's initial patent application contained the limitation that the BLC material must be "fluid permeable." *Id*. The patent examiner rejected both of these claims as being anticipated by U.S. Patent No. 4,490,148 to Beckestrom. Id. at 22.
Upon rejection of these claims, Mr. Enloe abandoned his patent application, opting not to appeal his case or argue the rejection, or amend the rejected claims. Id. at 45; [Tr. at 2930-31, 2936]. Mr. Enloe instead refiled a new patent application, which ultimately resulted in the issuance of the Enloe patent. *See* [DTX 235]. Mr. Enloe's new application did not include a generic BLC claim, but each of the claims therein contained the limitation that the BLC be formed from a fluid or liquid pervious material. Id.

[42] Section 102(g) provides that a person shall be entitled to a patent unless "before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it." Under this provision, a patent may be anticipated due to the prior conception and reduction to practice by another of the patented subject matter, provided that the prior invention was not abandoned, suppressed, or concealed. Checkpoint Sys. Inc. v. U.S. Int'l Trade Comm'n, 54 F.3d 756, 761-62 (Fed.Cir.1995); Texas Instruments Inc. v. U.S. Int'l Trade Comm'n, 988 F.2d 1165, 1177 (Fed.Cir.1993). It is clear that, prior to Mr. Lawson's invention, Mr. Enloe conceived and constructively reduced to practice a diaper containing liquid impermeable BLCs by the filing of a patent application. *See* Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1376 (Fed.Cir.1986) ("as has long been the law, constructive reduction to practice occurs when a patent application on the claimed invention is filed"). The parties dispute whether Enloe abandoned, suppressed, or concealed this invention, as well as who bears the burden of proof on this issue.

[43] [44] Although, as Paragon points out, there is a split of authority among earlier cases as to which side bears the burden of proof on this issue, this Court concludes that the better-reasoned authority places the burden of proving abandonment, concealment, or suppression on the party challenging the validity of the patent. *See* Oak Indus., Inc. v. Zenith Elec. Corp., 726 F.Supp. 1525 (N.D.Ill.1989). Concomitant to the presumption of validity afforded to all patents is the rule that a party challenging the validity of a patent bears the burden of establishing all facts necessary to prove invalidity. Checkpoint Sys., 54 F.3d at 761 (indicating that the party asserting invalidity bears "the burden of establishing, by clear and convincing

evidence, facts which support the ultimate legal conclusion of invalidity under s. 102(g)"). Thus, this fundamental tenet of patent law necessarily leads to the conclusion that the party claiming invalidity under section 102(g) bears of the burden of proving the absence of abandonment, suppression, and/or concealment, given the express inclusion of this element in section 102(g). Oak Indus., 726 F.Supp. at 1531 (stating that "this standard necessarily follows from the rule that the burden of proving patent invalidity is at all times on the party challenging the patent, and never shifts").

Moreover, the Court finds that the cases cited by Paragon, which place the burden of proving abandonment on the patentee, to be unpersuasive or inapplicable. Paragon relies on Refac Elec. Corp. v. R.H. Macy & Co., 9 U.S.P.Q.2d 1497, 1988 WL 93835 (D.N.J.1988), *aff'd,* 871 F.2d 1097, 1989 WL 27823 (Fed.Cir.1989), Amerline Corp. v. Cosmo Plastics Co., 407 F.2d 666 (7th Cir.1969), and Young v. Dworkin, 489 F.2d 1277 (C.C.P.A.1974).

The decisions in *Refac* and *Amerline* followed an earlier decision by the Seventh Circuit in International Tel. Mfg. Co. v. Kellogg Switch Bd. & Supply Co., 171 F. 651 (7th Cir.1909). In that case, the appellant claimed that the patent in suit was invalid because the inventor had abandoned his invention or dedicated it to the public. *Id*. at 656. The court was thus called upon to evaluate the equivalent of a defense under 35 U.S.C. s. 102(c), rather than a section 102(g) defense. Because the party claiming abandonment was also the party challenging the validity of the patent, the fact that the court placed the burden of proof on the party claiming abandonment does not support the rule adopted in *Refac* or *Amerline,* where the patentee was the party claiming abandonment of a prior invention. *See* Oak Indus., 726 F.Supp. at 1530 n. 3.

Additionally, the decision in *Young* is distinguishable from the present case because *Young* involved an interference proceeding. *See* 489 F.2d at 1277. The decision in *Young* to place the burden on the party claiming abandonment is inapposite to the present case, given that there is no presumption of validity in an interference proceeding. *See* Oak Indus., 726 F.Supp. at 1530 n. 3.

Paragon also asserts that Tone Bros. v. Sysco Corp., 28 F.3d 1192 (Fed.Cir.1994), represents an analogous situation in which the Federal Circuit placed the burden on the patentee to establish the non-existence of an element of an anticipation defense. This Court disagrees with Paragon's characterization of that case. In *Tone Bros.,* the district court held that the patent in suit was invalid because the invention described therein was in public use within the meaning of 35 U.S.C. s. 102(b). *Id*. at 1196-97. In reaching this conclusion, the district court concluded that the patentee could not as matter of law adduce evidence that the prior use of the invention was for an experimental purpose to counter defendant's prima facie case. *Id*.

The Federal Circuit reversed, holding that the district court erred in failing to consider the patentee's argument that the prior use was for an experimental purpose. *Id*. at 1200. In reaching this conclusion, the court made clear that the experimental use analysis does not form a separate element of the inquiry, but forms a part of the determination of whether there was a prior public use:

We have held that, in order to determine whether an invention was in public use within the meaning of section 102(b), a court must consider how the totality of the circumstances of the case comports with the policies underlying the public use bar....

Evidence of experimentation occurring is part of the totality of the circumstances considered in a public use inquiry. The fact that there was experimentation is relevant to the question of whether the activities of the inventor were at odds with any of the four policies underlying the public use bar. In other words, the inquiry is not: (1) was there a public use, and, if so, (2) was the public use for a bona fide experimental purpose and thus excused. Rather, there is only one inquiry-was there a public use within the meaning of section 102(b).

Id. at 1198. Thus, contrary to Paragon's assertion, the court in *Tone Bros*. did not place the burden on the

patentee to establish a separate element of an anticipation defense; the court merely indicated that the burden of production shifts to the patentee once the challenger has made out a prima facie case of anticipation. *Id*. at 1197 n. 4.

[45] Accordingly, the Court concludes that Paragon, as the party challenging the validity of the Lawson patent under section 102(g), has the burden of establishing by clear and convincing evidence that Mr. Enloe did not abandon, suppress, or conceal his initial patent application and invention disclosure, which described a diaper with liquid impermeable BLCs.

Paragon produced no evidence to establish that Mr. Enloe did not abandon, suppress, or conceal his invention of a diaper containing liquid impermeable BLCs. In fact, the only evidence presented on this issue supports the conclusion that Mr. Enloe abandoned, suppressed, and concealed this prior invention. The undisputed evidence establishes that, when the patent examiner rejected Claim 1 in the initial patent application, Mr. Enloe did not appeal the case or argue the rejection, instead he opted to refile a new patent application that did not include this claim. [Tr. at 2930-31, 2936]. Paragon produced no evidence that Mr. Enloe ever disclosed the use of liquid impermeable BLCs to the public or ever actually reduced this invention to practice. *See* Lutzker v. Plet, 843 F.2d 1364, 6 U.S.P.Q.2d 1370, 1371 (Fed.Cir.1988) ("when there is an unreasonable delay between the actual reduction to practice and the filing of a patent application, there is a basis for inferring abandonment, suppression, or concealment"). The Court therefore holds that Paragon did not satisfy its burden of establishing by clear and convincing evidence that Mr. Enloe did not abandon, suppress, or conceal his initial patent application and invention disclosure, which disclose the use of liquid impermeable BLCs. Accordingly, Paragon has not established that the claims at issue in the Lawson patent are anticipated by prior invention under 35 U.S.C. s. 102(g).

3. *Obviousness*

[46] A patent may be found invalid for obviousness in accordance with 35 U.S.C. s. 103. Under section 103, a Court must determine whether "the subject matter as a whole would have been obvious at the time the invention was made." FN20 Obviousness is a question of law based upon factual inquiries established by the United States Supreme Court in Graham v. John Deere Co., 383 U.S. 1, 17, 86 S.Ct. 684, 693, 15 L.Ed.2d 545 (1966). Arkie Lures, Inc. v. Gene Larew Tackle, Inc., 119 F.3d 953, 955 (Fed.Cir.1997); Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1566-68 (Fed.Cir.1987). The factors to consider in determining whether obviousness is present include: 1) level of ordinary of skill in the art at the time of the invention; 2) scope and content of the prior art; 3) differences between the prior art and the subject patent; and 4) secondary considerations such as commercial success, long felt but unresolved need, and failure of others. Graham, 383 U.S. at 17, 86 S.Ct. at 693; Arkie Lures, 119 F.3d at 955.

FN20. Section 103 provides in pertinent part:
A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

35 U.S.C. s. 103.
[47] [48] When performing an obviousness analysis, "[f]ocusing on the obviousness of substitutions and differences, instead of on the invention as a whole, is a legally improper way to simplify the often difficult determination of obviousness." Gillette Co. v. S.C. Johnson & Son, Inc., 919 F.2d 720, 724 (Fed.Cir.1990). The Court may not, with 20-20 hindsight, utilize the claims as a template and reconstruct the invention willy-nilly by picking and choosing elements at will from the prior art. *See* In re Gorman, 933 F.2d 982, 987 (Fed.Cir.1991). The "critical question, as s. 103 makes plain, is whether the invention as a whole would

have been obvious to one of ordinary skill in the art at the time it was made." Perkin-Elmer Corp. v. Computervision Corp., 732 F.2d 888, 894 (Fed.Cir.1984).

a. ***The Graham Factors***

1) ***Level of ordinary skill in the art***

[49] [50] The decision on the issue of obviousness is made from the viewpoint of person of ordinary skill in the field of the invention. Arkie Lures, 119 F.3d at 956. A person of ordinary skill in the art is a hypothetical individual who is presumed to be aware of all of the relevant prior art. Mobil Oil Corp. v. Amoco Chemicals Corp., 779 F.Supp. 1429, 1442 (D.Del.1991) (citing Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc., 807 F.2d 955, 962 (Fed.Cir.1986)), *aff'd,* 980 F.2d 742, 1992 WL 279125 (Fed.Cir.1992). To determine the level of ordinary skill in the art, a court should consider factors such as the educational level of the inventor and of those in the relevant industry and the sophistication of the technology involved. Ryko Mfg. Co. v. Nu-Star, Inc., 950 F.2d 714, 718 (Fed.Cir.1991).

[51] The Court agrees with P & G and Paragon that the level of ordinary skill in the relevant art would be typified by an individual with a college degree in engineering or one of the sciences and three to five years work experience in the diaper industry. *See* [Tr. at 160, 3185-86]. This hypothetical individual would understand the basics of diaper design and the characteristics of the available materials. [Tr. at 3186]. The Court also finds that one of ordinary skill in the art would understand that one of the problems associated with disposable diapers during the relevant time frame is the problem of containment of runny BMs and other liquid exudates. *See* [PTX 28, at 1:42-44].

2) ***Scope and content of the prior art***

[52] The scope of the relevant prior art is defined as that which is "reasonably pertinent to the particular problem with which the inventor was involved." Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1535 (Fed.Cir.1983) (quoting In re Wood, 599 F.2d 1032, 1036 (Cust. & Pat.App.1979)). Paragon asserts that the claims at issue in the Lawson patent are invalid as obvious in light of three prior art patents: Japanese Utility Model No. 41-18359 (the "Japanese Utility Model"), Beckestrom U.S. Patent No. 4,490,148 (the "Beckestrom patent"), and the Enloe patent.

a) ***The Japanese Utility Model***

The Japanese Utility model, which was published in 1966, discloses a non-disposable diaper cover having two sets of leg cuffs. [DTX 257; Tr. at 1621, 3016-17]. At the time of publication of the Japanese Utility Model, a diaper cover formed the outer part of a two-piece containment system. [Tr. at 186-87, 1621-22, 3018]. Prior to usage, a removable insert was placed inside the diaper cover. [Tr. at 1621-22, 3018]. After usage of this two-piece system, the removable insert was taken out, and the diaper cover was reused after cleaning and the addition of a fresh removable insert. [Tr. at 1622, 1808-09].

In the diaper cover described by the Japanese Utility Model, the main body of the diaper cover is formed from a waterproof cloth which is overlaid on a "suitable" surface fabric. [DTX 257, at 2]. Thin waterproof pieces are joined at one end to the main body by sewing or welding, with the free end of these pieces spaced away from the main body to form a pouch. Id. at 2, Fig. 2. At least one row of air-porous holes are formed on these waterproof pieces toward their free end. Id. at 2. According to the patent, the waterproof pieces are designed to prevent the leakage of urine and prevent the inside of the cover from getting humid as a result of the air-porous holes. Id. In addition, the Japanese Utility Model describes the use of elasticized edges at the leg openings. Id. at 2, Fig. 2. The Japanese Utility Model refers to the removable insert only as a "diaper." Id. at 4.

b) *The Beckestrom Patent*

The Beckestrom patent was issued in December 1984, and is directed to a protector against incontinence. [DTX 249]. Like the Japanese Utility Model, the Beckestrom patent is directed to a part of a two-piece containment system. The subject of the Beckestrom patent is an insert piece, the inner portion of this two-piece system, which is designed to be held in place with a pair of briefs or a girdle, band, or tape. Id. at 1:54-57. The Beckestrom insert consists of a bottom, liquid-tight layer with lateral portions, an absorbent body, and a liquid permeable top layer. Id. at 1:8-16. The absorbent body is fixed to the bottom liquid-tight layer, with the latter being longer and substantially wider than the former. Id. at 2:31-33. The lateral portions of the bottom layer are folded over inwards around the absorbent body to form side flaps. Id. at 2:33-35, Fig. 3. The side flaps are provided with elastic bands at their free edge. Id. at 2:35-37. This enables the lateral portions to form a seal against the thigh creases of the crotch when the diaper is fastened in place. Id. at 1:50-54. The liquid permeable layer is placed on top of the side flaps and is fixed to the ends of the insert and to the free end of the side flaps. Id. at 51-56, Fig. 1. Alternatively, the top layer is placed on the absorbent body and extends to the side edges of the absorbent body, terminating inside of the side flaps. Id. at 3:24-29, Fig. 8.

c) *The Enloe Patent*

For a discussion of the Enloe patent, *see supra* section II.E.2.a.

3) *The differences between the prior art and the subject patents*

Both the Japanese Utility Model and the Beckestrom patent differ from the Lawson patent in that they are directed to a two-piece containment system and do not disclose an integral disposable diaper. *See* [Tr. at 3018, 3025]. The Japanese Utility Model describes a diaper cover, the outer piece of this two-piece system.

Relying on the testimony of its expert, Peter Zajackowski, Paragon asserts that a person of ordinary skill in the art would conclude that the diaper cover was designed to be used with either a cloth or a disposable diaper. *See* [Tr. at 1621-22]. According to Paragon, the disposable insert would have consisted of a liquid pervious topsheet and absorbent core placed atop the backsheet of the diaper cover. [DTX 230; Tr. at 1629-30]. P & G counters that, given the time frame of the invention, a person of ordinary skill in the art would conclude that the diaper cover described in the Japanese Utility Model was designed to be used with a cloth diaper. *See* [Tr. at 3018, 3035-36]. P & G's expert, Richard Moran, testified that the cloth diaper was "far and away the dominant diaper used in Japan, as late as 1978, when [he] performed a rather thorough study of the diapering situation in Japan." [Tr. at 3035].

Paragon presented no evidence, other than the testimony of Mr. Zajackowski, that the diaper cover described by the Japanese Utility Model was designed for use or was in fact used with a disposable insert or disposable diaper. Paragon likewise presented no evidence to counter Mr. Moran's assertion that cloth diapers were overwhelmingly understood to be the type of diaper in use in Japan at the time of issuance of the Japanese Utility Model. Accordingly, the Court finds that a person of ordinary skill in art at the time of the Lawson invention would have concluded that the diaper cover described in the Japanese Utility Model was designed for use with a cloth diaper.

Thus, the Japanese Utility Model discloses a diaper cover consisting of a waterproof backsheet, two waterproof BLCs with the distal edge spaced away from the backsheet, and elasticized edges at the leg openings, [DTX 257], to be used with a cloth diaper insert which is designed to absorb and retain fluidic body exudates. *See* [PTX 18]. This system differs from the claims at issue in the Lawson patent in that it is not integral or disposable and does not contain a liquid pervious topsheet.FN21

FN21. The Lawson patent provides: "The absorbent core may be any means which is generally

compressible, conformable, nonirritating to the wearer's skin, capable of absorbing and retaining fluids and certain body exudates." [PTX 1, at 5:32-35]. Thus, a cloth diaper insert comes within Lawson's definition of an absorbent core.

In addition, the BLCs in the Japanese Utility Model perform a different function than that of the Lawson BLCs. Regarding the role of the BLCs in enhancing containment, the Japanese Utility Model provides that "a pouch is formed between the main diaper cover body and [the BLC] so that the leakage of urine or the like to the outside is completely prevented since the diaper is kept in this pouch and is isolated from the edges of both leg holes." [DTX 257, at 4]. The BLCs in the Japanese Utility Model thus enhance containment by holding the diaper in place and keeping it in the "pouch," so that it cannot reach the leg bands. Id.; [Tr. at 3036].

The Beckestrom patent, directed to the inside piece of the two-piece system, comprises an absorbent body fixed to a liquid impervious backsheet. The lateral ends of the backsheet, which extend beyond the ends of the absorbent core, are folded around the absorbent core to form side flaps. The flaps are depicted as sitting directly on top of the absorbent body or, alternatively, a liquid pervious topsheet. [DTX 249, at Figs. 3, 7-9]. The Beckestrom invention was designed to be used with a pair of briefs or other secondary means for holding it in place against the crotch of the wearer. [Tr. at 1638, 3022-23, 3025].

Unlike the Lawson patent, the Beckestrom patent does not disclose a dual-cuff diaper. In fact, the Beckestrom patent expressly teaches away from the use of gasketing cuffs. [Tr. at 1817, 3023-25]. The patent cites to several disadvantages of diapers using gasketing cuffs. It indicates that gasketing cuffs give rise to a risk of leakage because they cause the diaper to be tensioned against the thighs when in place. [DTX 249, at 1:20-25]. Movement of the thighs affects the position of the diaper and may cause a break in the seal between the diaper and the wearer. Id.; [Tr. at 3023-24]. The patent also indicates that diapers which do not employ gasketing cuffs are more comfortable to the wearer. [DTX 249, at 2:3-6].

Thus, the invention described in the Beckestrom patent differs from the Lawson claim at issue in three respects. First, the Beckestrom patent is not directed to an integral diaper. Second, the BLCs described by the Beckestrom patent are formed from a continuous segment of the backsheet. Third, the Beckestrom patent teaches away from the use of an elastically contractible gasketing cuff disposed adjacent to the edge of the diaper.

The Enloe patent is without question the closest prior art reference to the Lawson claims at issue. The Enloe patent, directed to an integral disposable absorbent article, discloses each of the elements of the Lawson claims at issue, with the exception of Lawson's limitation that a liquid impermeable material be used to form the BLC. The BLCs disclosed by the Enloe patent are fluid or liquid pervious, readily permitting urine to flow through them, as well as fluidic fecal material in Enloe's preferred embodiment. Although recognizing the use of waterproof side flaps in the prior art, the Enloe patent teaches away from the use of this type of material, noting that waterproof flaps can cause urine, moisture, and liquid fecal material to collect next to the skin of the wearer and cause skin irritation. [PTX 28, at 2:33-54].

Moreover, unlike the BLC described in the Lawson patent which is designed to prevent the strikethrough of all body exudates, the Enloe BLC is designed to act as a strainer, separating fluidic body exudates from solid fecal material. The Enloe BLCs "slow[ ] the sideways flow of fluidic fecal material and stop [ ] essentially all the sideways flow of solid material." [PTX 28, at 2:45-48]. Thus, the Enloe patent differs from the Lawson patent both in the type of material to be used to form the BLC and in the function of the BLC.

Upon a review of the relevant prior art, the Court finds that the differences between the prior art and the claims at issue weigh strongly in favor of a finding of nonobviousness.

The Federal Circuit has made clear that the prior art must provide some reason, suggestion, or motivation whereby a person of ordinary skill in the art would make the combination that comprises the patentee's inventions. *See, e.g.,* Arkie Lures, 119 F.3d at 957; Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1578-79 (Fed.Cir.1997); In re Oetiker, 977 F.2d 1443, 1447 (Fed.Cir.1992); SmithKline Diagnostics, Inc. v. Helena Lab. Corp., 859 F.2d 878, 887 (Fed.Cir.1988). The absence of a such a suggestion, teaching or motivation in the prior art is often dispositive as to the obviousness issue. Gambro Lundia, 110 F.3d at 1579.

None of the prior art references in the present case, either alone or in combination, provide any suggestion or motivation to combine a liquid impermeable BLC with the traditional elements of a disposable diaper in the manner disclosed in the Lawson patent. The BLCs in the Japanese Utility Model, although liquid impermeable, perform an entirely different function than the Lawson BLCs. The former serve to contain an entire diaper in the "pouch" created in the crotch region, whereas the latter are used inside the diaper as a barrier to liquid exudates which float across the topsheet. The Japanese Utility Model provides no suggestion that the BLCs can be employed in a manner akin to the Lawson BLC, i.e., in the diaper insert, or that any of its teachings can be applied to an integral or disposable diaper.

The Beckestrom patent teaches away from the use of the dual-cuff method of containment disclosed in the Lawson patent. The Beckestrom patent specifically criticizes the use of gasketing cuffs disclosed by prior art diapers, stating that gasketing cuffs are uncomfortable and give rise to a risk of leakage because they cause the diaper to move with the thighs, thereby affecting the sealing ability of the diaper. Beckestrom thus cannot be combined with the Japanese Utility Model which teaches the use of a dual cuff system. Additionally, like the Japanese Utility Model, the Beckestrom patent provides no suggestion that its teachings can be applied to an integral diaper.

Finally, the Enloe patent, the indisputably closest prior art reference, provides no teaching or suggestion to use a liquid impermeable material to form the BLCs. To the contrary, the Enloe patent expressly teaches away from the use of such materials, opining that "waterproof" flaps cause skin irritation by trapping urine, moisture and liquid fecal material next to the skin. Significantly, the Enloe patent does not indicate that the use of fluid pervious flaps results in the sacrifice of one benefit-containment-for an improvement in another-the decrease in skin irritation. Instead, the Enloe patent teaches that the use of fluid pervious flaps achieves both benefits, decreasing the potential for skin irritation while "enhanc[ing] the containment and absorption of urine and other fluid body exudates, such as liquified fecal material." [PTX 28, at 2:42-61]. Thus, the Enloe patent does not suggest any benefit to the use of a liquid impermeable BLC material.

[53] Because the Enloe patent teaches away from the use of liquid impermeable BLCs, it cannot be combined with either the Japanese Utility Model or the Beckestrom patent to render obvious the Lawson claims at issue. As the Federal Circuit has made clear, the party challenging a patent's validity

cannot pick and choose among the individual elements of assorted prior art references to recreate the claimed invention. [It] has the burden to show some teaching or suggestion in the references to support their use in the particular claimed combination. A holding that combination claims are invalid based merely upon finding similar elements in separate prior art patents would be "contrary to statute and would defeat the congressional purpose in enacting Title 35."

SmithKline Diagnostics, 859 F.2d at 886-87 (citing Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1577 (Fed.Cir.1987)) (citations omitted). There is no motivation or suggestion to combine the liquid impermeable BLCs disclosed in Beckestrom or the Japanese Utility Model with the other elements disclosed by the Enloe patent. In the absence of the suggestion or teaching in the prior art to make this combination, Paragon's case of obviousness "suffers a significant deficiency." Gambro Lundia, 110 F.3d at 1579.

Despite the absence of any teaching or suggestion in the prior art to make the combination disclosed by the Lawson patent, Paragon nonetheless asserts that the prior art establishes that the Lawson claims at issue would have been obvious as a mere substitution of materials pursuant to Hotchkiss v. Greenwood, 52 U.S.(11 How.) 248, 13 L.Ed. 683 (1850). The patent at issue in *Hotchkiss* claimed clay and porcelain door knobs. *Id*. at 248-49. Prior door knobs were constructed in the same manner, but made out of metal. The trial court instructed the jury that if knobs of the same form made out of metal or other materials were known and used prior to the issuance of the patent so that a knob of clay or porcelain is a "mere substitution of materials," then the patent is void. *Id*. at 252-53. The jury found the patent void, and the Supreme Court upheld this instruction, stating that

this patent cannot be sustained as a patent for the exclusive privilege of using clay for the manufacture of knobs, instead of brass, silver, or metallic compositions. That such a claim does not rise to the dignity of an invention or discovery, but is a mere substitution of one material in place of another, for making the same common article. There is no change proposed in the manner of working the clay, no improvement in the machinery used to produce the result, and no new result is obtained; the same identical knobs are produced and applied in the same way; the only change is in the material used, and we suppose that a mere change of one material for another cannot be the subject of a patent.

Id. at 262.

Paragon asserts that the Lawson claims at issue are invalid under *Hotchkiss* as a mere substitution of a liquid impermeable material to form the BLC for the liquid pervious material disclosed in Enloe. *Hotchkiss* did not hold, however, that the substitution of one material for another can never serve as the basis for a valid patent. The Supreme Court construed *Hotchkiss* in a later substitution-of-materials case as follows: "The use of one material instead of another in constructing a known machine is, in most cases, so obviously a matter of mere mechanical judgment, and not of invention, unless some new and useful result, an increase of efficiency, or a decided saving in the operation, is clearly attained." Hicks v. Kelsey, 18 Wall. 670, 673, 85 U.S. 670, 673, 21 L.Ed. 852 (1873). Lawson's liquid impermeable flaps have a completely different functionality from Enloe's liquid pervious flaps. The EnloeBLCs are designed to act as strainers. *See* [Tr. at 110-11]. They slow the sideways flow of fluidic exudates, but ultimately allow them to pass through to be collected by the lateral edges of the absorbent core, thereby causing an extra layer of material, i.e., the BLC, to be disposed between the absorbent area and the wearer's skin. [PTX 35, at 2:42-54, 4:54-68, Fig. 1; Tr. at 210-11]. Conversely, the Lawson BLCs are designed to prevent the strikethrough of liquid exudates by retarding the movement of liquid through the BLC. [PTX 1, at 10:47-51]. Thus, the Lawson BLCs are designed to keep all liquid body exudates that are not immediately absorbed by the absorbent core in the pouch formed in the center of the diaper by the BLCs and the absorbent core. *Id*. at Abstract, 2:18-28; [Tr. at 210-12]. In addition, the use of liquid impermeable BLCs in accordance with the Lawson patent results in improved containment benefits. See [Tr. at 116]. Given these differences in the operation and performance of the two types of materials, this case is distinguishable from the metal-to-clay substitution invalidated in *Hotchkiss*.

Paragon also asserts that statements of two P & G inventors, Mr. Lawson and Mr. Buell, establish that the permeable-to-impermeable substitution would have been obvious to one of ordinary skill in the art. Paragon specifically relies on Mr. Lawson's assertion that the use of a liquid impermeable material was a "common sense" decision:

"Question: Now, do you know why it is that someone tried the barrier leg cuff of a liquid impermeable material? In other words, what created an interest in trying that kind of a material as opposed to the inner liner liquid permeable material with which you earlier worked?

"Answer: Again, that material was developed by John Foreman, who was brought into [sic] work materials technology, and I can't speak for him. No one can now; he's passed away.

"But it was, to the best of my knowledge, a common sense division [sic-decision] of, we're trying to stop a fluid, a liquid, urine, from leaking through this material, so that it was a common sense policy to start looking at impermeable materials."

"Question: What knowledge do you have with respect to why the logical thinking was that a liquid impermeable material would be a better material would be better for a barrier leg cuff than a water permeable material?

"Answer: Again, I can't remember who made the decision, but it was more along the lines of common sense, of the permeable versus impermeable. The goal was to create a barrier leg cuff that would be a barrier; that would not allow fluid to go through, urine to go through, feces to go through. It would have to either go over or find some way of getting around the barrier. It was a decision I believe that was more of a common sense decision."

[Tr. at 826-27].

Paragon mischaracterizes this testimony as an admission by Mr. Lawson that one looking at the Enloe patent would have concluded that the impermeable-for-permeable substitution is a "common sense" choice. Mr. Lawson's statement that it was a "common sense" decision to use a liquid impermeable material is premised on his previous conception of the idea to create a "barriers" to stop fluid from leaking through the cuff. The Enloe patent, however, does not disclose the concept of an internal barrier to fluids. Rather, the Enloe patent discloses an internal fluid pervious strainer. The Lawson patent itself is the first reference to disclose the concept of forming an internal barrier to liquids. It is axiomatic that a finding of obviousness cannot be founded on knowledge or teaching provided by the patentee's invention itself. *See, e.g.,* Oetiker, 977 F.2d at 1447. Because the Enloe patent does not disclose or suggest the formation of an internal barrier to fluids, Mr. Lawson's testimony regarding his choice of materials after devising this concept is irrelevant.

Paragon also relies on the following testimony of Mr. Buell, who earlier experimented with a liquid impermeable BLC design:

"Question: Is it generally the case that impermeable material is more desirable for a barrier leg cuff than permeable material?

"Answer: Oh, it depends on the designer's intention and where the elements are to be located.

"Question: Well, is it the case that impermeable material gives better containment?

"Answer: I would say generally.

"Question: Was that fact generally well known to you in 1983 when this application was tried?

"Answer: I would say yes."

[Tr. at 2529].

The Court finds that Mr. Buell's testimony as to his general knowledge without any reference to the prior art or to its teachings is of little probative value to an obviousness inquiry. An obviousness determination cannot occur in a vacuum. Section 103 and *Graham* make clear that the focus of the inquiry must be upon

the differences between the patented subject matter and the prior art. Mr. Buell's statement that it was generally known *to him* that liquid impermeable materials provided better containment without any indication as to a prior art teaching to that effect does not bear upon what would have been obvious to one of ordinary skill in the art. Mr. Buell's testimony certainly does not establish that the substitution of a liquid impermeable material for the liquid pervious BLC disclosed in the Enloe patent would have been obvious given the Enloe patent's express teaching not to use this type of material.

In sum, the differences between the Lawson claims at issue and the prior art provide strong evidence of nonobviousness. The prior art contains no teaching, suggestion, or motivation to employ a liquid impermeable BLC with the traditional elements of a disposable diaper in the manner disclosed by the Lawson claims.

4) *Secondary considerations*

[54] [55] Evidence of secondary considerations such as unexpected results, commercial success, failure of others, and long-felt need, if present, must be considered in determining obviousness. Minnesota Mining & Mfg. v. Johnson & Johnson Orthopaedics, Inc., 976 F.2d 1559, 1573 (Fed.Cir.1992); E.I. DuPont De Nemours & Co. v. Monsanto Co., 903 F.Supp. 680, 761 (D.Del.1995), aff'd, 92 F.3d 1208, 1996 WL 403285 (Fed.Cir.1996). The secondary considerations provide evidence of how the patented invention is viewed by the interested public. Arkie Lures, 119 F.3d at 957. In addition to those secondary considerations previously mentioned, copying is evidence of nonobviousness. *See id*.

[56] Analysis of secondary considerations is not "secondary" at all; such considerations may be highly probative or even the most probative evidence in the record regarding the question of obviousness. Arkie Lures, 119 F.3d at 957; Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1538-39 (Fed.Cir.1983); *see also,* Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1380 (Fed.Cir.1986) (secondary considerations are "not merely 'icing on the cake' ").

P & G asserts that the commercial success of the Lawson and Dragoo inventions, and the implementation of these inventions by most of the industry provide strong evidence of nonobviousness. Paragon counters that the independent contemporaneous invention of the matter disclosed in the Lawson patent by others in the field evidences that claims at issue are invalid for obviousness.

a) *Commercial success*

[57] [58] P & G cites to the commercial success of the Lawson and Dragoo inventions in support of its nonobviousness contention. When a patentee asserts commercial success to support its contention of nonobviousness, there must be a nexus between the proven success and the patented invention. Demaco Corp. v. F. Von Langsdorff Licensing Ltd., 851 F.2d 1387, 1392 (Fed.Cir.1988). The burden of proof as to the nexus resides with the patentee. *Id*. To satisfy this burden, the patentee must show both that there is commercial success, and that the product or method that is commercially successful is the invention disclosed and claimed in the patent. *Id*. If the patentee satisfies this burden, then the challenger must demonstrate that the commercial success was due to extraneous factors other than the patented invention, e.g., advertising. *Id*. at 1393.

There is substantial evidence that the inventions described in the Lawson and Dragoo inventions were commercially successful. *See* [Tr. at 965-66]. The Lawson and Dragoo BLCs provide an extremely important consumer benefit in the reduction and prevention of urine and runny BM leakage, consistently the highest rated factor in consumer importance. [Tr. at 919]. In diary testing, the liquid impermeable BLC provided a 50% reduction in runny BM leakage and a 20% reduction in urine leakage. [Tr. at 929-32]. As a result of these consumer benefits, the Lawson and Dragoo BLC became an industry standard incorporated in

over 95% of disposable diapers sold in the United States today. [Tr. at 931-35]. Thus, the liquid impermeable BLC became a required feature in order to compete in the disposable diaper industry.

There is also evidence that P & G's implementation of the BLC feature has had a positive impact on its sales. The evidence established that sales of both Pampers and Luvs were generally declining in the late 1980's and early 1990's, with the Luvs sales declining at an extremely rapid rate. *See* [DTX 677]. In the year following the introduction of the Lawson/Dragoo BLC in Pampers, Pampers's annual sales increased before leveling off at a slightly higher amount than its pre-BLC sales. *See* [PTX 1084; DTX 677]. The introduction of the BLC feature in the Luvs line in May 1992 halted the rapid decline of Luvs's annual sales. *See* [PTX 1084; 677].

Moreover, perhaps the strongest evidence pertaining to the commercial success of the liquid impermeable BLC feature is the substantial increase in growth experienced by Paragon's sales subsequent to its implementation of this feature. The evidence establishes that Paragon experienced record sales immediately following the introduction of the accused infringing diapers. [Tr. at 612-13; PTX 385, at K18253 ("The successful implementation of ILG made a substantial impact on our record sales and profits of 1991/92")]. In fact, Paragon estimated that the failure to implement this feature would negatively impact its sales volume by up to 2.5 million stat cases over a four year period. [PTX 429, at K062420]. In addition, Paragon's implementation of a liquid impermeable BLC substantially narrowed the gap in consumers' overall acceptance rating between its products and the nationally branded diapers. [Tr. at 955-62].

Accordingly, the Court concludes that P & G demonstrated the commercial success of products containing the invention disclosed in the Lawson and Dragoo claims at issue. P & G has also demonstrated a nexus between the invention and the commercial success, namely, P & G has established that this feature became an industry standard as a result of the improved containment properties of diapers with the patented feature and had a positive effect on the sales of products implementing the teachings of the claims at issue. The commercial success of the Lawson and Dragoo inventions weighs in favor of a finding of nonobviousness.

b) *Copying*

The Court of Appeals for the Federal Circuit has made clear that the copying of another's invention provides additional evidence of nonobviousness. *See, e.g.,* Avia Group Int'l, Inc. v. L.A. Gear California, Inc., 853 F.2d 1557, 1564 (Fed.Cir.1988); Specialty Composites v. Cabot Corp., 845 F.2d 981, 991 (Fed.Cir.1988). The Court finds that this factor weighs heavily in favor of nonobviousness in this case. The evidence establishes that not only did Paragon copy the patented invention, but the Lawson and Dragoo designs have been copied by almost the entire industry. The evidence establishes that approximately 95% of the disposable diapers sold today employ liquid impermeable BLCs that infringe the Lawson and Dragoo patents. [Tr. at 933, 2711]. The Court finds that the industry-wide copying of the Lawson and Dragoo inventions constitutes substantial evidence of nonobviousness.

c) *Contemporaneous invention*

[59] Near simultaneous invention by two or more inventors working independently of each other may or may not be an indication of obviousness when considered in light of all the circumstances. Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 1460 (Fed.Cir.1984). Evidence of contemporaneous invention is probativeof the level of knowledge in the art at the time the invention was made. In re Merck & Co., Inc., 800 F.2d 1091, 1098 (Fed.Cir.1986).

Paragon asserts that two other inventors independently invented Mr. Lawson's liquid impermeable BLC invention. First, Paragon asserts that Mr. Enloe contemporaneously developed the Lawson invention, relying on the Enloe initial patent application and invention disclosure. The Enloe invention disclosure indicates that

Mr. Enloe recognized that a liquid impervious material could be used to form the BLC, although he expressed a preference for the use of a pervious or semi-pervious material. [DTX 194, at DL-148354].FN22 Consistent with this statement, claim 1 of the Enloe initial patent application contained a generic claim for the BLC feature, i.e., a claim without a limitation as to the type of material to be used to form the BLC. [DTX 236, at 12]; *see supra* section II.E.2.b. The Enloe initial patent application also disclosed each of the other elements of the Lawson claims at issue. The Court therefore finds that the Enloe invention disclosure evidences that Mr. Enloe independently conceived the Lawson invention, and that this independent conception provides evidence in favor of obviousness.

FN22. As in section II.D.2.b., the Court will assume arguendo that the Enloe invention disclosure constitutes admissible evidence for purposes of the resolution of the obviousness determination.

Paragon also contends that a P & G employee, Kenneth Buell, invented a diaper with liquid impermeable BLCs. Mr. Buell testified that he designed a diaper with a liquid impermeable seal made of a Kraton film attached to the topsheet. [Tr. at 2522]. Although Mr. Buell testified that the seal feature he invented exhibited many of the same characteristics as the Lawson BLC, he did not testify that his invention was identical to the Lawson invention. [Tr. at 2525]. Moreover, the evidence before the Court relating to the Buell invention is limited to the sketchy details provided by Mr. Buell's testimony and his rough drawings of the invention. [Tr. at 2521-26; DTX 1053, 1061]. Paragon presented no evidence that the Buell invention contained gasketing cuffs or a spacing means for spacing the distal edge of the BLC away from the topsheet. *See* [PTX 1125, at 1599]. Paragon also has not produced any evidence that the Buell "seal" improved containment by forming a fluid containing pocket in the central portion of the diaper. In fact, Paragon has not produced any evidence which demonstrates how the Buell invention worked at all. Accordingly, the evidence before the Court does not establish that Mr. Buell independently developed the Lawson invention. Mr. Buell's work, which neither party contends is prior art, is therefore not relevant to the Lawson obviousness determination.

b. ***Resolution of the Obviousness Issue***

After careful and thoughtful consideration of all of the evidence with regard to the *Graham* factors, the Court concludes that Paragon has failed to demonstrate by clear and convincing evidence that the Lawson claims at issue would have been obvious to a person of ordinary skill in art, given the foregoing prior art references. Although Mr. Enloe's initial conception of the Lawson invention weighs in favor of a finding of obviousness, the balance of the evidence supports the opposite conclusion. This Court is not aware of any prior art reference which provides any suggestion, teaching, or motivation to employ a liquid impermeable BLC with the traditional elements of a disposable diaper in the manner disclosed by the Lawson claims at issue. The Court finds particularly persuasive the fact that the Enloe patent, the closest prior art reference, expressly teaches away from the use of liquid impermeable materials for the BLC. The secondary considerations of commercial success and copying by almost the entire industry also weigh strongly in favor of nonobviousness. Given the strong evidence of nonobviousness in the record, the Court holds that Paragon has failed to meet its burden of establishing by clear and convincing evidence that the Lawson claims at issue would have been obvious to a person of ordinary skill in the art at the time of invention.

4. ***Conclusion-Lawson Invalidity***

After careful consideration of the evidence and the arguments of the parties, the Court finds that Paragon has failed to establish by clear and convincing evidence that claims 17, 21, 27, and 28 of the Lawson patent are invalid.

F. ***Invalidity-The Dragoo Patent***

Paragon asserts that the Dragoo claims at issue are invalid as anticipated or obvious in light of the Lawson patent, the Japanese Utility Model, or the Beckestrom Patent when viewed in light of Lawson or Enloe. FN23 Paragon also asserts that the Dragoo claims do not qualify for patentability as routine engineering. The Court will address each of these arguments seriatim.

FN23. The Court has already proceeded through much of the analysis with respect to the Dragoo obviousness determination when discussing the obviousness of the Lawson claims. The level of ordinary skill in the art is the same for both analyses; each of the differences identified between the Lawson claims and the Enloe and Beckestrom patents, and the Japanese Utility Model, are present between the Dragoo claims and these three references; and the secondary considerations of commercial success and copying apply equally to Lawson and Dragoo in favor of a finding of nonobviousness. Given the identity of analyses coupled with the fact that Paragon did not make separate anticipation and obviousness arguments with respect to the Dragoo patent, the Court will not specifically proceed through the *Graham* factors in its discussion of Dragoo obviousness.

1. ***The Lawson Patent***

[60] As discussed previously, the Dragoo patent is directed to improving and modifying the performance of the Lawson invention. Upon testing diapers constructed according to Lawson's preferred embodiment, Jerry Dragoo recognized that wicking occurred along the topsheet which extended to the lateral edge of the diaper. This permitted liquid waste to get outside the pocket created by the BLCs and increased the potential for leakage through the leg holes of the diaper. The Dragoo patent describes a solution to this problem by creating a leakage-resistant seal between the BLC material and the backsheet at either the proximal edge or the side edge of the diaper, and by terminating the topsheet at a point inside of this seal. In claims 1 and 3, the topsheet is terminated laterally inboard of the proximal edge of the BLC. The proximal edge is sealed to the backsheet, thereby preventing liquids from wicking outside of the BLC. In an alternative embodiment described by claims 17, 18, and 21, the BLC material forms the top of the gasketing flap and the topsheet is terminated inboard of the side edge of the diaper underneath the flap portion of the BLC. In this embodiment, the flap portion of the BLC is attached to the backsheet at the side edge of the diaper, thereby forming a leakage resistant seal along the side edge of the diaper.

Paragon relies on the following passage in the Lawson specification in asserting that the Dragoo claims at issue are invalid as anticipated:

A preferred embodiment of the diaper shown in Fig. 1 is provided with the barrier cuff joined to the topsheet. The term "joined" includes any means for affixing the barrier cuff to the diaper, and includes embodiments wherein the barrier cuff is a separate element having the proximal edge directly or indirectly attached to the topsheet (i.e. integral) or embodiments wherein the barrier cuff is made from the same element or material as the topsheet so that the proximal edge is a continuous and undivided element of the topsheet (i.e. unitary). The barrier cuff may alternatively be joined to the side flap, the backsheet, the absorbent core, the topsheet or any combination of these or other elements of the diaper.

[PTX 1, at 9:47-60]. Focusing on Lawson's teaching that the proximal edge of the BLC may alternatively be joined to the backsheet, Paragon asserts that the topsheet in this embodiment necessarily terminates inboard of the proximal edge, and, thus, the Dragoo claims merely describe an alternate embodiment of the Lawson invention.

[61] Anticipation requires that a single prior art reference disclose, either expressly or inherently, all of the elements and limitations of the relevant claim. Glaverbel Societe Anonyme v. Northlake Marketing & Supply, Inc., 45 F.3d 1550, 1554 (Fed.Cir.1995). Paragon asserts that the Dragoo claims are expressly

anticipated by the Lawson patent. This clearly is not the case. Each of the Dragoo claims at issue requires that the topsheet terminate inboard of the side edge of the diaper. The Lawson patent does not at any point indicate or suggest that the topsheet may be terminated at any point inboard of the side edge of the diaper. *See* [Tr. at 1779]. Nor does the Lawson patent depict a configuration in which this limitation is present. The failure of the Lawson patent to indicate that the topsheet may be terminated at any point other than the side edge of the diaper is fatal to a finding that the Dragoo claims are expressly anticipated by the Lawson patent.

[62] In addition, Lawson's disclosure of an alternate embodiment in which the BLC is "joined" to the backsheet does not constitute an inherent anticipation of the Dragoo claims. To constitute an inherent anticipation, an undisclosed element must necessarily be present in a structure described by the prior art. Continental Can Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1268-69 (Fed.Cir.1991). The Federal Circuit has stated that a reference that is silent about an asserted inherent characteristic anticipates only if "the missing descriptive matter is *necessarily present* in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Id*. at 1268 (emphasis added). "Inherency ... may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient." *Id*. at 1269 (quoting In re Oelrich, 666 F.2d 578, 581 (C.C.P.A.1981)).

The Lawson patent specifically discloses a configuration in which both the proximal edge of the BLC is joined to the backsheet and the topsheet extends to the edge of the diaper. In the embodiment depicted in Figure 7, the BLC, the topsheet, and the top of the gasketing flap are formed from a unitary member. The BLC is formed by folding or pleating the topsheet upon itself. [PTX 1, at 14:5-15, Fig. 7]. Because the topsheet also forms the top of the gasketing flap, it terminates at the side edge of the diaper. *Id*. at Fig. 7. In fact, the passage in the Lawson specification relied on by Paragon specifically references this embodiment, stating that the term "joined" includes embodiments where the BLC "is a continuous an undivided element of the topsheet (i.e. unitary)." *Id*. at 9:49-57; *see* [Tr. at 1841-42]. Accordingly, the Lawson patent does not inherently anticipate the Dragoo claims at issue because it does not disclose a configuration in which the topsheet necessarily terminates inboard of the side edge of the diaper.

Having concluded that column 9 of the Lawson patent does not disclose or suggest the modifications that form the basis of the Dragoo patent, it necessarily follows that Paragon has not established by clear and convincing evidence that the Dragoo claims would have been obvious to a person of ordinary skill in the art in light of the Lawson patent. Paragon's argument in its brief and all of the evidence that it presented with respect to the obviousness of Dragoo over Lawson at trial is contingent on the conclusion that column 9 of the Lawson patent either expressly or inherently discloses the diaper described by the Dragoo claims. Thus, given the Court's rejection of the premise underlying Paragon's obviousness argument, Paragon has not established that the Dragoo claims would have been obvious to a person of ordinary skill in the art in light of the Lawson patent.

2. ***The Japanese Utility Model***

[63] This Court has previously determined that the Japanese Utility Model discloses to a person of ordinary skill in the art a diaper cover consisting of a waterproof backsheet, two waterproof BLCs with the distal edge spaced away from the backsheet, and elasticized edges at the leg openings, to be used with a cloth diaper insert which is designed to absorb and retain fluidic body exudates. *See supra* section II.D.3.a.2).a). The Japanese Utility Model does not disclose an integral or disposable structure and does not disclose a liquid pervious topsheet. Thus, The Japanese Utility Model clearly does not anticipate the Dragoo claims at issue.

[64] In addition, Paragon has failed to establish that the Dragoo invention would have been obvious in light of the Japanese Utility Model. The Japanese Utility Model provides no suggestion that its teachings can be

applied to an integral diaper. The Japanese Utility Model also does not disclose a liquid pervious topsheet, and this Court has previously concluded that a person of ordinary skill in the art would not have concluded that it was designed for use with an insert containing a topsheet. Thus, the Japanese Utility Model necessarily contains no teaching or suggestion regarding the prevention of wicking along a hydrophilic topsheet in an integral, disposable diaper. Accordingly, the Court concludes that the Japanese Utility Model, standing alone, is irrelevant to the problem to which the modifications contained in the Dragoo patent are addressed. Because Paragon does not assert that the Japanese Utility Model can be combined with the teachings of other prior art references, Paragon has not established that the Dragoo claims are invalid as obvious in light of the Japanese Utility Model.

3. ***The Beckestrom Patent***

[65] The Beckestrom patent, directed to the insert piece of a two-piece containment system, discloses to a person of ordinary skill in the art an absorbent body fixed to a liquid impervious backsheet, with the lateral ends of the backsheet folded around the absorbent core to form side flaps. The Beckestrom patent does not disclose an integral diaper or the use of elasticized gasketing cuffs. The Dragoo claims at issue each require both of these elements. The Beckestrom patent therefore does not anticipate the Dragoo claims.

[66] With respect to obviousness, Paragon asserts that the Dragoo claims are invalid as obvious over the Beckestrom patent when combined with the teachings in the Enloe patent or the Lawson patent. The Beckestrom patent differs from the Dragoo patent in that the absorbent article described therein is not unitary and does not contain gasketing cuffs. In addition, the BLCs in the Beckestrom invention are formed from continuous extensions of the backsheet.

The Beckestrom patent itself neither provides any teaching regarding the problem of wicking in a unitary, dual-cuffed diaper, nor proposes the solution adopted by the Dragoo patent. The problem of wicking arose in the Lawson invention because the topsheet formed the top of the gasketing flap, thereby having a functionality at the side edge of the diaper. The protector described by the Beckestrom patent, however, does not contain gasketing cuffs, and thus, provides no teaching as to the problem addressed by Mr. Dragoo.

Moreover, assuming *arguendo* that Beckestrom's disclosure of BLCs formed from the extension of the backsheet member could be practicably applied in a unitary diaper, the Dragoo patent did not adopt this teaching as its solution to the wicking problem. The Dragoo patent instead sealed the separate BLC member disclosed by the Lawson patent to the backsheet at either the proximal edge or the side edge of the diaper and terminated the topsheet inside this seal. The Dragoo patent thus opted not to employ any of the teachings or suggestions contained in the Beckestrom patent to solve the problem of wicking in the Lawson invention.

Finally, the Beckestrom patent does not provide any suggestion to a person of ordinary skill in the art that it can be combined with the Enloe and/or Lawson patents. The Beckestrom patent expressly teaches away from a structure employing gasketing cuffs. Because both the Enloe and Lawson patents only disclose structures which contain gasketing cuffs, a person of ordinary skill in the art would not have combined Beckestrom with either of these references. Additionally, the Beckestrom patent contains no suggestion that its teachings can be employed in an integral diaper.

Accordingly, upon a review of the relevant prior art, the Court finds that the differences between the Beckestrom patent and the Dragoo claims weigh strongly in favor of a finding of nonobviousness. The teachings contained in the Beckestrom patent do not suggest the solution to the wicking problem adopted in the Dragoo claims at issue, and there is no teaching, suggestion, or motivation to combine the Beckestrom patent with the Enloe and/or Lawson patents. Given the fact that the secondary consideration such as commercial success and copying also weigh in favor of nonobviousness, the Court concludes that Paragon

has failed to demonstrate by clear and convincing evidence that the Dragoo claims at issue would have been obvious to a person of ordinary skill in art over the Beckestrom patent.

4. "***Routine Engineering***"

[67] Paragon also asserts that the Dragoo claims are unpatentable even in the absence of any prior art references as "routine engineering." Paragon cites to the fact that Mr. Dragoo merely noticed that the topsheet in diapers constructed according to the Lawson patent transported liquid beyond the BLCs after he poured grape juice into the diaper. Although a patentable invention may lie in the discovery of a source of the problem, *see* Eibel Process Co. v. Minnesota & Ontario Paper Co., 261 U.S. 45, 67-68, 43 S.Ct. 322, 329-30, 67 L.Ed. 523 (1923); Application of Nomiya, 509 F.2d 566, 572 (C.C.P.A.1975); In re Sponnoble, 56 C.C.P.A. 823, 405 F.2d 578, 585 (1969), given the conclusion that Paragon has not met its burden with respect to the invalidity of the combination disclosed by the Dragoo claims, this Court offers no opinion as to whether the discovery of the wicking problem disclosed in the Dragoo claims would also qualify those claims for patentability.

[68] Paragon also appears to suggest that Mr. Dragoo's solution to the wicking problem was unpatentable as routine engineering. The Federal Circuit on numerous occasions, however, has "been quick to reject efforts to circumvent the more painstaking *Graham v. Deere* analysis." *See* Robert L. Harmon, *Patents and the Federal Circuit,* s. 4.2(c) (3d. ed.1994); *see also* Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc., 807 F.2d 955, 959 (Fed.Cir.1986) ("To suggest that [a patentee's] new combination 'is not necessarily an invention' or otherwise to require some concept of 'inventiveness' or 'flash of genius' for patentability would improperly misplace the focus of 25 U.S.C. s. 103"). Paragon has not proven under the *Graham* factors that the combination disclosed in the Dragoo claims at issue would have been obvious to a person of ordinary skill in the art, given the available prior art references. Paragon cannot circumvent this conclusion by asking this Court to assume that there are no prior art references and then opining that the Dragoo claims do not qualify for patentability as routine engineering.

5. ***Conclusion-Dragoo Invalidity***

After careful consideration of the evidence and the arguments of the parties, the Court finds that Paragon has failed to establish by clear and convincing evidence that claims 1, 3, 17, 18, and 21 of the Dragoo patent are invalid.

G. ***Damages***

Paragon first implemented the BLC feature into its Ultra line of diapers in March of 1991. [D.I. 259, para. 1]. Since November 1991, all of Paragon's Ultra diapers contain BLCs which infringe the Lawson and Dragoo patents. [D.I. 242, s. 4, para. 19]. The parties have agreed to a damages period of March of 1991 to December 31, 1994. The parties have stipulated that Paragon's total amount of sales of infringing diapers from January 1992 through December 1994 is 42,409,028 units. [D.I. 259, para. 2]. P & G asserts that it is entitled to lost profits, reasonable royalties, and interest through December 31, 1994 of $102 million. Damages for infringing sales after December 31, 1994 will be determined by a subsequent accounting.

1. ***Legal Standard***

[69] In determining the appropriate amount of damages, the Court is bound by 35 U.S.C. s. 284 which provides: "Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court." 35 U.S.C. s. 284. The claimant bears the burden of proof on the issue of damages. *See, e.g.,* BIC Leisure Products, Inc. v. Windsurfing Int'l, Inc., 1 F.3d 1214, 1217 (Fed.Cir.1993) Fromson v. Western Litho Plate and Supply Co.,

853 F.2d 1568, 1574 (Fed.Cir.1988); Mobil Oil Corp. v. Amoco Chemicals Corp., 915 F.Supp. 1333, 1340 (D.Del.1994).

[70] [71] The appropriate measure of compensatory damages may be determined by one of three methods: (1) lost profits; (2) an established royalty; or (3) a reasonable royalty. Mobil Oil, 915 F.Supp. at 1340; 7 Donald S. Chisum, *Chisum on Patents* s. 20.03 at 20-77 (1997). A determination of lost profits or an established royalty are methods of assessing the actual damages suffered by the patentee. Trell v. Marlee Elec. Corp., 912 F.2d 1443, 1445 (Fed.Cir.1990); Del Mar Avionics, Inc. v. Quinton Instrument Co., 836 F.2d 1320, 1328 (Fed.Cir.1987) ("[I]t is reasonable to assume that (an established) royalty is a fair measure of the actual damage to a patentee who has authorized others to practice the patented invention.") (emphasis added). A reasonable royalty, on the other hand, is a measure of recovery "intended to provide a just recovery to persons who for evidentiary or other reasons cannot prove lost profits or an established royalty." Hayhurst v. Rosen, 1992 WL 123178, at (E.D.N.Y.1992); 7 Chisum, *Patents* s. 20.03[3] at 20-159. A court may split a damages award between lost profits to the extent they are proven and a reasonable royalty for the remainder. State Indus., Inc. v. Mor-Flo Indus., Inc., 883 F.2d 1573, 1577 (Fed.Cir.1989).

2. *Lost Profits*

[72] [73] To recover lost profits as actual damages, the patentee must demonstrate that there was a reasonable probability that, "but for" the infringement, it would have made the infringer's sales. Rite-Hite Corp. v. Kelley Co., Inc., 56 F.3d 1538, 1545 (Fed.Cir.1995). The Federal Circuit has adopted a four-factor test, first articulated in Panduit Corp. v. Stahlin Bros. Fibre Works, Inc., 575 F.2d 1152 (6th Cir.1978), as a standard, non-exclusive method for a patentee to establish entitlement to lost profits damages. *Id.;* Mor-Flo, 883 F.2d at 1577. Under the *Panduit* test, the patentee must establish: (1) demand for the patented product; (2) absence of acceptable non-infringing substitutes; (3) manufacturing and marketing capability to exploit the demand; and (4) the amount of profit it would have made. Rite-Hite, 56 F.3d at 1545. In addition, a prerequisite to the applicability of the *Panduit* test is that the products of the patent owner and the infringer compete against each other in the same market segment. BIC Leisure, 1 F.3d at 1218.

[74] To establish an entitlement to lost profits, a patentee need not negate every possibility that a purchaser might not have purchased a product other than its own. Rite-Hite, 56 F.3d at 1545. If the patentee establishes each of the *Panduit* factors, the court may reasonably infer that the claimed lost profits were in fact caused by the infringing sales. *Id*. Thus, by satisfying the *Panduit* test, the patentee has established its prima facie case with respect to "but for" causation, and the burden shifts to the infringer to show that the inference is unreasonable for some or all of the lost sales. *Id*.

a. *Competition Between P & G and Paragon's Products*

The evidence overwhelmingly establishes that P & G's Pampers and Luvs products that are covered by the Lawson and Dragoo claims are direct competitors with Paragon's infringing Ultra diapers. Samuel Efnor, Paragon's Vice President of Sales, testified that P & G and Paragon are direct competitors. [Tr. at 1191-92]. Bobby Abraham, the Chief Executive Officer of Paragon, also testified that Paragon's diapers "compete with both Pampers and Luvs." [Tr. at 605]. There are also numerous Paragon documents which indicate that Paragon's diapers compete with the national brand products such as Pampers and Luvs. [PTX 360, at 6 ("[Paragon] experiences substantial competition in the sale of infant disposable diapers from the national branded as well as regional branded manufacturers and other private label manufacturers."); PTX 319, at 5 (same); PTX 315, at K044371 ("1994 will be a major challenge for Paragon Trade Brands as we face continued competitive pressures from the major brands")].

Moreover, both P & G's and Paragon's marketing experts testified that Paragon's infringing diapers are direct competitors with P & G's Pampers and Luvs products. Paragon's expert, Robert Buzzell, admitted that there

is a single U.S. market for disposable diapers. [Tr. at 2348]. Likewise, Douglas McGraw, P & G's marketing expert, after describing numerous consumer studies and other marketing data, opined that private label diapers compete with nationally branded products. [Tr. at 916, 943, 1049].

[75] Paragon does not argue in its brief its products are not in competition with those of P & G. Its damages expert, Geoffrey Osborne, however, suggested that retailers see P & G's national brands and Paragon's private label brands as being in different market segments, asserting that the Court should focus on the retailer in its but-for causation analysis. [Tr. at 2860 ("the consumer decision is secondary to the retailer")]. The Court disagrees that the retailer should be the focus of the but-for-analysis. The goal of a lost profits actual damages analysis is to determine the sales and profits lost to the patentee because of the infringement. *See* Del Mar Avionics, 836 F.2d at 1326. Although the retailer may have an effect on the patentee's and the infringer's sales through shelf placement and pricing, the ultimate decision as to which party obtains a particular sale and the profit resulting from that sale is the consumer's, who stands in the store aisle and decides which product to buy. This observation is especially true in this case, because all retailers that carry Paragon's products also carry P & G's Pampers products on the same aisle, and most carry the Luvs line as well. [Tr. at 943, 1280, 2846]. Thus, the but-for analysis must be viewed through the eye of the consumer.

Accordingly, the Court concludes that P & G products covered by the claims at issue directly compete with Paragon's infringing Ultra diapers. It is therefore appropriate to apply the *Panduit* analysis to determine whether P & G has established its entitlement to lost profits.

b. ***Application of the Panduit Factors***

1) ***Demand***

P & G has presented evidence that there was demand for the liquid impermeable BLC feature claimed in the Lawson patent and the improvement claimed in the Dragoo patent. The evidence establishes that over 90% of the diapers sold in this country are covered by the Lawson and Dragoo patents. [Tr. at 933]; *see also* [Tr. at 118-119, 1233]. In addition, as will be discussed more fully below, Paragon's Ultra products experienced substantial sales increases in each of the years following the incorporation of the patented features. *See* [PTX 994, Exh. 5; 1086; 1131]. The Federal Circuit has indicated that a substantial number of sales of infringing products is compelling evidence of demand for the product. Gyromat Corp. v. Champion Spark Plug Co., 735 F.2d 549, 552 (Fed.Cir.1984). Paragon does not dispute P & G's assertion that there was substantial demand for the features claimed in the Lawson and Dragoo patents. Accordingly, the Court finds that P & G has established that there was a demand for diapers containing the patented features during the relevant time frame.

2) ***Absence of acceptable non-infringing alternatives***

The Federal Circuit has held that a patent owner may satisfy the second prong of the *Panduit* test by proving its share of the market in lieu of proof of the absence of acceptable substitutes. BIC Leisure, 1 F.3d at 1219 ("This market share approach allows a patentee to recover lost profits, despite the presence of acceptable, non-infringing substitutes, because it nevertheless can prove with reasonable probability sales it would have made 'but for' the infringement"); Mor-Flo, 883 F.2d at 1578. Under this approach, a patentee recovers lost profits on the percentage of infringing sales equal to its market share. Mor-Flo, 883 F.2d at 1578.

P & G assumed the existence of acceptable non-infringing alternatives for purposes of calculating lost profits, [Tr. at 1296], and thus seeks a lost profits recovery using a *Mor-Flo* analysis. P & G's annual market share during the damages period is set forth in DTX 1104. Paragon does not challenge the market share data used in P & G's lost profits damages calculation. Accordingly, the Court concludes that P & G has proven its market share for purposes of conducting a *Mor-Flo* lost profits analysis.

3) *Capacity*

P & G presented undisputed evidence that it had ample manufacturing and marketing capacity to meet the demand and to make and sell diapers far in excess of the sales it claims it lost as a result of Paragon's infringement. [Tr. at 966, 1125-27 (opining that P & G could have made at least 1.5 million stat cases of diapers in each of the years during the damages period)].

4) *P & G's profits*

P & G presented undisputed testimony as to which of its costs were fixed, semi-variable, and variable during the damages period. [Tr. at 1078-85, 1304-06]. For the period between 1990 and 1994, P & G presented undisputed evidence of its before tax profit margin on Pampers and Luvs. [PTX 1072; Tr. at 1069-70] *see* [PTX 202]. Thus, P & G established the amount of profit it would have made on sales lost to the infringing products.

c. *Quantification of Lost Profits Damages*

As the foregoing analysis demonstrates, P & G has satisfied the *Panduit* test under the market share theory adopted by the Federal Circuit in *Mor-Flo*. P & G, however, does not claim that it is entitled to its market share percentage of all Ultra sales during the damages period. Rather, P & G's damages expert, Mr. Malackowski, reduced the amount of post-infringement Ultra sales that are subject to a *Mor-Flo* lost profits analysis by estimating the amount of Ultra diapers that Paragon would have sold during the damages period if it had not added the BLC feature to its Ultra diapers. [Tr. at 1270; PTX 1095]. The actual Ultra sales exceeded his estimation, and Mr. Malackowski opined that the excess sales were the only sales that should be subject to a *Mor-Flo* lost profits analysis. [Tr. at 1270-71; PTX 1096]. Thus, Mr. Malackowski apportioned the excess sales on a market share basis to determine the amount of sales that P & G lost as a result of Paragon's infringement. Paragon challenges both the estimation and apportionment steps of Mr. Malackowski's analysis.

1) *Estimated sales*

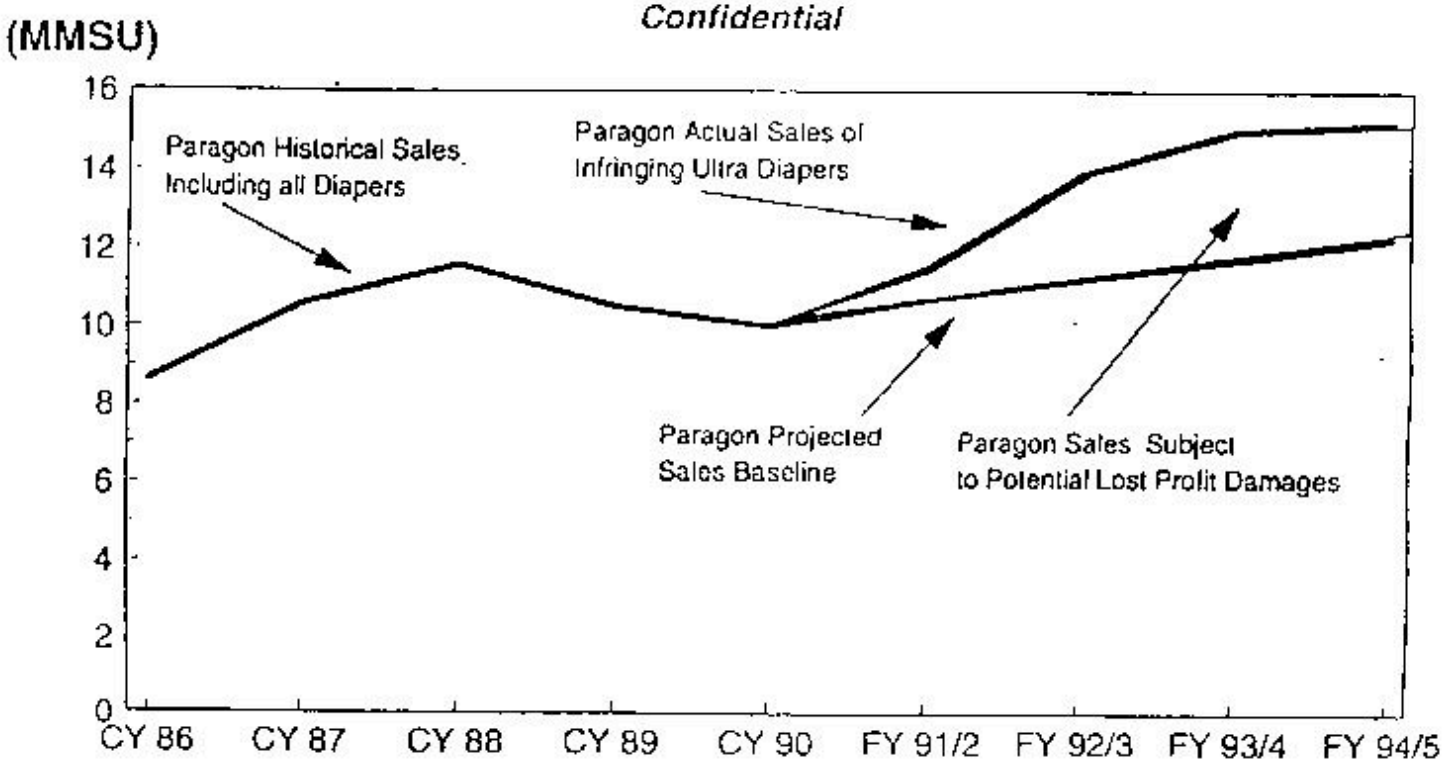
[76] Mr. Malackowski's graphical representation of what Paragon's Ultra sales would have been but for infringement, Exhibit 5 of his amended expert report, PTX 994, is reproduced below.

EXHIBIT 5

EXHIBIT 5

ILLUSTRATION OF PARAGON UNITS SUBJECT TO POTENTIAL LOST PROFITS DAMAGES

Confidential



Note:

FY 94/96 data annualized assuming equal monthly sales.

Mr. Malackowski used the pre-infringement sales of Paragon's Ultra and non-Ultra lines to estimate the amount of Ultra sales Paragon would have made during the damages period without the addition of the BLC feature. Paragon introduced its Ultra line of diapers in 1986. From 1986 to 1990, Paragon's Ultra sales increased annually, and Paragon's non-Ultra sales decreased annually. [PTX 1085; DTX 1104]. According to Mr. Malackowski, these trends can be attributed to product cannibalization, i.e., the substitution of a party's new product for one of its similar, but older products. [Tr. at 1237-38]. Under this theory, from 1986 to 1990, the increase in Paragon's Ultra sales occurs at the expense of its non-Ultra lines. *Id*. After the new product has been around for a few years, the substitution of the new product for the old will level off or stabilize. [Tr. at 1238-39]. Mr. Malackowski testified that the cannibalization of Ultra for non-Ultra stabilized during the period of infringement, which is evidenced by the fact that Paragon's annual non-Ultra sales remained essentially constant from 1991 through 1994. [Tr. at 1242; PTX 1086].

Because of the pre-infringement cannibalization of Ultra for non-Ultra sales and the stabilization of this cannibalization during the damages period, Mr. Malackowski used Paragon's total sales pre-infringement, i.e., the sum of Paragon's Ultra and non-Ultra sales, to estimate what Paragon's Ultra sales would have been but for infringement during the damages period. [Tr. at 1238-39, 1341-42; PTX 1093]. Mr. Malackowski determined that Paragon experienced an average increase in total sales of disposable diapers of 4.56% per

year from 1986-1990. [PTX 994, para. 36, 1095; Tr. at 1344]. To obtain his estimation, Mr. Malackowski assumed that Paragon's Ultra sales would have experienced this same 4.56% per year growth rate in each of the years during the damages period, starting with Paragon's total sales at the time of infringement as a baseline for his calculation. [PTX 994, para. 36, Exh. 5, 1095]. He then concluded that the amount of sales subject to the *Mor-Flo* lost profits analysis was the difference between Paragon's actual sales and the estimated sales determined by Mr. Malackowski for each of the years during the damages period. [PTX 994, Exh. 5].

Paragon criticizes Mr. Malackowski's use of Paragon's total sales volume pre-infringement to estimate the amount of Ultra sales post-infringement. Paragon also contends that its total diaper sales from 1986 to 1990 had no trend and thus could not be projected forward in any meaningful manner to estimate Paragon's future Ultra sales. The Court finds that it is not necessary to specifically address these criticisms of Mr. Malackowski's estimation, because the evidence establishes that Paragon's Ultra sales would not have exceeded Mr. Malackowski's projection, i.e., Mr. Malackowski's predicted trend line is a conservative estimation of Paragon's Ultra sales had it not added the BLC feature.

Paragon's marketing expert, Robert Buzzell, suggested that to accurately project Paragon's future Ultra sales, Mr. Malackowski should have attempted to fit Paragon's pre-infringement Ultra sales into an "S-shaped curve." [Tr. at 2326]. Paragon's damages expert, Geoffrey Osborne, agreed that new products traditionally have a growth trend that is defined by an S-shaped curve. [Tr. at 2796]. These experts testified that an S-shaped curve is the best predictor of future sales of a new product because it is universally accepted in marketing that any new product will grow very rapidly at first, then its sales will level off or plateau. *Id*.

Both Mr. Malackowski and Mr. Osborne estimated what Paragon's Ultra sales would have been using the S-shaped methodology.FN24 Their calculations differ in one significant respect: Mr. Malackowski used the average annual Ultra sales increase from 1986 to 1990 in making his calculation, whereas Mr. Osborne used the average annual Ultra growth rate percentage during this period. [Tr. at 2792-96, 3259-67; PTX 1131].FN25 This difference is graphically depicted in PTX 1131. Mr. Malackowski's calculation using this methodology results in a significant increase in the amount of post-infringement Ultra sales subject to a *Mor-Flo* lost profits analysis over the estimation obtained using his espoused methodology. [Tr. at 3259-3267; PTX 1131]. Conversely, Mr. Osborne's estimation using the 47% average annual growth rate yields lost profits damages of $0. [Tr. at 2795; PTX 1131]. Although agreeing with Mr. Buzzell that new products are traditionally defined by a S-curve, Mr. Osborne does not endorse his estimation as an accurate method of calculating lost profits. [Tr. at 2795-96]. Rather, he asserts that his calculation demonstrates the unreasonableness of Mr. Malackowski's actual analysis and the impossibility of predicting Paragons' but-for Ultra sales to a reasonable degree of certitude. *Id*.

FN24. Mr. Buzzell did not attempt to estimate what Paragon's Ultra sales would have been if it had not added the BLC feature.

FN25. Mr. Osborne excluded the Ultra growth from 1986 to 1987 in making his calculation, because, 1986 being the year that Paragon first sold Ultra diapers, the growth rate during this period was essentially 1000%. [Tr. at 2792].

The Court concludes that Mr. Osborne erred when he used the average annual growth as opposed to the average annual sales increase in making his estimate. The fallacy of Mr. Osborne's method can best be illustrated with a hypothetical in which both methods are used to predict Paragon's Ultra sales in 1990 using the Ultra sales from 1986 to 1989. *See* [DTX 1105]. The average annual growth rate over that period, omitting the first year,FN26 is 57.3%. Using this growth rate, Mr. Osborne's method predicts that Paragon

would have sold 8,005,626 units in 1990. Mr. Malackowski's method, using an average annual sales increase from 1986 to 1989 of 1,607,300 units, predicts that Paragon would have sold 6,696,700 units in 1990. Paragon actually sold 6,540,500 Ultra units in 1990. Mr. Malackowski's method clearly is the better predictor of Paragon's 1990 sales. The reason Mr. Osborne's method yields a result which differs by such a large amount, over 22%, from the actual Ultra sales, is that the growth rate of a new product experiencing a relatively constant increase in sales in its first few years before the increase levels off necessarily decreases at a rapid rate.FN27 Accordingly, the Court agrees with Mr. Malackowski that the average increase in sales should be used to predict future growth using the S-shaped curve methodology.

FN26. *See infra* note 24.

FN27. The growth rate of a product over a two year period is defined by the equation

$$\text{Growth Rate} = \frac{\text{Sales in year 2-sales in year 1}}{\text{Sales in year 1}}$$

Assuming that a product experience a constant growth in sales over a period of several years, the numerator of this equation remains constant, while the denominator is continually increasing as the actual sales increase from year-to-year. Because the year-to-year growth rate is inversely proportional to actual sales, the growth rate of a new product experiencing a constant annual increase in sales will necessarily decrease. For example, the year-to-year growth rates of Paragon's Ultra diapers from 1986 to 1990 are 700%, 88.2%, 26.4%, and 28.5%.

As shown in PTX 1131, the S-shape curve methodology endorsed by Mr. Buzzell estimates that Paragon would have sold less Ultra diapers but for infringement than the methodology endorsed by Mr. Malackowski, thereby increasing the amount of Paragon's Ultra sales subject to a *Mor-Flo* analysis. Thus, the Court need not specifically address Mr. Buzzell's and Mr. Osborne's criticisms of Mr. Malackowski's estimation. The evidence establishes that Mr. Malackowski's model arrives at a more conservative estimation of Paragon's but for sales than the estimation computed using the S-shape curve methodology endorsed by Mr. Buzzell. The Court therefore concludes that P & G has established to a reasonable probability that Paragon would not have made more non-infringing Ultra sales during the damages period than the amount of sales predicted by Mr. Malackowski's methodology. Accordingly, the Court accepts Mr. Malackowski's estimation of Paragon's Ultra sales but for infringement during the damages period for purposes of a *Mor-Flo* lost profits analysis.

2) *Apportionment*

[77] After estimating the amount of non-infringing Ultra sales, Mr. Malackowski apportioned the difference between the actual Ultra sales and his estimate on a market share basis pursuant to *Mor-Flo* to determine lost profits damages. [Tr. at 1270-71; PTX 1096]. Mr. Malackowski determined that P & G would have made approximately 8% of Paragon's accused infringing sales, but for the infringement. [Tr. 3270; PTX 1196].

Having satisfied the *Panduit* test and proving to a reasonable probability the Ultra sales that Paragon would have made but for infringement, P & G has established its prima facie case for damages under a *Mor-Flo* analysis, and the burden shifts to Paragon to establish the unreasonableness of the inference that P & G would have made some or all of these sales.

Paragon charges that apportionment on a market share basis is inappropriate in this case given the fact that retailers make a much larger profit on private label sales than on sales of nationally branded diapers.

Paragon asserts that Mr. Malackowski's approach to apportionment would have required retailers to substitute national brands for private label products on their store shelves, something retailers would have been unwilling to do given the difference in profits between private label and nationally branded sales. *See* [Tr. at 2797-2802].

Contrary to Paragon's assertion, Mr. Malackowski's approach does not assume that retailers would have allocated more shelf space to nationally branded diapers. Mr. Malackowski's approach properly focuses on the consumer level and merely predicts that more consumers would have pulled a P & G product off of the shelves. [Tr. at 3253-54]. His approach assumes only that the retailers carrying private label products would also have carried a P & G product. *Id*. This assumption is clearly reasonable given the undisputed evidence that retailers carrying Paragon's products at the very least also sell Pampers on the same aisle, with most of these retailers carrying Luvs as well. [Tr. at 943, 1280, 2846].

Paragon also asserts that a P & G study establishes that P & G only lost 0.3% of its sales to Paragon's Ultra diapers. [DTX 465]. This study, conducted over two three-month periods in 1993, concludes that private label has grown mainly at the expense of Huggies, that only 0.3% of Pampers volume losses have gone to private label, and that Luvs has gained some volume from private label diapers. *Id*. This study, however, only addresses the rate of switching between brands during the study period, but does not address the reasons behind the switching. Specifically, it does not address in any manner the effect of Paragon's addition of the BLC feature to its Ultra line of diapers on P & G's sales. The study thus does not purport to opine that only 0.3% of P & G's lost sales resulted from Paragon's addition of the BLC for the entire damages period.

Based on the evidence presented in this case, the Court concludes that apportionment on a market share basis is an extremely conservative projection as to the amount of sales Paragon captured from P & G. The evidence establishes that the BLC feature directly addresses the highest ranked consumer attribute and the highest unmet need in disposable diapers: improved leakage prevention. [Tr. at 919, 922, 927-28]. Paragon's addition of the BLC played an important role in narrowing the gap in consumer overall acceptance rating between Paragon's Ultra diapers and the nationally branded diapers. [Tr. at 955-61]. Paragon itself judged this feature essential to remain in the market for the quality-conscious consumer. [PTX 429, at K062420]. If anything, apportionment on a market share basis pursuant to *Mor-Flo* understates the amount of sales lost by P & G to Paragon. The *Mor-Flo* analysis assumes that all of the other products on the market are acceptable non-infringing alternatives. The overwhelming evidence of the significance of the BLC feature in the consumer purchasing decision calls this assumption into question, suggesting that, for many Paragon customers, a non-BLC diaper would not have been an acceptable alternative. *See* [Tr. at 1296-98]. Accordingly, the Court finds that Paragon has failed to demonstrate that apportionment on a market share basis pursuant to *Mor-Flo* is an unreasonable estimation of the sales that P & G lost to Paragon as a result of Paragon's infringement of the Lawson and Dragoo patents.

c. *Conclusion-Lost Profits*

P & G has therefore established that there was a reasonable probability that, "but for" the infringement, it would have made at least approximately 8% of Paragon's infringing sales. P & G is entitled to recover lost profits damages on approximately 8% of Paragon's infringing sales in accordance with Mr. Malackowski's damages calculations.

3. *Reasonable Royalty*

a. *Legal Standard*

[78] The parties agree that P & G is entitled to a reasonable royalty on the infringing Ultra sales to which a lost profits analysis does not apply. An award based upon a reasonable royalty, just like any other damages award, must be aimed at compensating the patentee for the infringement. 35 U.S.C. s. 284. A reasonable

royalty is defined as the amount that a willing licensor and licensee would bargain for at an arm's length hypothetical negotiation occurring on the date the infringement began. Unisplay, S.A. v. American Elec. Sign Co., Inc., 69 F.3d 512, 517 (Fed.Cir.1995) (citing Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d 1075, 1078 (Fed.Cir.1983)); Mor-Flo, 883 F.2d at 1580.

[79] [80] For purposes of the hypothetical negotiation, P & G's patents are deemed unquestionably valid and enforceable and will be infringed by Paragon if the parties do not negotiate a license. Mobil Oil Corp. v. Amoco Chem. Corp., 915 F.Supp. 1333, 1352-53 (D.Del.1994); TP Orthodontics, Inc. v. Professional Positioners, Inc., 20 U.S.P.Q.2d 1017, 1025 (E.D.Wis.1991), *modified on other grounds,* 22 U.S.P.Q.2d 1628, 1992 WL 189670 (E.D.Wis.), *aff'd,* 980 F.2d 743, 1992 WL 281030 (Fed.Cir.1992). The Court must also assume, for purposes of the hypothetical negotiation, that all parties would have known all relevant information. Georgia-Pacific Corp. v. United States Plywood Corp., 318 F.Supp. 1116, 1121 (S.D.N.Y.1970), *modified and aff'd,* 446 F.2d 295 (2d Cir.1971); TP Orthodontics, 20 U.S .P.Q.2d at 1025. Although the hypothetical negotiation takes place on the date of first infringement, the Court is permitted to take into account events and facts that occurred after the infringement began. Fromson, 853 F.2d at 1575-76. The Federal Circuit has stated:

The methodology encompasses fantasy and flexibility; fantasy because it requires a court to imagine what warring parties would have agreed to as willing negotiators;flexibility because it speaks of negotiations as of the time infringement began, yet permits and often requires a court to look at events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators.

Id. at 1575.

In Georgia-Pacific Corp. v. United States Plywood Corp., 318 F.Supp. 1116, 1121 (S.D.N.Y.1970), *modified and aff'd,* 446 F.2d 295 (2d Cir.1971), the District Court for the Southern District of New York described fifteen factors as a "comprehensive list of evidentiary facts relevant ... to the determination of the amount of a reasonable royalty for a patent license." Georgia-Pacific, 318 F.Supp. at 1120. In performing a hypothetical negotiation analysis, it is important to recognize that some of the *Georgia-Pacific* factors may be of minimal or no relevance to a particular case and other factors may have to be molded by the Court to fit the facts of the case at hand.

b. ***Application of the Hypothetical Negotiation to the Facts of this Case***

[81] The date of first infringement in this case is March of 1991. The parties each produced an expert who analyzed the *Georgia-Pacific* factors and provided an opinion as to the amount of a reasonable royalty. Both experts concluded that a single negotiation was appropriate to determine the reasonable royalty rate for licensing the technology covered by the Lawson and Dragoo patents. Mr. Malackowski, testifying on behalf of P & G, opined that the reasonable royalty rate at the time of infringement would have been 2.5% of Paragon's unit selling price. [Tr. at 1309]. Russell Parr, testifying on behalf of Paragon, opined that the rate would have been only 0.2% of net sales of the infringing diapers. [Tr. at 2611].

1) ***FACTOR 1: The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty***

Courts and commentators alike have recognized that the royalties received by the patentee under prior and existing licenses for patented technology is often the "most influential factor" in determining a reasonable royalty. *See, e.g.,* Mobil Oil, 915 F.Supp. at 1353. At the time of the hypothetical negotiation, there were no licenses for the patents in suit. [Tr. at 1314-15, 2615-16].

P & G did, however, grant one license under the patent after the date of the hypothetical negotiation. On

November 15, 1996, P & G granted a license under the Lawson and Dragoo patents to Confab, Inc. and the Waverly Group. [PTX 220]. Confab entered into the license as a means to reestablish itself as a manufacturer of private label disposable diapers. P & G initially offered Confab a royalty rate of 2.5% of the net sales price of diapers sold under the license. [Tr. at 2468-69]. Confab did not accept this offer. *Id*. P & G and Confab ultimately agreed to a royalty rate of 1% of the net sales price for a specific configuration of Lawson and a royalty rate of 1.25% for a full license under the Lawson patent. [PTX 220, para. 2(A)-2(B); Tr. at 1135-36]. Confab also agreed to pay an additional royalty rate of 0.75% for a full license under the Dragoo patent. [PTX 220, para. 2(C); Tr. at 1135-36]. Thus, Confab agreed to a total royalty rate of 2.0% of the net sales price for a license to manufacture and sell products covered by any and all of the claims at issue under the Lawson and Dragoo patents.

The Confab license is non-exclusive. [Tr. at 1135]. In addition, if either the Lawson or Dragoo patents are held invalid or unenforceable, Confab would be relieved from paying any royalties under the license agreement. [Tr. at 1144; PTX 220, para. 12].

Because there were no licenses under the Lawson and Dragoo patents at the time of infringement, both Mr. Malackowski and Mr. Parr concluded that factor would have had a neutral impact on the hypothetical negotiation. Although the Court agrees with this conclusion, the Court will consider the Confab license in making its determination as to the appropriate royalty rate.

2) *FACTOR 2: The rates paid by the licensee for the use of other patents comparable to the patent in suit*

[82] This factor focuses on the licensing customs of the industry and has been interpretedbroadly, encompassing even those licenses to which the licensee is not a party. Mobil Oil, 915 F.Supp. at 1354; *see* 7 Chisum, *Patents,* s. 20.03[3][b][ii], at 20-182 to 184. This factor presumes that a willing licensor and licensee would be guided to some degree by the royalty rates and bases of licenses on comparable patents in the industry. *Id*. Courts rarely give this factor decisive or substantial weight due the generally unique character of each patented invention. *Id*.

With respect to other licenses in the industry at the time of infringement, Mr. Malackowski testified that there were no licenses between two competitors in the United States diaper industry that were not cross-license agreements or the product of the settlement of a dispute. [Tr. at 1465]. Mr. Malackowski accordingly opined that this factor had a neutral impact for purposes of determining a reasonable royalty rate. [Tr. at 1316].

Mr. Parr discussed several license agreements in reaching his conclusion that this factor weighs in favor of a low royalty. The following four license agreements discussed by Mr. Parr involve licenses between P & G and individuals or corporations not involved in the manufacture or sale of disposable diapers. [Tr. at 2617-19, 2693-96]. In 1992, after the date of the hypothetical negotiation, P & G entered into a license with John and Debra Holt for a machine which places a hole in the topsheet of a diaper. [Tr. at 2617; DTX 622]. This license did not call for a running royalty, but required P & G to pay the Holts a onetime lump sum payment of $105,000. [Tr. at 2617]. P & G also entered into a license with a Mr. Sarbuland Khan which required P & G to make a one-time lump sum payment of $100,000 for technology described in a patent issued to Mr. Kahn. [Tr. at 2618; DTX 623]. Mr. Parr next discussed a license agreement between P & G and Tuff Span Fabrics under the latter's ringrolling patent which called for P & G to make an annual payment of $10,000 until the expiration of the patent. [Tr. at 2618; DTX 626]. The final of these four agreements involves a license between P & G and Raychem Corporation dealing with a heat-shrinkable elastomeric material used for making leg gathers. [Tr. at 2618-19; DTX 630]. The agreement called for P & G to pay a running royalty rate of 1.5% of the net cost of the material used in its diapers. [Tr. at 2619; DTX 630].

The Court finds each of these agreements would have had limited probative value to the hypothetical

negotiation given the fact that none of them involved licenses between two competitors in the disposable diaper industry. As Mr. Parr wrote in a published article, licenses between competitors "can be expensive" and "when negotiations are between competitors a relatively high royalty rate can result." [Tr. at 2698-99; PTX 1128, at 71]. Thus, a negotiated rate between P & G and Paragon most likely would have been significantly higher than the licensing rates of these four agreements.

Mr. Parr also discussed a royalty agreement between P & G and Finley adhesives in which P & G licensed the rights under a patent describing a wetness indicator to be used in disposable diaper adhesives. [Tr. at 2619; DTX 633]. Although Finley is not a competitor of P & G, the agreement provides that Finley may sell this invention to other manufacturers of disposable diapers. [DTX 633, at DL 160760]. The royalty rate set forth in this agreement is $0.25 per pound of the wetness indicator sold to diaper manufacturers. *Id*. The Court will take this agreement into consideration in determining the appropriate rate and will further address the significance of this agreement in its discussion of *Georgia-Pacific* Factors Nos. 4 and 12.

Finally, Mr. Parr also discussed two license agreements under the Harmon and Mesek patents to which Paragon was a party. Mr. Parr testified that the entire disposable diaper industry, including Paragon, obtained a license from Johnson & Johnson under the Harmon patent which is directed to superabsorbent polymers. [Tr. at 2620-23]. Relying on a letter from Stephen Geimer, Paragon's in-house counsel, and discussions with Johnson & Johnson's chief patent counsel, Mr. Parr testified that his understanding was that the royalty rate paid for this technology was 0.16% using the net sales price of the diaper as a royalty base. [Tr. at 2620-23; DTX 602, at 8]. Mr. Parr also testified based on Mr. Geimer's letter, that Paragon obtained a license under the Mesek patent directed to leg elastics at a royalty rate of 0.10% to 0.12%. [Tr. at 2623-24; DTX 602, at 8].

There is evidence in the record which calls Mr. Parr's understanding of these two agreements into question. In a letter purporting to amend a prior license agreement, Paragon's predecessor agreed to a royalty rate of 0.16% pursuant to the terms of a Settlement Agreement between Kimberly-Clark. [DTX 617]. This rate became effective on March 9, 1988. *Id*. Mr. Parr also testified in his deposition that Paragon's rate under the license for the Harmon patent was 0.9%. [Tr. at 2685]. Additionally, a document prepared for Paragon which summarizes its history of licensing provides that the royalty rate terms for this license were 5% on the first $1 million in net sales, 2% on the next $1 million in net sales, and 1% on all sales thereafter, yielding an effective royalty rate of 1.02%. [PTX 237]. This document further suggests that the reduced 0.16% rate arose as a result of cross-licenses under numerous patents. *Id*.FN28 The summary does not discuss the Mesek patent or indicate whether this patent was involved in this cross-license agreement between Johnson & Johnson and Paragon. When confronted with this contradictory evidence, Mr. Parr indicated that he did not recall the details of the agreement. [Tr. at 2682].

FN28. P & G also obtained a license under the Harmon patent. [DTX 645]. This license was the product of a settlement of a dispute between Johnson & Johnson and P & G. *Id*. at DL 206050. The royalty rate contained in this settlement agreement ranges between 0.2% and 0.4% of P & G's net diaper sales. *Id*. at DL 206051-52.

Based on this evidence, the Court rejects Mr. Parr's testimony regarding Paragon's licenses under the Harmon and Mesek patents. Mr. Parr did not appear to have any independent knowledge as to either of these agreements and was unable to explain the inconsistencies in Paragon's own documents. FN29 The documentary evidence establishes that the initial royalty rate under the Harmon patent was reduced to 0.16% as a result of a settlement agreement entered into between manufacturers in the infant disposable diaper industry. Because Paragon did not present any documentary evidence pertaining to the license under the Mesek patent, the Court will disregard this license when determining the reasonable royalty rate.

FN29. Notably, Mr. Geimer, who testified regarding the validity of the Lawson and Dragoo patents, did not provide any testimony regarding Paragon's licenses under the Harmon and Mesek patents.

3) *FACTOR 3: The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold*

Both Mr. Malackowski and Mr. Parr testified that the parties would have negotiated for a non-exclusive license that is not restricted to any particular part of the United States. [Tr. at 1317, 262]. Thus, these experts concluded that this factor would have a negative impact on the overall royalty rate. *Id*. This Court agrees. There is no basis in the record for concluding that the license would have been exclusive or that it would have territorially restricted Paragon's sale of the patented technology.

4) *FACTOR 4: The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve the monopoly*

Although an assumption underlying the hypothetical negotiation is that the patent owner would have granted the infringer a license at a rate that would have enabled the infringer to utilize the invention, the patent owner's bargaining power is clearly greater if it followed a consistent policy of refusing to grant licenses. 7 Chisum, *Patents* s. 20.03[3][b][iii], at 20-186 to 187. Steven Miller, P & G's Associate General Counsel testified that P & G has a general policy of not granting licenses under its patented technology. [Tr. at 1129]; *see also* [Tr. at 1317]. Mr. Parr disagreed, citing the Finley license, a cross-license between P & G and Kimberly-Clark. [Tr. at 2627-28].

The Court concludes that the record in this case establishes that at the time of the hypothetical negotiation P & G had a policy of not licensing its patents covering major innovations in diaper technology. P & G established that it received patents for several major innovations in disposable diaper technology in the past 30 years, including patents for an hourglass-shaped diaper and elastically contractible gasketing cuffs, as well as the Lawson and Dragoo inventions. *See* [PTX 23, 25, 26]. There is no evidence that P & G licensed any of these major innovations at the time of the hypothetical negotiation, excepting licenses which resulted from the settlement of litigation.

The only patented technology that P & G licensed to competitors at the time of the hypothetical negotiation was the wetness indicator described in the Finley patent. *See infra* II.G.3.b.2). The technology described in this patent was one of several alternatives that could be used in diaper adhesives and does not represent a major innovation in the disposable diaper industry on the level of the Lawson and Dragoo patents. *See* [Tr. at 3279]. The Court therefore finds that P & G maintained a policy of refusing to grant licenses under its patents covering major advancements in disposable diaper technology, and that P & G believed that the BLC feature described by the Lawson and Dragoo inventions was such an advancement. *See, e.g.,* [Tr. at 931-32]. Accordingly, this policy weighs in favor of granting a higher royalty in this case.

5) *FACTOR 5: The commercial relationship between the licensor and the licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter*

Mr. Malackowski and Mr. Parr disagreed as to this factor as well, with Mr. Malackowski concluding that P & G and Paragon are direct competitors in the disposable diaper industry, while Mr. Parr opined that they are not. [Tr. at 1318, 2632]. This Court has previously resolved this issue, concluding that P & G's diaper products covered by the claims at issue directly compete with Paragon's infringing Ultra diapers. *See supra* section II.G.2.a. Because a patent owner's bargaining power is greater if the would be licensee is a direct competitor, 7 Chisum, *Patents* s. 20.03[3][b][iii], at 20-186 to 187, this factor weighs in favor of a higher

royalty.

6) ***FACTOR 6: The effect of selling the patented specialty in promoting sales of other products of the licensee; the existing value of the invention to the licensor as a generator of sales of its non-patented items; and the extent of such derivative or convoyed sales***

[83] "Convoyed" or "derivative" sales occur where the sale of one thing is likely to cause the sale of another, such as selling a razor and then also being able to sell the blades to go with it. There is no evidence in the record that the sale of P & G's or Paragon's diaper products led to the sales of other products. This Court agrees with both experts that this factor would have had a neutral impact on the royalty rate. [Tr. at 1318, 2633].

7) ***FACTOR 7: The duration of the patents and the term of the license***

The theory behind giving weight to the patent's duration is that the parties would have been more likely to have negotiated a higher royalty rate the longer the remaining term of the patent, because a longer term would better allow the licensee to establish stronger customer relations. 7 Chisum, *Patents* s. 20.0 3 [3][b][ix], at 20-218 to 219. The Lawson patent expires on September 22, 2004. The Dragoo patent expires on January 3, 2006.

The Court agrees with both experts that this factor would have had a neutral impact on the negotiated rate. Both experts indicated that the benefits of a new feature in the disposable diaper industry do not last for very long. [Tr. at 1318-19, 2633-34]. Thus, the duration of the patents is irrelevant.

8) ***FACTOR 8: The established profitability of the product made under the patent; its commercial success; and its current popularity***

This Court has already concluded that the patented inventions are commercially successful. *See supra* section II.E.3.a.4)a). Approximately 95% of disposable diapers sold today in the country contain the BLC feature described in the Lawson and Dragoo claims at issue. [Tr. at 933]. In addition, numerous consumer studies demonstrated that diapers containing the Lawson/Dragoo BLC were very popular among consumers as a result of their improved leakage containment. *See, e.g.,* [Tr. at 108-09, 115-16, 929, 958]. Both the commercial success and the popularity of the product weigh in favor of a higher royalty.

With respect to the profitability of the product, the average operating profitability based on net sales of P & G's Pampers and Luvs products containing liquid impermeable BLCs as covered by the Lawson and Dragoo claims for the damages period was 12.97% and 13.02% respectively. [PTX 1107]. Although P & G's net profits were positive for diapers covered by the claims at issue, the rate of return and the net present value for the BLC feature were negative. [Tr. at 933-34].

The gross profitability of Paragon's Ultra diapers increased each year since its inception in 1986. [PTX 1108]. The average gross profitability of the Ultra diapers for the first two years after Paragon's implementation of the BLC feature was 22.39%. [PTX 1108]. The gross profitability of the Ultra diapers exceeded that of the non-Ultra diapers during this period by 42%. [PTX 1108]. FN30 The net profit margin on Paragon's Ultra diapers is approximately 7%-8%. [Tr. at 678]. There was no testimony regarding the effect that Paragon's implementation of the BLC feature had on its net profits.

FN30. The gross operating profitability of non-Ultra diapers during 1991-92 was 15.82%. [PTX 1108].

Although Paragon's actual profits drastically increased as a result of its record sales in the years immediately following its use of the patented invention, the Court finds that the actual profitability of diapers containing

the BLC feature was negative. This feature had a negative rate of return on the Pampers and Luvs products, and there was no evidence regarding whether the post-1991 growth in the Ultra's gross profitability resulted from the continuing annual increases in production efficiency, the addition of the BLC feature to Ultra diapers, or a combination of both. Accordingly, the profitability aspect of this factor would have had a negative impact on any negotiated royalty for the Lawson and Dragoo inventions.

9) FACTOR 9: The *utility and advantages of the patented property over the old modes or devices, if any, that had been used for working out similar results*

It's clear to this Court that diapers containing the BLC feature covered by the Lawson and Dragoo claims have substantial advantages over prior art diapers. The evidence conclusively shows that the presence of the liquid impermeable BLC significantly reduced leakage, providing a 50% reduction in runny BM leakage and a 20% reduction in urine leakage. [Tr. at 96-99, 927-29]. These strong benefits were clearly perceived by Paragon prior to its implementation of the BLC feature. *See* [PTX 429, at K062419]. Accordingly the Court finds that this factor weighs strongly in favor of a higher royalty rate.

10) *FACTOR 10: The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention*

The nature of the patented invention is a liquid impermeable BLC that is sealed to the underlying structure of the diaper in such a manner that it prevents the wicking of liquids underneath this seal to the outer edges of the diaper. P & G has sold diapers implementing the teachings of the Lawson and Dragoo patents in both its Pampers and its Luvs lines. This Court has already addressed the technical benefits of the invention in its discussion of Factor 9. The Court also has concluded that there are economic benefits to selling diapers covered by the claims at issue. *See supra* section II.G.3.b.8).This factor therefore weighs in favor of a higher royalty rate.

11) *FACTOR 11: The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use*

Mr. Malackowski and Mr. Parr differed in their conclusions with respect to this factor. Mr. Malackowski testified that Paragon has extensively used the patent and that the vast majority of Paragon's sales now infringe the Lawson and Dragoo claims at issue. [Tr. at 1322-23]. Mr. Malackowski thus concluded that this factor would have had a positive impact on the royalty rate. *Id*. Conversely, Mr. Parr concluded that this factor would have had a negative impact on a negotiated royalty rate, indicating that there was no evidence that is probative of the value of this feature to Paragon. [Tr. at 2642].

The Court strenuously disagrees with Mr. Parr's assessment of this factor. There is a plethora of evidence pertaining to Paragon's use of the patented invention and the benefits it obtained as a result of the invention. The BLC decreased the gap in consumer overall acceptance rating between the Ultra diaper and nationally branded products. [Tr. at 955-62]. Paragon achieved record sales in the years immediately following its implementation of its feature in its Ultra line. [Tr. at 612-13; PTX 385, at K18253]; *see also* [PTX 429, at K062420]. Paragon's infringing sales during the damages period exceed 50 million diapers. [DTX 1104]. Accordingly, the Court concludes that Paragon has extensively used the patented invention and has achieved substantial benefits from this use. This factor therefore weighs strongly in favor of a higher royalty.

12) *FACTOR 12: The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions*

The Court has already determined with respect to *Georgia-Pacific* Factor 2 that there were no comparable licenses in the disposable diaper industry at the time of the hypothetical negotiation. The only patented technology licensed by P & G to a competitor at the time of infringement was the wetness indicator covered

by the Finley patent. As discussed in *Georgia-Pacific* Factor No. 4, this technology differs from the Lawson and Dragoo advancements in that it does not represent a major innovation in the disposable diaper industry.

In addition, neither expert testified as to the customary profit percentage used to set the royalty rates in licenses in other businesses. Mr. Parr was questioned on cross-examination regarding the "25% Rule-of-Thumb" approach to determine an appropriate royalty rate. Under this method, the royalty rate is calculated as 25% to 33.33% of the operating profit margin before taxes. [Tr. at 2714-16; PTX 1128, at 63-64]. Applying this approach to Paragon's 7.9% average operating profit margin, an appropriate royalty rate would have been between 1.975% and 2.6% of Paragon's operating profit margin. [Tr. at 2717].

Although the Court will consider the Rule-of-Thumb analysis in determining the royalty rate, this approach will not receive substantial weight. Mr. Parr criticized the use of this approach in a published article, opining that "[t]he 25% to 33 1/3% Rule is not really even useful as a general guide for deriving an appropriate royalty rate." [PTX 1128, at 64]. There was no testimony advocating the use of the this approach as an appropriate guidepost for the determination of a royalty rate under a *Georgia-Pacific* analysis, and the Court has found no case adopting this test *as a matter of law*. *See* Fonar Corp. v. General Elec. Co., 107 F.3d 1543, 1553 (Fed.Cir.1997); Mobil Oil, 915 F.Supp. at 1366. Accordingly, the Court finds that this factor would have had a neutral impact on the hypothetical negotiation.

13) ***FACTOR 13: The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer***

This factor attempts to take into account the relative contribution of the patented feature to the success of the product. 7 Chisum,*Patents* s. 20.02[3][b][vii], at 20-211 to 213. If the patented feature forms only a small part of the product, either physically or economically, it is generally the case that a licensee would have been less disposed to agree to a high royalty. *Id*. Mr. Malackowski testified that this factor would have had a positive impact on a negotiated royalty rate because there is evidence that the patented feature significantly increased sales and profitability. [Tr. at 1324]. Conversely, Mr. Parr indicated that this factor would have weighed in favor of a lower royalty rate, given the numerous features required to make a diaper a successful product. [Tr. at 2647-55].

The Court finds that this factor would have negatively impacted the royalty rate. The BLC feature is only a single element in a complex system that forms a disposable diaper. The inclusion of several other essential features not covered by the Lawson and Dragoo patents, such as the absorbent core, the elastically contractible gasketing cuffs, and the hourglass shape, is required to successfully market and sell disposable diapers in this country today.

In addition, for a private label product to be successful, it must mimic the features contained in the nationally branded products as fast as possible, at the lowest possible cost. [Tr. at 941]. Mr. McGraw testified based on a Paragon document that Paragon's ability to beat P & G to the market with two of the last three significant product innovations caused P & G to lose market share to Paragon. [Tr. at 963; PTX 138, at DL333894]. Some of the success of Paragon's products must therefore be attributed to its manufacturing processes and its ability to sell a comparable product to nationally branded diapers at a significantly lower cost.

Accordingly, although the BLC feature had a significant impact on Paragon's increased sales and profits, there were numerous other factors at work that played a part in both Paragon's ability to maintain its previous market share as well as the sales increase it obtained after the addition of the BLC feature. Thus, while the patented feature contributed to the success of Paragon's Ultra products, it represents merely an improvement to an already successful product. Accordingly, the Court finds that this factor would have had

a negative impact on a negotiated royalty rate.

14) ***FACTOR 14: The opinion testimony of qualified experts***

In determining the weight accorded to each expert's testimony, the Court looked not only at the demeanor, credibility, and qualifications of the expert, but also at the factual basis for the expert's testimony.

15) ***FACTOR 15: The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is the amount which a prudent licensee-who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention-would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license***

The fifteenth factor sets forth the "willing buyer/willing seller" hypothetical negotiation through which the other fourteen factors are to be considered. After examining each of the fourteen other factors and the entire record in this case, the Court finds that the parties, after engaging in a hypothetical negotiation in March of 1991, would have agreed to a license to the rights infringed by Paragon in this case at a royalty rate of 2.0% of the net sales price of products produced under the license.

The Court was substantially in agreement with Mr. Malackowski's royalty rate analysis, in which he concluded that a rate of 2.5% would have been the product of the hypothetical negotiation. The Court found particularly significant the factors pertaining to the commercial success of the Lawson and Dragoo technology, the substantial improvement in leakage containment achieved by these inventions, Paragon's extensive use of this technology and the benefits it received as a result of its use, and P & G's general policy of not licensing significant technological innovations to direct competitors at the time of the hypothetical negotiation.

The Court also finds the Confab license to be probative of the rate to which P & G and Paragon would have agreed at the time of infringement. Confab, a competitor of both P & G and Paragon, agreed to an unrestricted, non-exclusive license to practice the technology covered by the Lawson and Dragoo claims at issue at a royalty rate of 2.0%. Although this license was entered into six years after the hypothetical negotiation, the analysis under many of the *Georgia-Pacific* factors would be the same for both the P & G-Confab negotiation and the P & G-Paragon hypothetical negotiation. In particular, the competitive relationship between the parties, the absence of prior comparable licenses in the industry, and the commercial success and significance of the innovations at issue have not changed since March 1991.

In addition the "Rule-of-Thumb" analysis provides an additional confirmation of the reasonableness of a royalty rate of 2.0%. Mr. Parr indicated that the "Rule-of-Thumb" analysis applied to Paragon's profit margin yields a range of 1.975% and 2.6%. [Tr. at 2714-18].

Paragon argues that there is no way that it could pay a royalty in this range and still maintain a profit, given Kimberly-Clark's contention that the Ultra diapers infringe the Enloe patent. Paragon's argument that a private label manufacturer could not pay this royalty is belied by the Confab license. In addition, the argument that Paragon may also have to pay a royalty to Kimberly-Clark miscomprehends the *Georgia-Pacific* methodology. The hypothetical negotiation rests on a "legal fiction" which "conjures a 'willing' licensor and licensee who like Ghosts of Christmas Past, are dimly seen as 'negotiating' a 'license.' " Panduit Corp. v. Stahlin Bros. Fibre Works, Inc., 575 F.2d 1152, 1159 (6th Cir.1978). To create this fiction, the methodology necessarily proceeds from several underlying assumptions, one of which being that the patented claims at issue are deemed unquestionably valid and enforceable and will be infringed by the products of the licensee in the absence of a negotiated license. Thus, this Court must assume that Paragon's

Ultra diapers infringe the Lawson and Dragoo patents and these patents are valid and enforceable. Because the Lawson and Enloe patents claim two patentably distinct types of the same feature, it is unlikely that this factor would weigh heavily in favor of a lower royalty rate in this hypothetical negotiation.

Moreover, Paragon's fears about paying dual royalties for its use of the BLC feature could have been assuaged in the hypothetical license by the inclusion of a clause, similar to the one in the Confab license, providing that no royalties are required to be paid under the agreement if a court of competent jurisdiction concludes that the Ultra diapers infringe the Enloe patent. The Court thus finds unpersuasive Paragon's argument that it could not have afforded to pay a royalty in the 2.0% range and still have made a profit.FN31

FN31. Paragon also asserts that another court has previously concluded that a royalty rate in this range is economically unreasonable in the disposable diaper industry. In H.B. Fuller v. National Starch and Chem. Corp., 689 F.Supp. 923 (D.Minn.1988), the patent at issue claimed an adhesive for use in the construction of disposable diapers. *Id*. at 927-30. After finding infringement, the court opined that a royalty rate of 2.5% of net diaper sales was wholly unrealistic and would price "any adhesive or diaper manufacturer out of the market." *Id*. at 947-48. This conclusion, however, was based in large part on the fact that the patentee's claimed royalty would equal almost double the hypothetical licensee's total *revenue*. *Id*. at 947. Conversely, in this case, the 2.0% royalty rate yields a royalty that falls between 25% to 33% of Paragon's net profits on its Ultra sales. Given the highly factual nature of the *Georgia-Pacific* analysis, Paragon's efforts to elevate the conclusion in *Fuller* into binding precedent on the reasonable royalty determination in this case is misplaced.

Accordingly, after careful consideration of all the factors as well as the entire record in this case, the Court finds that if P & G and Paragon had engaged in a hypothetical negotiation in March of 1991 to determine the appropriate rate for a patent license for all the rights infringed in this case, the parties would have settled on a royalty rate of 2.0% of the net sales price. The Court further finds that this rate is adequate to compensateP & G for Paragon's infringing sales that are not subject to lost profits damages.

4. ***Enhanced Damages-Willful Infringement***

[84] P & G contends that Paragon willfully infringed the Lawson and Dragoo patents warranting enhanced damages and attorneys' fees. Under 35 U.S.C. s. 284, a court may increase a damages award up to three times the amount found or assessed. In exercising its discretion under this section, the court should apply a two-step analysis. First, the court should determine whether an infringer is guilty of conduct that would justify an award of increased damages. Second, the court should determine whether, and to what extent, to increase damages. Jurgens v. CBK, Ltd., 80 F.3d 1566, 1570 (Fed.Cir.1996).

[85] [86] It is clear that a finding that an infringer acted willfully or in bad faith may entitle the aggrieved party to increased damages under 35 U.S.C. 284. Jurgens, 80 F.3d at 1570; Yarway Corp. v. Eur-Control USA, Inc., 775 F.2d 268, 277 (Fed.Cir.1985); E.I. DuPont De Nemours & Co. v. Monsanto Co., 903 F.Supp. 680, 740 (D.Del.1995), aff'd 92 F.3d 1208, 1996 WL 403285 (Fed.Cir.1996). A party seeking to establish willful infringement must prove the bad faith of the infringer by clear and convincing evidence. Monsanto, 903 F.Supp. at 740. The test for willful infringement is "whether, under all the circumstances, a reasonable person would prudently conduct himself with any confidence that a court might hold the patent invalid or not infringed." Hall v. Aqua Queen Mfg., Inc., 93 F.3d 1548, 1555 (Fed.Cir.1996).

[87] The Federal Circuit has held that there is an "affirmative duty to use due care in avoiding infringement of another's patent rights." Jurgens, 80 F.3d at 1570. This duty usually includes "seeking and obtaining competent legal advice before engaging in activity that may result in infringement." Stryker Corp. v.

Intermedics Orthopedics, Inc., 96 F.3d 1409, 1414 (Fed.Cir.1996) (quoting Electro Med. Sys. S.A. v. Cooper Life Sciences, 34 F.3d 1048, 1056 (Fed.Cir.1994)). There is, however, no "absolute requirement" for a would-be defendant to obtain an opinion letter in order to avoid a finding of willful infringement. Hall, 93 F.3d at 1555.

[88] [89] The question is whether, under the totality of the circumstances, a potential infringer acted reasonably in avoiding the infringement of a valid patent. The following factors are relevant to this determination:

(1) the infringer's deliberate copying of the ideas of another; (2) the infringer's knowledge of the patent rights of another; (3) any good faith belief of invalidity or non-infringement formed by the infringer after an investigation of the patent rights of another; (4) the infringer's behavior as a litigant.

Monsanto, 903 F.Supp. at 740.FN32

FN32. Although the infringer's behavior as a litigant is normally a relevant factor in deciding the question of willfulness, it is of decidedly secondary importance. In the circumstances of this particular case, the final factor is of no value in showing either willfulness or lack of willfulness.

a. *Lawson Willfulness*

[90] On October 30, 1988, over two years prior to the date of first infringement, John Milnamow and Stephen Geimer of the law firm of Dressler, Goldsmith, Shore, Sutker & Milnamow, Ltd., prepared an opinion analyzing the validity of the Lawson patent. [DTX 326]. These attorneys concluded that the each of the Lawson claims at issue were clearly invalid on several independent bases. First, these attorneys opined that the claims in the Lawson patent were invalid as anticipated or obvious over the Enloe patent. *Id*. at K073513. The attorneys found that the requirement of liquid impermeability was clearly suggested by or within the teachings of the Enloe patent. *Id*. at K073522-24. Second, these attorneys concluded that each of the Lawson claims at issue were invalid over the Beckestrom patent, either alone or in combination with several other references, including the Japanese Utility Model. *Id*. at K073524-31. Paragon's Chief Executive Officer, Bobby Abraham, indicated that he relied on this opinion in making the decision to implement the BLC feature into the Ultra line of diapers. [Tr. at 589].

P & G asserts that the findings of the district court in the Seattle litigation between Kimberly-Clark and P & G directly contradicted the opinion of Mr. Milnamow and Mr. Geimer. P & G contends that because the conclusions of the Milnamow and Geimer opinion were rejected by the United States District Court for the District of Washington, Paragon was under a duty to immediately obtain a second opinion of counsel.

Based upon a review of the totality of the circumstances, the Court finds that P & G has not satisfied its burden of establishing by clear and convincing evidence that Paragon willfully infringed the Lawson patent. The Seattle district court's opinion only addressed the issue of anticipation over the Enloe patent. [DTX 184, para.para. 89-94]. Conversely, the opinion of Mr. Milnamow and Mr. Geimer concluded that the claims at issue were invalid on several independent bases that were not addressed by the Seattle district court, including obviousness over Enloe and obviousness over Beckestrom.

The Court finds that the 1988 opinion of Messrs. Milnamow and Geimer was competent and that Paragon was justified in relying on it. The opinion indicated that the attorneys studied the file history of the Lawson patent, as well as several prior art references, before reaching their conclusions. The opinion is not conclusory, containing an analysis of each prior art reference. The opinion further provides a separate analysis of the invalidity of each claim contained in the Lawson patent in view of the prior art references.

In addition, the record provides other indicia of Paragon's good faith with respect to the Lawson patent. Mr. Abraham had numerous discussions with these attorneys in which they thoroughly explained the opinion and the rationale for the conclusions contained therein. *See, e.g.,* [Tr. at 589, 627-29, 648]. Paragon continued to rely at trial and in its post-trial brief on the same defenses originally set forth in the 1988 opinion. *See* Read Corp. v. Portec, Inc., 970 F.2d 816, 829 (Fed.Cir.1992) (stating that the continued assertion at trial of defenses set forth in the original opinions of counsel supports good faith). Finally, shortly after the Federal Circuit issued its opinion disposing of the Seattle case, Mr. Milnamow and Mr. Geimer issued another opinion analyzing the validity of the Lawson claims not invalidated by the Federal Circuit. [DTX 327]. In this opinion, these attorneys reaffirmed the conclusions in the 1988 opinion with respect to the invalidity of the remaining Lawson claims. [DTX 327, at K073475-76].

Accordingly, P & G has not met its burden of establishing by clear and convincing evidence that Paragon willfully infringed the Lawson patent. P & G therefore is not entitled to enhanced damages or attorneys' fees for Paragon's infringement of the Lawson patent.

b. ***Dragoo Willfulness***

[91] On December 17, 1991, nine months after the date of first infringement, Messrs. Milnamow and Geimer issued an opinion regarding the validity of the Dragoo patent. [DTX 336]. The attorneys concluded that the Dragoo claims at issue are invalid as obvious in view of the Beckestrom patent when combined with the teachings of other prior art patents including the Japanese Utility Model and the Enloe patent. *Id*. at K073658-67. The opinion provides a thorough analysis of the Dragoo prosecution history and the relevant legal principles. The opinion also provides a separate invalidity analysis for each claim in the Dragoo patent.

Based upon the totality of the circumstances, the Court finds that this opinion was sufficient to discharge Paragon's duty to use due care to not infringe the Dragoo patent after the date of the opinion. Although, as P & G points out, the Patent and Trademark Office specifically considered the Beckestrom patent before granting the Dragoo patent, the opinion begins with a two-page cover letter providing a separate discussion regarding the reasons why the Dragoo patent was granted over the Beckestrom patent. *Id*. at K073643-44. In particular, this letter notes that the patent was prosecuted before three different primary examiners, resulting in repeated changes in the application of and the examiner's position on the relevant prior art. The Court concludes that Paragon justifiably and reasonably relied on this opinion, and that P & G has not established that Paragon willfully infringed the Dragoo patent after it received this opinion of counsel.

[92] Paragon, however, did not obtain this opinion until nine months after its first sale of an Ultra product containing the infringing BLCs. There is substantial evidence in the record that Paragon knew of the Dragoo patent and copied its teachings in implementing the BLC feature into its Ultra diapers. It is undisputed that Paragon's designers knew of the Lawson and Dragoo patents when they developed the prototype for the infringing diapers. Jeffrey Tarizzo, a design engineer at Paragon from 1989 to 1992, testified that everybody who was involved in the research and development of a diaper containing the BLC feature was given a copy of the Lawson and Dragoo patents. [Tr. at 760-63]; *see also* [PTX 514; Tr. at 735 (indicating that another Paragon designer considered the Dragoo patent in recommending the nature of the design for the Ultra product)].

In addition, Paragon's pre-BLC rollout documents recognized that its BLC design incorporated the teachings of the Dragoo patent to avoid leakage under the BLC. [PTX 429, at K062420 ("The system is unique vs current national brand systems because the proposed system extends the hydrophobic nonwoven material beyond the cuff to the edge of the diaper, improving leakage by trapping moisture that may escape under the leg cuff")]. Indeed, copying the teachings of the Dragoo patent was part of Paragon's strategy of "brand-

matching." "Brand-matching" is a marketing term which refers to the strategy of private label manufacturers placing the same or similar features in their diapers as those introduced in the nationally branded products that have become standard in the industry. [Tr. at 714-15, 1100]. Paragon followed this strategy in implementing the teachings of the Lawson and Dragoo patents into its Ultra line of diapers. [Tr. at 1100]. Thus, the Court finds that P & G has established by clear and convincing evidence that Paragon knew of the Dragoo patent prior to commencing its infringing sales and deliberately copied its teachings in designing the infringing diapers.

Given Paragon's deliberate copying of the teachings of the Dragoo patent, Paragon failed to discharge its affirmative duty to use due care to avoid infringement of the Dragoo patent. Prior to obtaining the opinion of counsel in December 1991, the record is devoid of any evidence indicating that Paragon investigated whether its products infringed the Dragoo patent or the validity of this patent. The Court accordingly finds that P & G has established by clear and convincing evidence that Paragon did not have a good faith belief that its Ultra diapers containing the BLC feature did not infringe the Dragoo patent at time it began selling these infringing diapers. The Court therefore holds that Paragon willfully infringed the Dragoo patent from March 1991 to December 1991, entitling P & G to receive an enhanced damages award.

[93] Having found that Paragon acted willfully, the Court must determine the extent of the enhancement. In Read Corp. v. Portec, Inc., 970 F.2d 816 (Fed.Cir.1992), the Federal Circuit set forth nine factors relevant to the determination of the extent of an enhancement for willfulness. *Id.* at 827. Three of these factors encompass the four considerations that formed the basis for the Court's finding of willfulness. The remaining factors include defendant's size and financial condition; closeness of the case; duration of defendant's misconduct; remedial action by the defendant; defendant's motivation for harm; and whether defendant attempted to conceal its misconduct. Read Corp., 970 F.2d at 827.

Upon consideration of these factors and the totality of the circumstances in this case, the Court finds that P & G is entitled to a damages enhancement equal to 100% of the damages award for infringement from March 1991 to December 1991. In addition to the factors underlying the finding of willfulness, the Court finds it significant that Paragon's actions did not stem from a motivation to harm P & G, but rather were dictated by the conditions of the disposable diaper industry. Mr. Abraham testified that a successful private label manufacturer must allow the nationally branded products to first introduce an innovation and educate the public and then introduce the same or a similar feature in its diapers. [Tr. at 579-80, 677]. It was thus necessary for Paragon to introduce a BLC-type feature in its diapers to remain a viable contender in the private label industry. [Tr. at 1103]. In addition, Paragon took action to remedy its willful conduct, obtaining and relying on an opinion of outside legal counsel within a year after the first infringing sale. Finally, the Court also finds significant that Paragon's cooperation, conduct, and demeanor throughout discovery and trial has been exemplary, especially when compared to conduct that this Court has witnessed in past trials. The Court accordingly finds that P & G is entitled to enhanced damages for Paragon's willful infringement of 100% of the damages award, i.e., double damages, for Paragon's infringement from March 1991, the date of first infringement, through December 17, 1991, the date on which Paragon received the opinion of Messrs. Milnamow and Geimer regarding the Dragoo patent.

5. ***Prejudgment Interest***

Under 35 U.S.C. s. 284, a judgment may be accompanied by "interest and costs as fixed by the court." The Supreme Court has held that prejudgment interest should be awarded in most patent cases because prejudgment interest is necessary to fully compensate the patent owner. General Motors v. Devex, 461 U.S. 648, 655, 103 S.Ct. 2058, 2062, 76 L.Ed.2d 211 (1983). The parties have stipulated as to the interest rates to be applied to any damages in this case. [D.I. 257-59]. The Court finds that P & G is entitled to prejudgment interest on its lost profits and reasonable royalty damages at the entitled to prejudgment interest on the lost profits and the reasonable royalty damages at the rates stipulated to by the parties.

6. ***Conclusion***

Based on the foregoing, P & G is entitled to recover lost profits damages on approximately 8% of Paragon's infringing sales during the damages period in accordance with Mr. Malackowski's damages calculations. P & G is entitled to a reasonable royalty of 2.0% of the net sales price on the remaining 92% of Paragon's infringing sales during the damages period.FN33 P & G is further entitled to prejudgement interest on the lost profits and the reasonable royalty damages at rates stipulated to by the parties. Finally, P & G is entitled to enhanced damages of 100% of the damages received for Paragon's infringement, i.e, lost profits plus reasonable royalty damages, from Paragon's first infringing sale in March 1991 to Paragon's receipt of the opinion of counsel on December 17, 1991, for willful infringement of the Dragoo potent.

FN33. As stated previously, the parties stipulated to the amount of infringing sales in 1992 to 1994. The parties also agree that Paragon first implemented the BLC feature into its Ultra line of diapers in March of 1991, and that by November 1991, all of Paragon's Ultra diapers contained BLCs. The parties dispute the amount of infringing sales in 1991, but neither party addressed this issue its briefs.

P & G presented no evidence regarding Paragon's infringing sales volume in 1991. Mr. Osborne testified it was unreasonable to assume that 100% of Paragon's post-March 1991 sales volume contained BLCs. [Tr. at 2816-17; DTX 360]. Mr. Osborne testified that approximately 46% of the 1991 Ultra sales volume contained BLCs. [Tr. at 2816-17; DTX 260]. In the absence of any evidence to the contrary, the Court holds that the Ultra sales volumes set forth in DTX 360 which amount to approximately 46% of Paragon's post-March 1991 Ultra sales state the correct amount of Paragon's infringing sales in 1991. These figures should accordingly be used in calculating P & G's damages award.
P & G shall submit an accounting of the amount of damages to which it is entitled in accordance with this Opinion. P & G may apply to this Court for damages resulting from Paragon's infringement from December 31, 1994 through the date of this Opinion. Judgment shall be entered accordingly.

III. THE PIENIAK PATENT

A. ***Technological Background***

The technology at issue in the Pieniak patent also involves infant disposable diapers. In the late 1970s or early 1980s, Johnson & Johnson initiated a program to develop an improved absorbent core for use in disposable diapers as a means of getting into the disposable diaper industry. [Tr. at 1851-54]. Although Johnson & Johnson ultimately abandoned its efforts to manufacture and sell a line of diapers, it did succeed in the developmentof a new absorbent core which was based on the polymerization of acrylic salts. [Tr. at 1851-54, 1860]. This process enabled engineers to apply a very large amount of superabsorbent to the absorbent core, thereby facilitating the development of a thinner diaper. [Tr. at 1854, 1862].

Heinz Pieniak, a member of Johnson & Johnson's Research and Development Department at the time of this project, was one of the engineers responsible for the development of this improved absorbent structure. In 1987, after Johnson & Johnson had abandoned its efforts to enter the disposable diaper industry, it sold its superabsorbent technology to Weyerhaeuser, Paragon's predecessor. [Tr. at 1860-61]. Mr. Pieniak moved with the technology to Weyerhaeuser, and helped Weyerhaeuser develop a diaper implementing this technology. [Tr. at 1850, 1861]. The Pieniak patent is directed to a diaper implementing the superabsorbent technology developed by Mr. Pieniak at Johnson & Johnson. [Tr. at 1862-64].

B. ***The Pieniak Patent***

The Pieniak patent, entitled "Low Bulk Disposable Diapers," claims a disposable diaper that is configured for improved fit and comfort by providing a construction which exhibits relatively low bulkiness, while at

the same time providing efficient absorbency to avoid leakage. [DTX 1, at 2:12-17]. The patented diaper achieves this goal through the use of a relatively thin and narrow absorbent panel with a high absorptive capacity per unit volume. *Id*. at 2:17-21. The structure of the diaper is particularly configured so as to minimize the unnatural outward displacement of an infant's thighs during usage, thereby enhancing comfort. *Id*. at 2:21-24.

The diaper described in the Pieniak patent consists of a facing layer or topsheet formed of moisture pervious material which is positioned next to the infant's skin; an absorbent panel; and an outer backing layer which is positioned farthest from the infant's skin. *Id*. at 2:25-42, 17:18-46. According to the specification, the absorbent panel "comprises a matrix of absorbent material," which includes an impact or target zone defined as the second and third fifths of the panel length measured from the front of the diaper. *Id*. at 2:43-47. In its preferred form, the absorbent matrix comprises superabsorbent material in combination with a fibrous web and also includes a liquid transport means comprising at least one "wicking layer" of densified hydrophilic fibers. *Id*. at 2:62-68, 9:13-32.

The use of a wicking layer was intended to overcome a typical problem known as "gel blocking." *Id*. at 9:25-32. Gel blocking occurs when the superabsorbent material at the surface of the core forms a solid surface gel upon the first discharge of urine into the diaper. *See Id;* [Tr. at 2113, 3072-73]. The surface gel would then block later urine discharges from being absorbed by the absorbent panel, potentially causing urine to run off. [Tr. at 2113, 3072-73]. The wicking layer promotes liquid transport through the absorbent matrix for efficient utilization of the superabsorbent. [DTX 1, at 9:30-32]. The Pieniak patent describes the preferred wicking layer as coextensive with at least a portion of the fibrous web of the absorbent matrix. *Id*. at 9:15-20.

The Pieniak patent provides several formulae to determine whether a particular diaper is sufficiently thin and has sufficient absorptive capacity to fall within the claims of the Pieniak patent. The patent defines the diaper's thickness in the crotch region as "Cross Sectional Bulk" [hereinafter "CSB"] FN34 which equals the thickness multiplied by the width of the absorbent panel in the crotch region. *Id*. at Table I. The Pieniak claims at issue require the CSB to be no more than "about 0.6 square inches." *Id*. at 17:31-47.

FN34. The patent also uses the term "cross-sectional area" which the Court finds is synonymous with "Cross Sectional Bulk." *See* [DTX 1, at 10:40-57].

The patent determines whether a diaper has the requisite absorptive capacity by use of the "Absorbency Efficiency Index" [hereinafter "AEI"]. *Id*. at 15:40-16:56. In computing the AEI, the patent proceeds from several assumptions. The patent assumes that the diaper is able to absorb 220 cubic centimeters of urine through usage which represents the 90th percentile of void volume of urine for diapers during overnight usage. *Id*. at 15:48-53. The patent also assumes the impact zone length is 6 inches and that approximately 60% of the urine introduced into the impact zone of the absorbent panel remains there, while the remaining 40% is distributed through the rest of the panel. *Id*. at 15:53-56. The AEI is computed according to the following formula:

$$\text{AEI} = \frac{220 \text{ cc} \times 0.6}{\text{CSB} \times 6 \text{ in.} \times \text{conversion factor of } 16.39 \text{ cc/cu in.}}$$

Id. at 16:10-29. Thus, the CSB is the only variable in the AEI equation. The claims at issue each require a diaper to have an AEI of at least 1.5. *Id*. at 17:28-47.FN35

FN35. The Pieniak patent also uses several other measurements pertaining to the "fit" and "comfort" of a diaper, such as the "Diaper Compression Index," the "Discomfort Factor," and the "Diaper Fit Index."

The inventors performed CSB and AEI calculations on a diaper made according to the teachings of the patent, Sample LBD, and compared the measurements of this diaper with other commercially available disposable diapers. According to the patent, Sample LBD had a substantially lower CSB and substantially higher AEI than other commercially available disposable diapers. *Id*. at Table I, VII.

1. ***Claims at Issue***

The claims at issue in the Pieniak patent are claims 1, 10, and 11. Claim 1 of the Pieniak patent provides in relevant part:

1. A disposable diaper having improved fit and comfort, the diaper having front and back waist end portions and comprising:

an absorbent panel;

a moisture-pervious facing layer positioned in overlying relationship on one side of said absorbent panel, said facing layer being adapted for positioning adjacent the wearer of the diaper; and

an outer backing layer positioned on the side of said absorbent panel opposite said facing layer;

the absorbent panel and outer backing layer being secured together at the waist portions of the diaper;

said absorbent panel comprising a matrix of absorbent material and having an impact zone which comprises the second and third fifths of said absorbent panel in a longitudinal direction as measured from the front thereof, said impact zone including a portion positionable between the thighs of the wearer, which said portion has a transverse dimension and a thickness dimension to provide a cross-sectional area for said portion of no more than about 0.6 square inches, said matrix of said absorbent panel having sufficient inherent absorbency to provide said absorbent with an absorbency efficiency index of at least 1.5, thereby providing sufficient absorbent capacity for absorbing anticipated volumes of voided liquid with a structure which is sufficiently narrow and thin so as to minimize discomfort to the wearer.

Id. at 17:18-47.

Claims 10 and 11 are dependent from claim 1. Claim 10 adds only the requirement that the outer backing layer must consist of a liquid impermeable plastic film. *Id*. at 18:46-48. Claim 11 provides specific dimensions for the width and thickness of the absorbent panel. Claim 11 requires the panel width to be "about 4.5 inches," the panel thickness to be "about 0.13 inches" yielding an AEI of "about .2.29." *Id*. at 18:49-53. Not coincidentally, these dimensions are identical to the measurements taken of Sample LBD.

2. ***Arguments of the Parties***

a. ***Infringement***

Paragon asserts that there are twenty-one P & G Pampers Ultra Dry Thin, Pampers Stretch, and Luvs Ultra Leakguard series diapers that directly infringe claims 1 and 10 of the Pieniak patent. Paragon also asserts that P & G's Pampers Ultra Girls Crawler/Walker I, Pampers Ultra Girls Walker II, and Luvs Ultra Leakguard Boys/Girls-size 3 lines directly infringe claims 1, 10 and 11 of the Pieniak patent. Paragon does not contend that any of these accused diapers infringe under the doctrine of equivalents.

P & G denies that its diapers infringe the Pieniak patent. P & G argues that the absorbent panel in each of

the accused diapers has a larger CSB than that required by independent claim 1. Specifically, P & G asserts that the CS-10 wicking layer present in each of the accused diapers must be included in the absorbent panel in determining its thickness. Paragon contends that the CS-10 layer should not be included in the thickness measurement. If this layer is included in the thickness measurements, the absorbent panels in all of the accused diapers have CSBs that are significantly higher than claim 1's limitation of 0.6 square inches, and the diapers thus do not infringe any of the claims at issue.

P & G also asserts that Paragon cannot succeed on its counterclaim for infringement of the Pieniak patent, because this claim was waived as the result of a 1993 arbitration agreement between P & G and McNeil-PPC, who at that time owned the Pieniak patent. Paragon contends that this agreement does not pertain to the technology at issue or the diapers accused of infringing this technology.FN36

FN36. Given the Court's conclusion that the accused diapers do not literally infringe any of the claims at issue in the Pieniak patent, the Court offers no opinion with respect to P & G's argument that Paragon's claim for infringement under the Pieniak patent was waived as a result of a 1983 arbitration agreement between P & G and McNeil-PPC, Inc.

b. ***Invalidity/Inequitable Conduct***

P & G contends that each of the Pieniak claims at issue is invalid. P & G contends that Weisman U.S.Patent No. 4,610,678 (the "Weisman patent") anticipates claims 1 and 10 of the Pieniak patent and renders obvious claim 11. P & G also asserts that the Pieniak claims at issue are invalid as indefinite pursuant to 35 U.S.C. s. 112. Finally, P & G argues that the Pieniak patent is unenforceable as a result of inequitable conduct during its prosecution.FN37

FN37. Given the Court's conclusion that the claims at issue are invalid as anticipated or obvious and that the Pieniak patent is unenforceable as a result of inequitable conduct, the Court does not address invalidity on the basis indefiniteness.

C. ***Infringement***

There is no dispute that the accused P & G diapers contain most of the elements of the Pieniak claims at issue. Both parties agree that the accused diapers contain an absorbent panel, a moisture-pervious facing layer, and an outer backing layer, with the absorbent panel and outer backing layer being secured together at the waist. The only elements in dispute pertain to the size and absorbency limitations required by each of the claims at issue. Specifically, the parties dispute whether the accused diapers satisfy the requirements of independent claim 1 that the CSB of the impact zone of the absorbent panel measure "no more than about 0.6 square inches" and that the absorbent matrix have an AEI "of at least 1.5."

As outlined in section II.D.1, *supra,* the "issue of infringement raises at least two questions: (1) what is patented, and (2) has what is patented been made, used or sold by another." Fromson, 720 F.2d at 1569.

1. ***Claim Construction***

Claim 1 requires that the impact zone of the "absorbent panel" have a CSB of "no more than about 0.6 square inches." The dispute over whether this parameter covers the accused diapers revolves around which layers in the accused diapers should be included in the thickness measurement underlying the CSB computation, i.e., the determination of which layers in the accused diapers form the "absorbent panel." In addition, the resolution of this issue also requires the Court to interpret the term "about 0.6 square inches" to determine whether a diaper with an absorbent panel that has a CSB in excess of 0.6 square inches can

nonetheless literally infringe claim 1 of the Pieniak patent.

a. "*Absorbent Panel*"

[94] The crotch region of the accused diapers consists of a topsheet, a CS-10 wicking layer, a tissue layer, a storage core, and a backsheet. *See* [DTX 38]. The parties agree that the storage core should be included in the thickness measurement. The parties also agree that the topsheet and backsheet should be excluded in computing these measurements. The parties, however, contest whether the CS-10 layer should be included in the thickness measurement. The Court agrees with the parties that this issue is a matter of claim construction, requiring the Court to determine whether a wicking layer, if present in the accused diaper, forms part of the "absorbent panel" as that term is defined by the patent.

[95] Based on a review of claim language, the specification, and the prosecution history, the Court concludes that a wicking layer, even if separate from the storage core, forms part of the "absorbent panel," and thus must be included in making the thickness measurements. The patent's definition of "absorbent panel" itself provides little guidance on this issue. The specification of the Pieniak patent defines the "absorbent panel" as "compris [ing] a matrix of absorbent material." [DTX 1, at 2:43-44]. The term "comprising" is a term of art in the area of patent law, meaning in this context that the absorbent panel consists of a matrix of absorbent material, but may also include other elements or components. In re Baxter, 656 F.2d 679, 686 (C.C.P.A.1981); Dow Chem. Co. v. American Cyanamid Co., 615 F.Supp. 471, 484 (E.D.La.1985), *aff'd,* 816 F.2d 617 (Fed.Cir.1987). The Pieniak patent does not specify whether a "wicking layer" is necessarily included within the definition of "absorbent material." Nevertheless, the Pieniak patent's definition of "absorbent panel," by use of the term "comprising," certainly does not exclude the possibility that a separate wicking layer should be considered part of the absorbent panel.

Perhaps the strongest evidence that a wicking layer is a part of the "absorbent panel" comes from the Pieniak's patent description of its preferred embodiment. The preferred absorbent panel expressly includes "an associated wicking layer of densified cellulosic fibers provided on one or both of the expansive surfaces of the fibrous web for enhancing liquid transport within the absorbent matrix." *Id*. at 4:34-40; *see also id*. at 9:13-32 (indicating that the absorbent matrix in the preferred embodiment includes at least one wicking layer). In fact, Sample LBD included two wicking layers, both of which were considered part of the absorbent matrix and included in the thickness measurement listed in Table I. *Id*. at 9:13-39; [Tr. at 2097-98]. The specification thus teaches to one of ordinary skill in the art that if the diaper contains a wicking layer, it forms a part of the absorbent panel and must be taken into account in determining the thickness in the crotch region, and hence the CSB and AEI as well.

Paragon argues that the CS-10 layer in the accused diapers is not analogous to the wicking layers in Sample LBD because the former is separated from the storage core by a tissue layer, whereas the latter were embedded on the top and bottom sides of the fibrous web of the absorbent matrix. It follows from Paragon's argument that only wicking layers which are attached to the storage core fall within the definition of "absorbent panel," while wicking layers that are separate from the storage core do not.

The patent, however, does not teach that such a distinction should be made. The CS-10 layer in the accused diapers serves the same purpose and functions in essentially the same manner as the wicking layers in Sample LBD. The purpose of the CS-10 layer is to enable the diapers to handle high rates of urine discharge by facilitating the transportation of urine to the storage core. [Tr. at 1998-2000, 2014-15, 3180-84]. It performs this function by providing temporary storage capacity for urine, and, over time, permitting the urine to be distributed and absorbed by the storage core. *Id*. Thus, like the wicking layers in Sample LBD, the CS-10 layer plays an important role in the efficient acquisition and storage of urine by the superabsorbent material in the storage core. This identity of functionality strongly suggests to one of ordinary skill in the art, as matter of claim construction, that the patent's failure to make the distinction

between a wicking layer which is embedded in the fibrous web and a wicking layer that sits atop the fibrous web warrants equal treatment for both types for purposes of determining the composition of the absorbent panel. *See* [Tr. at 3116].

In addition, the inclusion of a wicking layer, assuming the diaper in question contains one, in measuring the thickness of the absorbent panel corresponds with the primary objective of the Pieniak invention. The Pieniak patent is replete with statements and teachings that the "improved fit and comfort" objective of the claimed invention is directly related to reducing the bulk of the diaper in the crotch region. The Pieniak patent accordingly uses the cross-sectional area of the absorbent panel as the yardstick for determining whether a particular diaper is sufficiently thin and narrow that it is covered by the claims of the patent. The presence of a wicking layer in any diaper invariably contributes to the bulk in the crotch region. Because the CSB is the test provided in the patent to gauge the relative bulkiness of the diaper, the inclusion of the thickness and bulk of a wicking layer in making this calculation, regardless of whether it is separate from the storage core, is consistent with the patent's claimed coverage of only relatively low bulk disposable diapers.

The conclusion that a wicking layer, if present, forms part of the absorbent panel, is also consistent with the prosecution history of the Pieniak patent. In their last submission before allowance of the Pieniak patent, the applicants represented that the significance of the Pieniak invention was that it claimed a *diaper* with less bulk in the crotch region than the prior art. The applicants stated:

It is the Applicants who have discovered and claimed a diaper structure which is of a low bulk.... In this regard, claim 1 specifies a *disposable diaper* having a cross-sectional area in the portion of the diaper between the thighs of the wearer of no more than about 0.6 square inches....

. . . . .

... claim 1 should be in condition for allowance as it now requires a diaper with low-bulk in the crotch region....

[DTX 2, at 285, 287 (emphasis added)].

The Court does not mean to suggest that the applicants' representations to the patent examiner override the unambiguous language in claim 1 that only thickness of the absorbent panel should be measured in computing the CSB and AEI. The Court finds only that these remarks lend support to the conclusion that the inventor's definition of absorbent panel includes all the material sandwiched between the topsheet and backsheet that plays a role in the absorbent capabilities of the diaper. *See* [DTX 1, at 1:19-25].

Paragon asserts that if the Court holds that a separate wicking layer forms part of the absorbent panel, the Court would be construing claim 1 to require the presence of a wicking layer, a limitation not present in that claim. Paragon therefore asserts that such an interpretation would be contrary to the doctrine of claim differentiation, given claim 9's express requirement of the presence of a wicking layer in the absorbent matrix. This argument completely mischaracterizes the issue before the Court. The issue does not involve whether claim 1 requires an infringing diaper to contain a wicking layer. Rather, the issue before the Court is whether a wicking layer forms part of the absorbent panel, *if the diaper accused of infringement contains this element*. The Court's holding thus in no way adds the limitation of a wicking layer to claim 1 of the Pieniak patent.

Based on the foregoing, the Court finds that a person of ordinary skill in the art at the time of invention would have understood the term "absorbent panel" to include a wicking layer, if one is present, regardless of whether this layer is separate from or attached to the diaper's storage core. It follows that a wicking layer, if

present, must be included in the thickness measurements underlying the determination of an accused diaper's CSB and AEI.FN38

FN38. Even the Court did not find, as matter of claim construction, that one of ordinary skill in the art would conclude that a wicking layer, if present, forms a part of the "absorbent panel," the Court would find as a matter of fact that the CS-10 layer in the accused diaper forms a part of the absorbent panel. The evidence establishes that the CS-10 layer makes up the top layer of the absorbent panel, forming part of the absorbent capacity of the diaper itself. [Tr. at 3180-84]. The CS-10 layer absorbs and temporarily stores urine gushes before distributing most of the urine to the storage core. [Tr. at 1752, 2000, 2014-15, 3180-84]. The CS-10 layer thus constitutes "absorbent material" because it has the power, tendency, or capacity, to absorb. *See Webster's Third New Int'l Dictionary* 7 (1981).

b. "*No More Than About 0.6 Square Inches*"

[96] Claim 1 of the Pieniak patent recites that the portion of the impact zone of the absorbent panel positionable between the thighs must have "a transverse dimension and a thickness dimension to provide a cross-sectional area for said portion of no more than about 0.6 square inches." [DTX 1, at 17:31-40]. The specification provides no express indication as to the basis for the about 0.6 square inches limitation. The only disclosure in the Pieniak patent that relates to this limitation is the 0.585 square inch measurement disclosed in Table I as the CSB for Sample LBD. *Id*. at 10:18-40. The 0.585 measurement rounds off to 0.6. The prosecution history confirms that the CSB for Sample LBD was in fact used to obtain the "about 0.6 square inches" limitation. Prior to the inventor's final amendment of the claims, claim 1 included the approximate width and thickness dimensions of Sample LBD and specified that these dimensions provide the basis for the 0.6 square inch limitation. [DTX 2, at 210].

The Court finds that, at best, the "no more than about 0.6 square inches" limitation does not cover any diaper with a CSB that, when rounded off to a single digit, exceeds 0.6 square inches. The parties do not dispute that a diaper which exceeds this measurement, i.e., a diaper having a CSB in excess of 0.64 square inches, does not literally infringe claim 1 of the Pieniak patent. *See* [Tr. at 2071]. Although P & G asserts that 0.6 square inches represents the maximum permissible CSB for a diaper to infringe the Pieniak patent, the Court need not resolve this issue given the fact that none of the accused diapers have a CSB in the 0.6 to 0.64 square inches range. Thus, the Court concludes that, at the very least, a diaper having a CSB that exceeds 0.6 square inches when rounded off to a single digit does not literally infringe claim 1 of the Pieniak patent.

2. *Literal Infringement*

[97] Given the Court's construction of the terms "absorbent panel" and "no more than about 0.6 square inches," it is clear that none of the accused diapers infringe claim 1 of the Pieniak patent. Expert witnesses for both parties determined the CSB for the accused diapers, including the wicking layer in their computations. The experts' measurements are substantially in agreement. Paragon's expert, Steve Warner, concluded that the CSBs in the accused diapers range from 0.77 to 1.06 square inches. [DTX 34, at Exh. C, col. 14; Tr. at 2101-05]. Likewise, P & G's expert, Richard Moran, measured the CSBs in the accused diapers, finding that they ranged from 0.743 to 1.021 square inches. [PTX 1003, at DL216685; Tr. at 3114-16]. Thus, each expert is in agreement that none of P & G's diapers accused of infringement has a CSB which is less than 0.64 square inches. Accordingly, the Court concludes that none of the accused diapers literally infringe claim 1 of the Pieniak patent. As both claims 10 and 11 are dependent from claim 1, P & G's accused diapers necessarily do not literally infringe claims 10 or 11 of the Pieniak patent. FN39

FN39. In addition, the Court finds that Paragon has failed to prove infringement even under its own claim construction theory. As discussed *supra,* the Pieniak patent uses the AEI formula to measure whether an

accused diaper has a sufficient absorbent capacity to fall within the claims of the patent. Claim 1 requires that the matrix of the absorbent panel have "a sufficient inherent absorbency to provide said absorbent with an absorbent efficiency index of at least 1.5." [DTX 1, at 17:40-47]. The AEI formula requires a threshold absorbency of at least 220 cubic centimeters of urine. *Id*. at 15:48-16:50. When Paragon's experts determined the absorbent capacity of the absorbent panel in the accused diapers, they did so without removing the CS-10 layer. [Tr. at 1766-71, 2112-17]. There is thus no evidence in the record demonstrating that "said absorbent," i.e the absorbent panel, *see* [DTX 1, at 15:48-52], under Paragon's claim construction theory, satisfies the threshold 220 cubic centimeter requirement. Accordingly, the Court holds that even if one were to agree with Paragon's asserted construction of the terms "absorbent panel," that is, the CS-10 layer is not part of the absorbent panel, Paragon still has failed to prove that any of the accused diapers literally infringe the Pieniak claims at issue. Under its claim construction theory, Paragon has not demonstrated that any of the accused diapers have a "sufficient absorbent capacity for absorbing anticipated volumes of voided liquid" as required by claim 1 of the Pieniak patent.

3. ***Conclusion-Infringement***

For all of the foregoing reasons, the Court concludes that none of P & G's accused diapersinfringe claims 1, 10, or 11 of the Pieniak patent.

D. ***Invalidity/Unenforceability***

As outlined in section II.E.1, *supra,* P & G, as the party asserting invalidity, has the burden of establishing invalidity of the Pieniak patent by clear and convincing evidence.

1. ***Anticipation and Obviousness Over the Weisman Patent***

a. ***Claims 1 and 10***

[98] [99] [100] P & G asserts that claims 1 and 10 of the Pieniak patent are invalid under 35 U.S.C. s. 102, as anticipated by the Weisman patent.FN40 For a discussion of the legal standards for anticipation, *see supra* section II.E.2.

FN40. Relying solely on a Johnson & Johnson study, Paragon argues that the Weisman patent cannot serve as an anticipatory reference because the Weisman technology does not work in a diaper. For a prior art reference to anticipate, it must be operable U.S. v. Adams, 383 U.S. 39, 50, 86 S.Ct. 708, 713, 15 L.Ed.2d 572 (1966). Because prior patents are presumed to be operable, *see, e.g.,* Structural Rubber Products Co. v. Park Rubber Co., 749 F.2d 707, 714 (Fed.Cir.1984) (presumption of utility), the burden of production shifts to Paragon to demonstrate that Weisman technology is inoperable. Freeman v. Minnesota Mining and Mfg. Co., 693 F.Supp. 134, 147 (D.Del.1988), *aff'd in part, vacated in part,* 884 F.2d 1398, 1989 WL 86448 (Fed.Cir.1989).

Paragon has produced no evidence that the Weisman technology is inoperable. Although the Johnson & Johnson study noted several problems with the Weisman absorbent structure, such as high stiffness and low basis weight, *see* [DTX 159, at K078914], Mr. Pieniak, who was part of the team that performed this study, indicated that the team never prepared or tested any diapers constructed in accordance with Example IX of the Weisman patent. [Tr. at 1989-90]. Conversely, Mr. Moran, P & G's expert, constructed a diaper in accordance with Sample B of Example IX of the Weisman patent shortly before trial, finding that it easily contained 220 cubic centimeters of urine. [Tr. at 3154-55]. Accordingly, because the only evidence bearing on this issue shows that the Weisman technology is operable, Paragon has failed to rebut the presumption of operability accorded to the Weisman patent.
The Weisman patent, entitled "High-Density Absorbent Structures," pertains to flexible, thin absorbent

structures and products such as disposable diapers which incorporate these structures. [PTX 35]. According to the patent, the absorbent structures disclosed therein are "uniquely adapted for use in disposable diapers which are extremely thin and comfortable but which have an absorbent capacity which is at least equal to the much bulkier products which are currently marketed." *Id*. at 2:52-59. The specification indicates that these absorbent structures can be incorporated into disposable diapers using conventional diaper making techniques by replacing the wood pulp fiber web core disclosed in the prior art with the patented technology. *Id*. at 8:55-60. The specification further provides that the Weisman absorbent structures can be used in the conventional diaper chassis, incorporating by reference patents which disclose z-folded and hourglass-shaped diapers. *Id*. at 8:55-9:4.

P & G asserts that Example IX of the Weisman patent discloses five specific diapers, Samples B, C, E, F, and H, with dimensions and absorbent capacities which squarely anticipate claims 1 and 10 of the Pieniak patent. The Example IX diapers were constructed in accordance with Example VII, and employ a Weisman absorbent panel which is 12 inches in width and 16 inches in length. *Id*. at 12:9-52, 16:23-29, 17:7-9. Mr. Pieniak and Mr. Moran both testified that they understood Example IX to describe z-folded diapers. [Tr. at 1918, 3105].

It is undisputed that these five diaper samples contain most of the elements of claim 1 of the Pieniak patent. The diapers contain an absorbent panel comprising a matrix of absorbent material, a moisture-pervious facing layer (topsheet), and an outer backing layer (backsheet). *Id*. at 16:23-46; *see id*. at 8:55-9:4. The absorbent panel in the five sample diapers was placed between the topsheet and the backsheet and secured to the backsheet at the waist portions of the diaper. *Id*. at 16:23-46. Likewise, it is undisputed that the sample diapers comprise the only additional element required by dependent claim 10 of the Pieniak patent, i.e., the backsheet of these diapers is a liquid impermeable plastic film. *Id.; see* [Tr. at 3112].

The disputed elements concern the dimensional and absorbency limitations and the fit and comfort requirements contained in claim 1 of the Pieniak patent. Claim 1 claims a disposable diaper "having improved fit and comfort," and "providing ... a structure which is sufficiently narrow and thin so as to minimize discomfort to the wearer." Claim 1 further limits the cross-sectional area ("CSB") of the impact zone of the absorbent panel to "no more than about 0.6 square inches," and requires that the absorbent matrix provide sufficient absorbent capacity to provide the absorbent panel with an AEI of "at least 1.5.," "thereby providing sufficient absorbent capacity for absorbing anticipated volumes of voided liquid." [DTX 1, at 17:30-36]. The Court will address each of these elements seriatim.

1) "*Improved fit and comfort*" *and* "*sufficiently narrow and thin*"

[101] P & G asserts that neither the phrase "having improved fit and comfort" nor the clause "providing ... a structure which is sufficiently narrow and thin so as to minimize discomfort to the wearer" add any limitation to claim 1 beyond the requirement that the CSB of the impact zone be "no more than about 0.6 square inches ." P & G contends that the Pieniak specification associates the "fit" and "comfort" of a diaper only with the thickness and width dimensions of the crotch region. Because the CSB formula is also dependent only on the width and thickness in the crotch region, P & G argues that a diaper which satisfies the 0.6 square inches limitation necessarily has "improved fit" and "comfort" and is "sufficiently thin and narrow so as to minimize discomfort to the wearer." Although Paragon does not address this assertion in its brief, its expert, Mr. Zajackowski, agreed that if a diaper satisfies the CSB limitation, it will also satisfy the "fit and comfort" and "sufficiently thin and narrow" limitations as well. [Tr. at 1765, 1775]. The resolution of this issue requires the Court to construe these terms as a matter of law.

The Pieniak specification directly relates the "fit" and "comfort" of a diaper to the bulk of the diaper in the crotch region. [DTX 1, at 1:42-2:24]. With regard to wearer comfort, the patent states that a diaper with less bulk causes less unnatural displacement of the wearer's thighs, thereby improving comfort. *Id* . at 1:51-57.

According to the patent, the thickness that a diaper exhibits in the crotch region in excess of the child's natural crotch width will push against the child's thighs, causing them to spread apart to accommodate the diaper. *Id*. at 1:51-55. The patent opines that the unnatural displacement of the child's thighs resulting from thicker diapers encumbers the child's mobility and causes the product to be uncomfortable. *Id*. at 1:55-57.

The patent also states that a diaper which is less bulky also has improved "fit." The patent indicates that consumers prefer a snug-fitting diaper for its aesthetic appeal, as well as the ease with which outer clothing can be placed over the diaper. *Id*. at 1:57-61. The patented diaper therefore fits better than bulkier diapers which hang low between and infant's legs with a bagging or pouch-like appearance. *Id*. at 1:61-63.

The Pieniak patent measures the bulk in the crotch region using the previously discussed CSB formula. In Table I, the patent compares a diaper implementing the patented technology, Sample LBD, with 17 other prior art samples. The CSB of Sample LBD is 0.585 square inches, which can be rounded off to 0.6 square inches. As Table I discloses, Sample LBD has substantially better CSB than each of the other tested samples. *Id*. at 12:38-43, Table I.

The specification of the Pieniak patent also discloses three other indices as illustrative of a diaper's fit and comfort characteristics, and compares Sample LBD's performance under these indices with the other tested samples. The first of these other indices is the "Diaper Compression Index." The patent indicates that the Diaper Compression Index expresses the differences in the fit characteristics of the tested samples. *Id*. at 11:33-35. The Diaper Compression Index is dependent only on the thickness of the absorbent panel in the crotch region. *Id*. at 11:33-53.FN41 Table III of the patent lists the Diaper Compression Index for the various samples tested. Sample LBD had the best Diaper Compression Index of the tested samples. *Id*. at Table III. The patent concludes that this data indicates that Sample LBD has a negligible effect in encumbering the infant, while the other tested samples far exceed the infant's natural crotch width. *Id*. at 11:54-57.

FN41. The Diaper Compression Index equals 4 times the diaper thickness divided by the mean distance between the thighs of a 16-24 pound infant. [DTX 1, at 11:50-53].

The next of these indices is the "Discomfort Factor," which the patent describes as another manner in which the bulk differences between various diapers can be expressed. *Id*. at 13:35-37. This index is essentially redundant with the CSB measurement. Both the CSB and the Discomfort Factor are solely dependent on the cross-sectional area of the crotch region. The Discomfort Factor merely throws in a few additional constants to alter the numbers. *Id*. at 13:57-67.FN42 Sample LBD performs better under the Discomfort Factor than the 17 prior art samples. *Id*. at Table V.

FN42. The Discomfort Factor equals the CSB multiplied by the approximate length of the impact zone in mid-size diapers (6 inches), divided by the average distance between the thighs of a 16-24 pound infant (0.46 inches). *Id*.

The final index is the "Diaper Fit Index." The patent describes this index as "another factor which determines the fit and comfort level of a diaper." *Id*. at 14:44-47. The Diaper Fit Index is dependent only on the distance between the innermost elastic members, i.e., the inboard edges of the gasketing cuffs, measured across the absorbent panel in the crotch region. *Id*. at 14:56-64. The patent indicates that if this distance is "large," excessive bagging or hanging between the infant's thighs will occur. *Id*. As with the other three indices, Sample LBD has the most preferred Diaper Fit Index when compared with the other tested samples. *Id*. at Table VI.

The only measurement or index expressly incorporated as a claim element in claim 1 is the CSB. Claim 1 limits the CSB of a diaper to "no more than about 0.6 square inches." Because the specification of the patent repeatedly associates the fit and comfort of a diaper to the bulk in the crotch region, it is clear to the Court that a diaper which does not satisfy this claim limitation also fails both the "having improved fit and comfort" and "sufficiently narrow and thin" requirements. The issue before the Court is whether these two terms also impose limitations under the other three indices disclosed in the Pieniak specification.

The Court finds that a person of ordinary skill in art at the time of the invention would have concluded that the terms "having improved fit and comfort" and "sufficiently narrow and thin so as to minimize discomfort to the wearer" do not impose any limitations under the Diaper Compression Index, the Discomfort Factor, or the Diaper Fit Index. In describing the invention, the specification repeatedly directly associates the "fit" and "comfort" of the diaper with the "bulk" of the diaper in the crotch region, defined by the CSB measurement. *See, e.g.,* 1:8-13, 1:42-46, 2:3-9, 2:11-15. Each of the other three indices represent alternate computations of the bulk in the crotch region, which is directly measured using the CSB formula. Nowhere does the patent provide any guide or clue that there is an additional dimensional requirement associated with the terms "improved fit and comfort" and "sufficiently thin and narrow," other than the CSB limitation imposed in claim 1. Although these indices are referenced in the specification, under principles of claim construction, extraneous limitations appearing only in the specification may not used to add limitations to a claim. *See supra* section II.D.1.a.2).

Moreover, the Pieniak specification does not define "improved fit and comfort" or "sufficiently thin and narrow" as requiring a specific measurement under the Diaper Compression Index, the Discomfort Factor, or the Diaper Fit Index. Nor does the specification provide any direct association of these terms with any of the three indices. It follows that the patent does not teach one of ordinary skill in the art that the terms in question impose a limitation under any of these three indices.

The claim language itself also suggests that these terms are not additional elements of the claim. The term "having improved fit and comfort" is part of the preamble. Althoughthe preamble may constitute a limitation on the claim, courts generally conclude that it does not impose an additional limitation where it "merely states a purpose or intended use and the remainder of the claim completely defines the invention," 3 Chisum, *Patents* s. 8.06[1][d] (quoting Marston v. J.C. Penney Co., 353 F.2d 976, 986 (4th Cir.1965)), as in the present case. Likewise, the "sufficiently narrow and thin" language appears as a conclusion to the element containing the CSB limitation, suggesting that a diaper which satisfies the CSB limitation necessarily meets the "sufficiently narrow and thin" requirement. Accordingly, the Court finds that a diaper which satisfies the "no more than about 0.6 square inches" limitation placed on the diaper's CSB necessarily has "improved fit and comfort" and provides a "structure which is sufficiently narrow and thin so as to minimize discomfort to the wearer." These terms therefore do not further limit the diapers covered by and the art which anticipates claim 1 of the Pieniak patent.

2) *The CSB limitation*

It is clear that Samples B, C, E, F, and H of Example IX of the Weisman patent each have a CSB that is less than 0.6 square inches. All five of the samples have an initial width of 12 inches. [PTX 35, at 16:23-30]. The width of the absorbent panel in these diapers upon being z-folded is 4.5 inches. *See* [Tr. 3153-54]. The original thicknesses of the absorbent panels in the sample diapers are set forth in Table IX. Table IX discloses original panel thicknesses ranging between 0.5 and 0.7 millimeters, or 0.0197 to 0.0276 inches, for the five samples alleged to anticipate claims 1 and 10. [PTX 35, at Table IX].FN43 A z-folded absorbent panel is approximately three times thicker than an unfolded pad. [Tr. at 3153-54]. Thus, the z-folded absorbent panels have thicknesses ranging between 0.059 to 0.083 inches. The thickness and width dimensions for the five samples yield CSBs ranging from 0.29 to 0.37 square inches, all well below the limit of 0.6 square inches. Accordingly, Samples B, C, E, F, and H each have a CSB which is "no more than

about 0.6 square inches." FN44 These samples therefore satisfy the CSB limitation contained in claim 1 of the Pieniak patent.FN45

FN43. 1 millimeter=0.03937 inches

FN44. Even if the CSB was computed for the absorbent panel in the five samples in question prior to z-folding the samples, it would still fall below the limit of 0.6 square inches. Multiplying the width of $12 inches by the thickness of the thickest of the five samples, 0.7 millimeters or 0.0276 inches, yields a CSB of 0.33 square inches. Thus, Samples B, C, E, F, and H, even prior to being z-folded, satisfy the "no more than about 0.6 square inches" limitation placed on the CSB by claim 1.

FN45. These five samples also yield lower, and thus better, numbers for the Diaper Discomfort Factor and the Diaper Compression Index than Sample LBD, because the absorbent panel in Sample LBD was thicker and had a higher CSB in the crotch region. *See* [PTX 1056]. The Diaper Fit Index can not be calculated for Samples B, C, E, F, and H, because there is no indication that these diapers contained leg elastics. *See* [PTX 35, at 23-46].

3) *The AEI limitation*

[102] Claim 1 requires that the absorbent panel have an AEI of "at least 1.5, thereby providing sufficient absorbent capacity for absorbing anticipated volumes of voided liquid." [DTX 1, at 17:40-45]. The patent indicates that a diaper has adequate absorbent capacity if its impact zone is capable of absorbing and distributing 220 cubic centimeters of urine. *Id*. at 15:48-56. The patent further states that approximately 60% of the urine introduced into the impact zone will remain there, while the other 40% distributes through the remainder of the absorbent panel. *Id*. Although the patent parades the AEI formula as a measure of whether a diaper sample has an adequate absorbent capacity, the only variables in the AEI equation are the width and thickness of the absorbent panel. *Id*. at 16:10-30. In other words, the AEI is dependent only on the CSB of the absorbent panel. The AEI formula assumes that the diaper sample in question can absorb at least 220 cubic centimeters of urine and that 60% of the absorbed urine remains in the impact zone. *Id*.

Although the absorbency is not a variable in the AEI equation, the AEI inherently requires that the absorbent panel be capable of absorbing at least 220 cubic centimeters of urine. This is evidenced by the claim language itself which concludes that a disposable diaper which has an AEI of at least 1.5 provides "sufficient absorbent capacity for absorbing anticipated volumes of voided liquid." *Id*. at 17:41-45; *see id*. at 16:49-56 (indicating that Sample LBD's high AEI indicates that a low bulk diaper need not compromise the desired absorbent capacity of the product).

Paragon asserts that the AEI formula also requires that the impact zone of the diaper be capable of absorbing 132 cubic centimeters of urine, or 60% of the anticipated void volume. The Court disagrees. There is no reference anywhere in the patent to the 132 cubic centimeter figure cited by Paragon as a requirement of claim 1. In addition, unlike the 220 cubic centimeter requirement, the specification does not state that the absorptive characteristics of the diaper require 60% retention of urine in the impact zone. *Id*. at 15:48-56. Rather, the specification assumes that approximately 60% of the urine introduced into the diaper remains in the impact zone. *Id*. The specification provides: "It has been determined that an appropriate standard in ascertaining functionality with respect to absorptive capacity is that the impact zone *be capable* of absorbing about 220 cc of urine through its usage.... Approximately 60% of the urine introduced into the impact zone remains there...." *Id*. (emphasis added). Thus, there is no indication in the specification that the impact zone must be capable of retaining 60% of the anticipated void volume or 132 cubic centimeters of urine.

Likewise, the patent's prosecution history also states the 60% retention figure as an assumption and not as a requirement. [PTX 46, at 222 para.para. 8, 9]. The inventors stated to the Patent and Trademark Office that they

determined that approximately 60% of the urine introduced into the impact zone of a disposable diaper remains there, while the other approximately 40% is distributed throughout the rest of the absorbent panel of the diaper. We based our analysis on a contemplated void volume of 220 cc....

For comparative testing of a disposable diaper embodying the present invention and commercially-available products, we calculated an Absorbent Efficiency Index for each such product, wherein we related the *anticipated void volume* to the cross-sectional bulk of a disposable diaper at its impact zone....

Id. (emphasis added). This declaration indicates that the 220 cubic centimeters anticipated void volume is the only threshold absorbency standard. Again, there is no disclosure that the AEI requires the retention of 132 cubic centimeters of urine in the impact zone. Accordingly, the Court finds that a person of ordinary skill in art would not have concluded that claim 1 requires that the impact zone of the absorbent panel be capable of retaining at least 132 cubic centimeters of urine.

The Weisman patent discloses that Samples B, C, E, F, and H of Example IX are each capable of absorbing at least 220 cubic centimeters of urine. These diaper samples were tested on infants in a nursery school setting. [PTX 35, at 17:12-23]. The diapers were pre-loaded with a predetermined amount of synthetic urine. *Id* . After leakage occurred, the diapers were taken off and weighed. *Id*. The results of this test, exhibited in Table IX ("Grams of fluid to grade 3 leakage"), indicate that the five samples have absorbent capacities ranging from 230 to 263 cubic centimeters of urine.FN46 Thus, each of the samples had an absorbent capacity of at least 220 cubic centimeters of fluid.

FN46. One gram of water or synthetic urine is approximately 1 cubic centimeter in volume.

As indicated previously, the AEI is dependent only on the CSB of the absorbent panel. The Example IX diapers all had AEIs substantially greater than 1.5, ranging from 3.60 to 5.06. Accordingly, Samples B, C, E, F, and H of the Weisman patent each satisfy the AEI limitation imposed by claim 1 if the Pieniak patent.

Based on the foregoing, the Court concludes that Samples B, C, E, F, and H of Example IX of the Weisman patent disclose all of the elements and limitations of claims 1 and 10 of the Pieniak patent. The Court accordingly finds that the Weisman patent anticipates claims 1 and 10 of the Pieniak patent, pursuant to 35 U.S.C. s. 102.

b. *Claim 11*

[103] Claim 11 of the Pieniak patent is dependent from claim 1 adding only the requirements that the portion of the absorbent panel positionable between the thighs of the wearer have a width of about 4.5 inches, a thickness of about 0.13 inches and an AEI of 2.29 inches. P & G first argues that claim 11 is anticipated by the Weisman patent. The Weisman patent, however, does not disclose a diaper having the exact dimensions recited in claim 11. [Tr. at 3113]. Thus, the Weisman patent does not anticipate claim 11 of the Pieniak patent.

[104] P & G also asserts that claim 11 is invalid for obviousness in light of the Weisman patent. As outlined in section II.E.3., *supra,* obviousness under 35 U.S.C. s. 103 is question based on the following factual inquires established in Graham v. John Deere Co., 383 U.S. 1, 17, 86 S.Ct. 684, 693, 15 L.Ed.2d 545 (1966):

1) the level of ordinary skill in the art at the time of invention; 2) scope and content of the prior art; 3) differences between the prior art and the subject matter patent; and 4) secondary considerations such as commercial success, long felt but unresolved need, and failure of others.FN47 The critical question under section 103 is whether the invention would have been obvious to one of ordinary skill in the art at the time it was made. *See supra* section II.E.3.

FN47. The Court has previously determined that the level of ordinary skill in the art would be typified by an individual with a college degree in engineering or one of the sciences and three to five years work experience in the diaper industry. *See supra* section II.E.3.a.1).

1) ***Scope and content of the Weisman patent and the differences between it and claim 11***

The values recited in claim 11 of the Pieniak patent for the width and thickness parameters and the AEI are not cited as critical or optimum dimensions. Each of these elements is encompassed within the AEI and CSA ranges disclosed in claim 1. There is no indication in the Pieniak patent that a diaper embodying these dimensions has certain advantages over less bulky diapers, or other diapers that are covered by claim 1. The dimensions contained in claim 11 are merely the dimensions of Sample LBD, the only tested embodiment of the Pieniak invention cited in the specification. *See* [DTX 1, at Table I, VII]. Pursuant to the teachings of the Pieniak patent, a diaper which is less bulky than Sample LBD would be more comfortable and would fit better than Sample LBD. *See, e.g., id*. at 1:41-63, 12:36-38, Accordingly, given this Court's conclusion that the Weisman patent anticipates claim 1 of the Pieniak patent, from which claim 11 depends, the only obviousness issue is whether a diaper comprising an absorbent panel with the specific dimensions recited by claim 11 would have been obvious to a person of ordinary skill in the art.

The Weisman patent discloses thin and flexible absorbent structures which provide superior absorbent capacity. [PTX 35, at 2:52-59]. The patent indicates that these structures can be used in disposable diapers using conventional diaper making techniques by replacing the wood pulp fiber web absorbent core disclosed in the prior art with a Weisman absorbent structure. *Id*. at 8:55-60; [Tr. at 3097-98]. Alternatively, the patent discloses that a Weisman absorbent structure may be used as an insert by placing it between the traditional wood pulp fiber core and the backsheet. [PTX 35, at 9:35-50]. The patent provides that the use of the invention as an insert results in a substantial increase in the absorbent capacity over a conventional diaper without an insert. *Id*. When used to form the absorbent core, the patent indicates that the thickness of the Weisman absorbent structures is preferably between about 0.3 to about 2 millimeters, and more preferably between about 0.5 to about 1 millimeter. *Id*. at 9:32-35. When used as an insert, the patent specifies that the preferable thickness for the insert is between about 0.1 to about 1 millimeter. *Id*. at 9:45-47.

The patent cites to two prior art diaper constructions, incorporating by reference the two prior art patents which disclose these constructions. [PTX 35, at 8:55-9:4]. The first of these prior art constructions is the Duncan z-folded diaper. *Id.;* [Tr. at 3098]. The absorbent core utilized in this construction is sixteen inches long and twelve-and-a-half inches wide. [Tr. at 189]. The core was z-folded widthwise in the crotch region to a width of approximately four-and-a-quarter to four-and-a-half inches. *Id*.

Both Mr. Moran and Mr. Pieniak testified that one of ordinary skill in the art would have understood that Example IX of the Weisman patent discloses diaper samples that were z-folded in accordance with the Duncan patent. [Tr. at 1918, 3105]. Mr. Moran further indicated that each of the Example IX diapers were z-folded to a width of 4.5 inches, the same width disclosed in claim 11 of the Pieniak patent. [Tr. at 3153-54]. Seven of the samples in Example IX were prepared using a Weisman absorbent structure, five of which anticipate claims 1 and 10 of the Pieniak patent. Each of the Weisman samples has a thickness, when z-folded, of less than 0.13 inches. [PTX 35, at Table IX]. Example IX also discloses three structures that were

prepared using a conventional diaper absorbent core. *Id*. at 17:24-25. The thickness of each of these three structures was 2.9 millimeters or 0.114 inches. *Id*. at Table IX.

The second diaper construction technique disclosed in the Weisman patent is the hourglass-shaped construction disclosed in the Buell patent. [PTX 25; Tr. at 3098]. The Buell patent indicates that the width of the absorbent body in the crotch region of a diaper constructed in accordance with the patent is between 1 inch and 6 inches, and preferably between 2 and 3 inches. [PTX 25, at 5:44-48].

Both the Duncan and Buell constructions thus disclose an impact zone with a width of 4.5 inches. Accordingly, the invention described in the Weisman patent differs from claim 11 of the Pieniak patent in only one respect; the Weisman patent does not specifically disclose an absorbent panel having a thickness dimension in the crotch region of 0.13 inches.FN48

FN48. The only variables in the AEI formula are the width and thickness of the impact zone. Thus, any diaper that satisfies the width and thickness limitations of claim 11 necessarily has an AEI of 2.29.

Upon a review of the relevant prior art, the Court finds that the similarities between the Weisman patent and claim 11 weigh strongly in favor of a finding of obviousness. The absorbent structures disclosed in the Weisman patent are thinner, and thus are superior in terms of "fit" and "comfort," to the 0.13 inches required by claim 11. The Weisman patent indicates that the Weisman absorbent structures have a preferred thickness of between 0.012 to 0.079 inches. [PTX 35, at 9:32-35]. The patent, however, does not require 0.079 inches as an upper limit on the thickness dimension and does not disclose any disadvantages with respect to absorbent capacity if the thickness dimension is increased above this limit. In fact, several of the sample diapers employing Weisman absorbent cores disclosed in Example IX had thickness measurements, upon z-folding, which were greater than 0.079 inches. *See* [PTX 35, at Table IX]. Although the thicknesses of each of these diapers were less than 0.13 inches, the Court agrees with the unrebutted testimony of Mr. Moran, P & G's expert, that it would have been an obvious variation to add more absorbent material to the structures disclosed in Example IX to obtain the requisite thickness of 0.13 inches. There is no evidence to indicate that the addition of absorbent material to the Example IX structures would have resulted in a decrease in the absorbent capacity. To the contrary, the Court finds that a person of ordinary skill would have expected the absorbent capacity to remain the same or increase upon the addition of additional absorbent material.

Accordingly, because there is no importance specifically attributed to the dimensions recited in claim 11, the Court finds that the disclosure in the Weisman patent of a slightly thinner diaper with the same width and adequate absorbent capacity provides strong evidence that claim 11 would have been obvious to one of ordinary skill in the art.

2) *Secondary considerations*

After a review of the record in this case, the Court finds that the record is devoid of any evidence pertaining to secondary considerations such as unexpected results, commercial success,FN49 or failure of others relating to the Pieniak invention.

FN49. Citing to sales of the P & G products accused of infringement, Paragon asserts that the Pieniak invention was commercially successful. As this Court has found that these diapers do not infringe the Pieniak patent, the evidence pertaining to their sales bears no relevance to the issue of commercial success.

3) *Resolution of the obviousness issue*

After careful and though consideration of all of the evidence with regard to the Graham factors, the Court concludes that P & G has demonstrated by clear and convincing evidence that claim 11 of the Pieniak patent would have been obvious to a person of ordinary skill in the art, given the Weisman patent. The Weisman patent discloses a diaper containing each of the limitations present in claim 11, except the thickness dimension specified in claim 11 and the AEI that necessarily results from this parameter. The Weisman patent expresses a preference for diapers which are thinner than the diaper claimed in claim 11. Pursuant to the teachings contained in the Pieniak patent, the Weisman patent thus discloses an absorbent structure that is superior in fit and comfort. The Court agrees with Mr. Moran that it would have been obvious to a person of ordinary skill in the art to add absorbent material to increase the thickness of the impact zone to the dimension specified in claim 11. Accordingly, the Court holds that claim 11 of the Pieniak patent is invalid as obvious under 35 U.S.C. s. 103.

2. ***Inequitable Conduct***

[105] P & G argues that the failure to disclose the Weisman patent to the PTO during the prosecution of the Pieniak patent constitutes inequitable conduct. P & G charges both of the named inventors, Heinz Pieniak and Gloria Huffman, and their attorneys, John Milnamow and Stephen Geimer, with intentionally failing to disclose material information and intentionally submitting false material information to the PTO.

[106] [107] [108] It is well-settled that applicants for patents have an uncompromising duty of candor and good faith in dealing with the PTO. 37 C.F.R. s. 1.56(a). That duty is not an irrelevant legal fiction; the duty of candor is and has long been an essential ingredient in the patent process. Precision Instrument Mfg. Co. v. Automotive Maintenance Mach. Co., 324 U.S. 806, 818, 65 S.Ct. 993, 999, 89 L.Ed. 1381 (1945). "Inequitable conduct" results from the failure to conform to this duty and renders the entire patent unenforceable, not just those claims to which the inequitable conduct was directed. J.P. Stevens & Co., Inc. v. Lex Tex Ltd., Inc., 747 F.2d 1553, 1561 (Fed.Cir.1984). Inequitable conduct resides in an affirmative misrepresentation of a material fact, the failure to disclose material information, or submission of false material information, coupled with an intent to deceive or mislead the PTO. Critikon, Inc. v. Becton Dickinson Vascular Access, Inc., 120 F.3d 1253, 1256 (Fed.Cir.1997); Molins PLC v. Textron, Inc., 48 F.3d 1172, 1178 (Fed.Cir.1995).

[109] [110] A party who alleges inequitable conduct arising from a failure to disclose prior art must establish by clear and convincing evidence that (1) the prior art is "material;" (2) the patent applicant knew of this prior art and its materiality; and (3) the failure to disclose this prior art resulted from an intent to deceive or mislead the PTO. Molins, 48 F.3d at 1178. If the party charging inequitable conduct establishes the thresholds for materiality and intent, the court must conduct a balancing test and determine "whether the scales tilt to a conclusion that inequitable conduct occurred." Critikon, 120 F.3d at 1256. The more material an omission or representation, the lower the level of intent required to establish inequitable conduct. *Id*.

a. ***Materiality***

There is no question that the Weisman patent was of the highest degree of materiality to the examination of the Pieniak patent. As determined *supra,* the Weisman patent anticipates claims 1 and 10 of the Pieniak, and renders obvious claim 11. Thus, the Weisman patent was unquestionably material to the patentability of the Pieniak patent.FN50

FN50. The definition of "material" is codified in 37 C.F.R. 1.56, PTO Rule 56. A new Rule 56 went into effect in 1992, applicable only to applications pending or filed after March 16,1992. Molins, 48 F.3d at 1179 n. 8. The old Rule 56 defined information as "material" when "there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." *See id*. The new Rule 56 provides that information is "material"when it is not cumulative and "(1) It

establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or (2) It refutes or is inconsistent with a position the applicant takes in: (i) Opposing an argument of unpatentability relied on by the Office, or (ii) Asserting an argument of patentability." 37 C.F.R. s. 1.56(b).

The Pieniak patent issued on March 24, 1992. Because the Court finds that the Weisman patent is material under both the new and the old standard, the Court does not comment on which Rule applies to this case.

b. *Knowledge*

In the early 1980s, the management of Johnson & Johnson implemented a project to develop a new absorbent structure to be used in disposable diapers. [Tr. at 1852]. This project resulted in the development of a compressed composite absorbent technology. [Tr. at 1852-59, 2992]. In 1986, Johnson & Johnson decided to abandon its diaper business, and endeavored to sell the compressed composite technology. [Tr. at 1860-61].

Paragon's predecessor, Weyerhaeuser, which was considering the acquisition of this technology at that time, brought to Johnson & Johnson's attention the then-recently issued Weisman patent. [PTX 45, at K079150, Tr. at 650]. In response to Weyerhaeuser's concerns, Johnson & Johnson assembled a so called "SWAT team" in December 1986 to compare the effectiveness of the Weisman technology with its own compressed composite technology. [PTX 45, at K079150; Tr. at 1878, 2992-93, 3002]. The purpose of the SWAT team, which included Mr. Pieniak and Ms. Huffman, was to determine whether the Weisman patent reduced the value of Johnson & Johnson's compressed composite technology to prospective purchasers or licensees and to develop data to support the sale of this technology to Weyerhaeuser. [PTX 36, at K78928-29; PTX615; Tr. at 3002-05].

On December 9, 1986, the Johnson & Johnson SWAT team met to discuss the agenda for testing structures produced pursuant to the Weisman patent. [PTX 44; Tr. at 1908-09]. Mr. Pieniak admitted that as of this date, he had studied the Weisman patent and knew that it disclosed a diaper comprising an absorbent panel with a smaller cross-sectional area than that required by the draft claims of the Pieniak patent. [Tr. at 1908-12]; *see* [D.I.242, s. 4, para.para. 23-25]. As is discussed *infra,* the draft claims were completed approximately a month earlier. [PTX 772; Tr. at 3358, 3372]. Shortly after the December 6, 1986 meeting, Mr. Pieniak and Ms. Huffman were sent a memorandum which specifically provided that the Weisman patent disclosed a preferable thickness for its absorbent structures ranging from 0.5 to 1.0 millimeters, or as low as 0.002 inches, almost 10 times thinner than Sample LBD. [PTX 45].

In January 1987, the SWAT team issued a 222-page report detailing its study of the Weisman patent. [PTX 36]. As part of the study, the team actually made diapers having Weisman absorbent panels. [PTX 36, at K078913; Tr. at 1879-82, 3007-08]. At least one of the constructed samples satisfied all of the parameters of claims 1 and 10 of the Pieniak patent. "Roll # 6" had a thickness of 1.7 millimeters, or 0.067 inches, and a width of 4.5 inches yielding a CSB of 0.302 square inches. [PTX 36, at K078915, K078940]. Roll # 6 also absorbed more than 220 cubic centimeters of fluid in doll tests, thereby satisfying the absorbent capacity requirement. *Id*. at K078951, K078953.

In the same time frame as the SWAT team's investigation, Mr. Pieniak and Ms. Huffman began working on the Pieniak patent application. [Tr. at 2963-64, 3359, 3368]. On November 5, 1986, the inventors had one of several meetings with Mr. Geimer, Mr. Milnamow, and Robert Minier, Johnson & Johnson's Chief Patent Counsel, to discuss their low bulk disposable diaper invention. [PTX 42; PTX 668; Tr. at 2269-71, 3370-71]. On the following day, Messrs. Geimer, Milnamow, and Minier prepared draft patent claims for the invention. [PTX 772; Tr. at 3359, 3372]. On November 13, 1986, the draft claims were forwarded to Mr. Pieniak. [PTX 43; Tr. at 1901-02]. Among the limitations contained in these draft claims was a maximum CSB for the absorbent panel in the crotch region of about 0.6 square inches. [PTX 43].

In January 1987, the same month that the SWAT team completed its report on the Weisman patent, Mr. Minier directed Mr. Milnamow to draft a patent application on the basis of Mr. Pieniak's and Ms. Huffman's invention of a low bulk diaper. [PTX 672; Tr. at 3375-77]. The first application for the Pieniak patent was filed October 27, 1988. [Tr. at 3382]. The Pieniak patent was ultimately issued on March 24, 1992.

The Court finds that the evidence could not be more clear that Mr. Pieniak and Ms. Huffman knew of the Weisman patent and its materiality to the patentability of their invention throughout the prosecution of the Pieniak patent. The evidence is undisputed that both of these inventors took part in an extensive study of the Weisman patent and prepared diaper samples comprising the Weisman technology which, according to their own measurements, satisfied the dimensional and absorbency requirements contained in claim 1 of the Pieniak patent.

Paragon suggests that the inventors did not find the Weisman patent to be material because the inventors believed that the Weisman technology did not work well. First, the evidence establishes that at least one of the diaper samples constructed in accordance with Weisman, Roll # 6, met each of limitations contained in claims 1 and 10. Additionally, although having knowledge of the diapers disclosed in Example IX of the Weisman patent, the inventors, as part of their work for the SWAT team, never prepared or tested diapers constructed in accordance with this Example, i.e., z-folded diapers. [Tr. at 1989-90]. Thus, the inventors had no reasonable basis to believe that the anticipatory diapers had any operability problems.

Accordingly, the Court finds that P & G has established by clear and convincing evidence that Mr. Pieniak and Ms. Huffman were aware of the Weisman patent and its materiality before filing their patent application.

c. *Intent*

[111] The requisite intent required for inequitable conduct need not be proven by direct evidence or by proof of deliberate scheming. Critikon, 120 F.3d at 1256. Intent may also be inferred from the surrounding circumstances. *Id*. The Federal Circuit has indicated that intent may be inferred if the patent applicant knew, or should have known, that withheld information would be material to the PTO's consideration of the patent application. *Id*.

A relatively high degree of intent may be inferred from the record in this case. The record establishes that both Mr. Pieniak and Ms. Huffman were aware that the duty of candor and good faith required them to disclose to the PTO all material information of which they had knowledge. [DTX 8; Tr. at 1875-76, 2218]. In addition, the Court has already found that the anticipatory Weisman reference is highly material and that the inventors had clear knowledge of its materiality as a result of their participation in the SWAT study.

In the face of this evidence, Paragon offers Mr. Pieniak's denial of an intent to withhold relevant information from the PTO and Ms. Huffman's assertion that the Weisman patent had nothing to with the Pieniak application. *See* [PT at 1895, 2994]. With respect to Mr. Pieniak's contention, the Federal Circuit has made clear that mere denials are insufficient where a high level of materiality and knowledge have been established:

No single factor or combination of factors can be said always to require an inference of intent to mislead; yet a patentee facing a high level of materiality and clear proof that it knew or should have known of that materiality, can expect to find it difficult to establish "subjective good faith" sufficient to prevent the drawing of an inference of intent to mislead. A mere denial of intent to mislead (which would defeat every effort to establish inequitable conduct) will not suffice in such circumstances.

Critikon, 120 F.3d at 1257.

Moreover, the Court rejects the inventors' assertions that they did not consider or realize the significance of the Weisman patent when preparing the Pieniak patent application. The inventors' took part in an extensive analysis of the Weisman absorbent structures within the same time frame in which they reviewed the draft claims of the Pieniak application. [PTX 672;Tr. at 2967-68]. Mr. Pieniak admitted on the stand that he knew as of December 9, 1986, that the Weisman patent disclosed a diaper with a smaller CSB than that required by the draft claims. [Tr. at 1910]. The Court finds Paragon's suggestion that the inventors failed to recognize the significance of the Weisman patent when they authorized their attorneys to proceed on their patent application in January 1987, to be incredulous. Yet, despite the knowledge gained through the SWAT study and the testing performed on diapers which were less bulky than Sample LBD and which fell within the limitations contained in the draft claims, the inventors never disclosed the Weisman patent to the PTO or to Messrs. Geimer and Milnamow. Nor did the inventors ever disclose the SWAT report which memorialized their knowledge of the technology disclosed by the Weisman patent.

In addition, as Mr. Pieniak admitted on the stand, the applicants made several comments to the PTO, which at worst were misleading, and at best constituted affirmative misrepresentations. In response to a rejection of their draft claims by the PTO, the inventors submitted a declaration which stated that the CSB of their own claimed diaper was significantly less than a wide variety of commercially available samples tested by the inventors. [PTX 46, at 220 para. 3]. The declaration further provided that "none of the prior art products which we extensively tested and evaluated in any way suggested the combination of improved comfort, fit, and absorptive characteristics in accordance with a product embodying our invention." *Id*. at 223 para. 10. The former statement is clearly misleading and the latter is false, given the undisputed evidence that the inventors tested diapers that were thinner and contained less bulk than Sample LBD as part of the SWAT team study. Although the diapers incorporating the Weisman structure were not commercially available, Mr. Pieniak indicated that he knew that a diaper need not be commercially available to constitute prior art. These deceptive statements to the PTO bolster the inference that the inventors acted with an intent to deceive by failing to disclose the Weisman patent.

The Federal Circuit has indicated that "[i]t is axiomatic that '[c]lose cases should be resolved by disclosure, not unilaterally by the applicant.' " Critikon, 120 F.3d at 1257(alteration in original) (quoting LaBounty Mfg., Inc. v. U.S. Int'l Trade Comm'n, 958 F.2d 1066, 1076 (Fed.Cir.1992)). It is an understatement to say that the inventors recognized that this was a close case. Rather, the evidence shows that they clearly knew that the Weisman patent was probably an anticipatory reference, and the record does not reveal a good faith basis for their failure to disclose it. Accordingly, the Court finds that Mr. Pieniak and Ms. Huffman acted with an intent to deceive when they did not disclose the Weisman reference to the PTO.

d. ***Conclusion-Inequitable Conduct***

Given the strength of the evidence with respect to all three factors, the Court finds that P & G has established that Mr. Pieniak and Ms. Huffman engaged in "inequitable conduct" in failing to disclose the Weisman patent. The Court therefore holds that the Pieniak patent is unenforceable.FN51

FN51. Because the Court concludes that the Pieniak patent is unenforceable as a result of inequitable conduct on the part Mr. Pieniak and Ms. Huffman, the Court offers no opinion on whether the actions of Messrs. Milnamow and Geimer also rise to the level of inequitable conduct.

3. ***Conclusion-Invalidity/Inequitable Conduct***

The Court finds that P & G has demonstrated by clear and convincing evidence that claims 1 and 10 of the Pieniak patent are invalid as anticipated by the Weisman patent. The Court finds that P & G has

demonstratedby clear and convincing evidence that claim 11 of the Pieniak patent is invalid as obvious in light of the Weisman patent. The Court further finds that P & G has demonstrated by clear and convincing evidence that the Pieniak patent is unenforceable as a result of inequitable conduct. Judgment shall be entered accordingly.