

**In the United States Court of Federal Claims**

No. 94-1084C

(Filed: August 28, 2002)

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**JAMES E. WRIGHT,**

Plaintiff,

v.

**THE UNITED STATES,**

Defendant.

Patent infringement; damages;  
reasonable royalty; *Georgia-  
Pacific* factors; delay  
compensation calculation.

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*Martin H. Freeman and Mark A. Freeman, Rockville, MD, for plaintiff.*

*Robert G. Hilton, Commercial Litigation Branch, Civil Division, United States Department of Justice, Washington, DC, for defendant, with whom were Vito J. DiPietro, Director; and Stuart E. Schiffer, Acting Assistant Attorney General. Thomas J. Byrnes, of counsel.*

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**OPINION**

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**DAMICH, Chief Judge.**

**I. Introduction**

This is the damages portion of the opinion rendered on February 8, 2002, in which this Court found the Government liable for patent infringement, pursuant to 28 U.S.C. § 1498, of United States Patent 4,768,417 (the '417 Patent)<sup>1</sup>, which was issued to James E. Wright (Plaintiff) on

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<sup>1</sup> The following abbreviations are used: "Tr." for trial transcript; "Hr'g" for closing argument hearing; "Stip." for the parties' joint stipulations filed on June 20, 2000; "Claim Constr. #1" for the first claim construction opinion issued by Judge Margolis on May 14, 1997; and "Claim Constr. #2" for the second claim construction opinion issued by this Court on May

September 6, 1988.<sup>2</sup> For the reasons set forth herein, the Court hereby grants Plaintiff reasonable and entire compensation in the amount of \$755,174.59.

## II. Background

While the factual record in this case was discussed in the Court's earlier opinion, issued on February 8, 2002, finding the United States Navy (Defendant) liable for literal infringement of Claim 1(a), 1(b), and 1(c), and liable for infringement of Claim 1(d) under the doctrine of equivalents, the Court nevertheless mentions several important details.

The '417 Patent concerns a detonator net weapon designed to explode upon ignition, thereby damaging an enemy object. Based on his patent and the use of linear explosive charge technology, Plaintiff developed a proposal for a rocket-deployed explosive net for clearing mines. He presented his proposal to various Navy and Marine Corps offices from 1988 to 1991. Because of a long-standing problem with shallow water mine-clearing operations, the Navy issued a Broad Agency Announcement in July of 1991, asking for ways to solve the water and surf zone mine-clearing problem. Plaintiff responded to this announcement by submitting three additional proposals demonstrating the effectiveness of the detonator net weapon in solving the shallow water mine-clearing problem. In March of 1992, Defendant notified Plaintiff that it would be developing its own system in-house and that Plaintiff's proposals would no longer be considered. Defendant's system became known as the Distributed Explosive Technology (DET) system.<sup>3</sup>

Plaintiff then offered Defendant a license to use the '417 Patent in the development of the DET system. Defendant rejected this offer, asserting that the Plaintiff's claims were invalid based on prior art not previously disclosed. In response to this challenge to the validity of the '417 Patent, Plaintiff filed a Request for Reexamination of the '417 Patent. On March 10, 1994, the United States Patent and Trademark Office (USPTO) denied Plaintiff's Request for Reexamination, concluding that no new substantial question of patentability had been raised by the prior art

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14, 2001.

<sup>2</sup> The '417 Patent contains one independent claim, Claim 1, which is the claim at issue. Claim 1 reads:

1. A detonator net weapon comprising:
  - (a) a net comprising spaced, interwoven, alternating lengths of plastic rope and detonator cord that define a polygonal body including an edge,
  - (b) said plastic rope imparting strength to the net,
  - (c) control packages secured to the edge of said net, and
  - (d) said control packages including means to ignite said detonator cord so that said cord will explode with significant force.

<sup>3</sup> The DET system, which was designed to breach mine fields in the surf zone, is a rocket-launched explosive array that includes a single fire-and-forget fuse. *Wright v. United States*, 51 Fed. Cl. 638, 640 (2002).

references cited by Defendant. In April of 1994, Plaintiff offered Defendant another license for the use of the invention. After Defendant rejected that offer, Plaintiff commenced the current action on December 21, 1994.

Because liability has already been determined, the sole remaining issue is damages. With respect to damages, the parties dispute whether Plaintiff should be compensated merely for the 18 units created by the Government, which contain explosives, or for the 18 infringing units, the unpatented components that function with the 18 patented units, and the units merely contemplated for production. The parties also dispute the rate to be applied to the calculated amount of compensation and any additional delay compensation.

### III. Discussion

28 U.S.C. § 1498(a) provides that a plaintiff is entitled to reasonable and entire compensation whenever the Government makes or uses his patent. Compensation is premised on a Fifth Amendment taking of a nonexclusive license under the patent. *Leesona v. United States*, 599 F.2d 958, 968 (Ct. Cl. 1978). The value of the license is based on a reasonable royalty. *De Graffenried v. United States*, 25 Cl. Ct. 209, 221 (1992). The Government takes a license for each individual infringing item when an item is first manufactured or used by the Government. *Decca Ltd. v. United States*, 640 F.2d 1156, 1166 (Ct. Cl. 1980). The Federal Circuit has defined a reasonable royalty as follows:

A reasonable royalty is the amount that a person desiring to manufacture [or use] a patented article, as a business proposition, would be willing to pay as a royalty and yet be able to make [or use] the patented article, in the market at a reasonable profit. When an established royalty does not exist, a court may determine a reasonable royalty based on “hypothetical negotiations between willing licensor and licensee.”

*Wang Labs., Inc. v. Toshiba Corp.*, 993 F.2d 858, 870 (Fed. Cir. 1993) (citations omitted). The hypothetical negotiation is considered to have taken place at the time of the infringement.

*Minco, Inc. v. Combustion Eng'g, Inc.*, 95 F.2d 1109, 1119 (Fed. Cir. 1996).

In determining the value of the license, one must assume that the negotiators for the licensor and licensee know all of the factors bearing on the value of the license. *Fromson v. Western Litho Plate and Supply Co.*, 853 F.2d 1568, 1575 (Fed. Cir. 1988). A factor is relevant if it would have tended to affect the price set by hypothetical negotiators. *ITT Corp. v. United States*, 17 Cl. Ct. 199, 230 (1989). The court determines, as a matter of fact, the weight to be given to any factor. *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1120-21 (S.D.N.Y. 1970). A court may also consider events which occurred and facts which were known after the original infringement, even if they “could not have been known or predicted by the hypothesized negotiators.” *Fromson*, 853 F.2d at 1575. The analysis also “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.” *Id.*

In addition to the royalty, a court adds delay compensation to account for the passage of time between the date of the taking of the item and the date the judgment is paid. *Decca Ltd.*, 640 F.2d at 1172.

Thus, in order to calculate a reasonable royalty in this case, the Court must determine: (1) the royalty base and any additional licensing fees; (2) the royalty rate; and (3) the delay compensation owed. *Id.* at 1173 (finding that delay compensation begins to accrue as of the date of the taking and continues to accrue until the date of the payment of judgment).

#### A. Royalty Base

The distinction among the parties' positions with respect to the royalty base is that Defendant believes that only the cost of the 18 units created by the Government, which contained explosives, should be included in the base,<sup>4</sup> while Plaintiff asserts that he is entitled to damages on the 18 infringing units as well as on devices that were encapsulated under the entire market rule.<sup>5</sup>

The entire market rule formulation has been used to calculate a reasonable royalty by determining whether an unpatented component sold with the patented apparatus should be included in the damage calculations. *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538, 1549 (Fed. Cir. 1995). This rule "allows the recovery of damages based on the value of an entire apparatus containing several features, even though only one feature is patented." *Paper Converting Machine Co. v. Magna-Graphics Corp.*, 745 F.2d 11, 22 (Fed. Cir. 1984); *see also TWM Mfg. Co. v. Dura Corp.*, 789 F.2d 895, 901 (Fed. Cir. 1986) ("Where a hypothetical licensee would have anticipated an increase in sales of collateral unpatented items because of the patented device, the patentee should be compensated accordingly."). The rule is not without limitations, however. The rule has "typically been applied to include in the compensation base unpatented components of a device when the unpatented and patented components are physically part of the same machine." *Rite-Hite*, 56 F.3d at 1549. The Federal Circuit in *Rite-Hite* held that the entire market rule limits recovery on sales of any such unpatented component to those components that "function together with the patented component in some manner so as to produce a desired end product or result. All the components together must be analogous to components of a single assembly or be parts of a complete machine, or they must constitute a functional unit." *Id.* at 1550.

The Court agrees with Defendant that the royalty base should include only the 18 research and development units which contained live detonating cords and a fuze. While the Government did make other arrays, only 18 such arrays had attached explosives. Therefore, they were the only

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<sup>4</sup> The Defendant's expert on this issue, Mr. Auzville Jackson, Jr., pointed out that government witnesses had testified that these 18 units were the only live units.

<sup>5</sup> The Plaintiff's expert on this issue, Mr. Terry Lee Musika, stated that the entire market rule entitles Plaintiff to include in the royalty base those costs related to devices such as launch controllers and trainers, as well as actual DET systems, the cost of Research, Testing, Development and Exploration (RTD & E), and the cost of future DET systems (and related costs) that the Government intended to make.

ones that infringed Plaintiff's patent. According to Ms. Amy O'Donnell, expert for the Defendant on damages, Defendant's Exhibit Z is the contract created for the purpose of constructing the prototype units needed for testing the DET. Tr. 735:16-736:5. Exhibit Z indicates that during the Research, Testing, Development and Exploration (RTD & E) phase, the Navy made 18 units that had both an explosive array and an initiator attached to the net. The total cost of these 18 units, without the cost of the detonator cord included, was \$3,659,248. The detonating cord cost an additional \$1,296,000.<sup>6</sup> Therefore, adding the two together, the total cost of these infringing units was \$4,955,248.

### 1. Inert Units and Subcaliber Trainers

In addition to the cost of the 18 infringing units, Plaintiff attempts to include in the royalty base the costs of inert research and development units, inert trainers,<sup>7</sup> and subcaliber trainers.<sup>8</sup> These units should not be included in the royalty base. While they are made of rope and kevlar, they do not contain explosives or initiators. Because they cannot explode and cannot damage enemy targets, they are non-infringing. Moreover, because they do not function in conjunction with a live DET, as they are used independently for testing and training purposes, they cannot be included in the reasonable royalty under the entire market rule. Pursuant to the entire market rule, unpatented components having no functional relationship to the patented invention cannot be used in calculating a reasonable royalty. *Rite-Hite*, 56 F.3d at 1550.

### 2. Future Costs

Plaintiff attempts to include future costs in the royalty base; namely, the cost of 103 live operational DET units that the Defendant plans to purchase after the research and development phase. Tr. 724:17-22. In support of his position, Plaintiff asserts that the Defendant budgeted for and projected for the development of additional DETs.<sup>9</sup> According to 28 U.S.C. § 1498(a),

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<sup>6</sup> Ms. O'Donnell testified that the detonating cord used for the DET systems cost the Navy an average of \$2 per foot. Tr. 736:17-19. She also testified that the military used 35,000 to 36,000 feet of cord per array (including any extra to cover breakage). Tr. 736:21-23. Thus, Defendant's use of the \$1,296,000 figure appears to accurately reflect the total cost of the cord used to make 18 units, at \$72,000 per unit.

<sup>7</sup> Inert trainers are devices used for tactical training of Marines aboard a boat in a surf zone.

<sup>8</sup> Subcaliber trainers are smaller versions of inert trainers used by the military to train marines (in a classroom scenario) on the hookups and attachments in the context of firing rocket motors. Subcaliber trainers are also designed to give a visual indication of what the aft end of the array looks like upon deployment.

<sup>9</sup> Plaintiff's Exhibit 107 states that the Defendant has budgeted \$1,577,837 for the years 2001-2004, and \$176,260 for the years 2005-2007.

however, there are no provisions for including future procurement costs for expected making and using in the royalty base. The statute provides relief only for units that are actually infringing.

The language in 28 U.S.C. § 1498 expressly states that a patentee is entitled to reasonable compensation only if an infringer has “used and manufactured” an invention covered by a patent.<sup>10</sup> Because the Government’s waiver of sovereign immunity must be strictly construed, the Court cannot include in the royalty base components to be “used and manufactured” at some time in the future. *See Zumerling v. Marsh*, 783 F.2d 1032, 1034 (Fed. Cir. 1986) (holding that the right to sue the Government must be expressly stated and cannot merely be implied).

*Tektronix* lends further support to this conclusion. There, the Court of Claims held that infringement occurs not at the time that an accused infringer contracts to “use or manufacture” a product, but rather at the time that he or she actually uses or obtains the infringing goods.

*Tektronix v. United States*, 575 F.2d 832, 836-37 (Ct. Cl. 1978). Based on this logic, the future costs of the 103 live operational DETs that were to be obtained in this case cannot be included in the royalty base.

### 3. Related Components and Devices

Plaintiff seeks to include damages in the royalty base for a number of other components associated with the production and use of the DET system. Plaintiff argues that the cost of these other components, such as the launcher system, the launch interface kit, fragment shield, and auto pilots, should be included in the royalty base because of the entire market rule.

As discussed earlier, while the royalty base sometimes does include unpatented elements under the entire market rule, it is clear from the facts in *Rite-Hite* that Plaintiff’s reliance on the entire market rule to claim these extra components is unavailing.<sup>11</sup> “It is a clear purpose of the

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<sup>10</sup> 28 U.S.C. § 1498(a) provides as follows:

Whenever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner’s remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture.

<sup>11</sup> In *Rite-Hite*, the plaintiff held a patent to a device for securing the rear of a truck or other vehicle to a loading dock to prevent the vehicle from separating from the dock during loading or unloading and thus endangering a forklift operator. In suing the defendant for infringement, the patentee unsuccessfully sought lost profits on dock levelers – separate devices that serve to bridge the gap between the loading dock and the truck – that it would have sold with its patented device. *Rite-Hite*, 56 F.3d at 1549. The court held that while the two components were often used together, it was not the case that they functioned together to achieve one result and “each could effectively have been used independently of each other.” *Id.* at 1551. The court was also swayed by the fact that the parties had already been established competitors in the marketing of the unpatented dock levelers and that the dock levelers and the patented vehicle restraints were sold together merely for “convenience and business advantage.” *Id.*

patent law to redress competitive damages resulting from infringement of the patent, but there is no basis for extending that recovery to include damages for items that are neither competitive with nor function with the patented invention.” *Rite-Hite*, 56 F.3d at 1551. For example, unlike the plaintiff in *Rite-Hite*, Plaintiff here was not already in the marketplace attempting to sell his patented device along with functionally complementary products, such as launcher systems and auto pilots.

In addition, based on the testimony of various government employees and expert witnesses, it is evident that the devices in question do not share a sufficient functional relationship with the patented invention. The test is not, as Plaintiff argues, whether components “derive their value from” the accused infringing system, Tr. 553:16-17, but whether the non-patented components, together with the patented component, constitute a “functional unit” and whether the patented component cannot be operated independently of the non-patented components. *Rite-Hite*, 56 F.3d at 1550, 1551. Floats, weights, and spreaders are used for in-water deployment, a use contemplated by Plaintiff’s patent, but not inherent in the language of Claim 1. See Tr. 647:8-649:7. Similarly, air stabilizer devices, used to deploy nets into the air, are not inherent components of Claim 1. Tr. 652:22-653:9. Auto pilots, for example, guide moving objects remotely, see Tr. 434:6-10, and launch controllers provide electrical input to the rocket motor initiators to fire, Tr. 730:25-731:25, but there is no mention of rockets or rocketry in the language of Claim 1. Claim 1, in fact, does not address the mode of deployment of the detonator net weapon. Therefore, even though a Government witness (Ms. O’Donnell) testified that the launcher system, launch interface kit, and fragment shield were developed “specifically and only” for the DET system, Tr. 416:21-417:10, the ‘417 Patent can function, depending upon the mode of deployment, without necessarily employing these components.

In *Kori Corp. v. Wilco Marsh Buggies & Draglines, Inc.*, the Federal Circuit observed that “[t]he ultimate determining factor is whether the patentee or licensee can normally anticipate the sale of the unpatented components together with the patented components.” *Kori*, 761 F.2d 649, 656 (Fed. Cir. 1985) (affirming an award of damages for the unpatented uppers of an amphibious vehicle having a patented pontoon structure). The Federal Circuit in *Rite-Hite*, however, citing *Kori*, observed that the rule is applied “only in situations in which the patented and unpatented components were analogous to a single functioning unit.” *Rite-Hite*, 56 F.3d at 1550.

Of the four major subsystems of the DET system, then, only the “Array Container” subsystem, described by the Government as the “heart of the DET,” containing “the packing frame/container, swivels, harness, augmentation lines, secondary expansion devices, weather screen, and fire-and-forget fuze,” Pl.’s Ex. 32, p.1, comprises the portion of the DET that would come under the entire market rule.

Defendant, however, has not yet produced any fully functioning DET systems beyond the 18 prototypes that had an explosive array with live detonating cord and an initiator attached to the net. Tr. 735:16-736:23. The cost of these prototype arrays and the detonating cord, addressed *supra*, was \$4,955,248. Tr. 736:4-23; Defendant’s Exhibit Z. As these costs already encompass any non-patented components that may appropriately come under the entire market rule pertaining to the “Array Container,” there are no other such costs that Plaintiff is entitled to add to the royalty base under the rule.

#### 4. Research, Testing, Development and Exploration

Plaintiff also attempts to include in the royalty base RTD & E costs. The fundamental flaw with this request, however, is that the research and development were done by the Navy, precluding Plaintiff from having associated costs included in the royalty base. Tr. 715:17-20; 1095:2-15. Rather than do the research, Plaintiff presented the Government with a “paper patent,” defined by Mr. Jackson as a patent that has not been reduced to practice, where no prototype exists. Tr. 1105:2-6. Plaintiff did contribute a computer-generated model of his invention, but experts testified that this model was far from representing the final product,<sup>12</sup> for it did not require the care, trouble, risk, expense, and responsibility that the Government took in incorporating the claimed element into an acceptable design.<sup>13</sup> See *Olsson v. United States*, 25 F. Supp. 495, 499-500 (Ct. Cl. 1938). Plaintiff himself stated that he did not have expertise in explosives, and he sought professionals to assist him in reducing his invention to practice.<sup>14</sup> Any arrangement in which the Government paid someone else for research it itself had done would not have been, as Mr. Jackson testified, a “win-win situation” for the Government.

The Court is aware of case law indicating that a patentee can recover some of the research and development costs associated with his or her invention. The instant case, however, is distinguishable from such previous cases because there, the patentee actually reduced his or her invention to practice. *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1353-54 (Fed. Cir. 1983); *Gargoyles v. United States*, 37 Fed. Cl. 95, 104 (1997). Plaintiff alludes to *De Graffenried*, which is distinguishable because there Mr. De Graffenried invented and reduced to practice the closest prior art. *De Graffenried v. United States*, 20 Cl. Ct. 458, 463 (1990). The

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<sup>12</sup> According to Mr. Prybyla, computer modeling predicts the wrong result most of the time. Tr. 239:19-25. While this Court is not prepared to wholly embrace Mr. Prybyla’s testimony, it was to some extent persuaded by his statement that a computer model is not reality, and that some people do not accept it at all.

<sup>13</sup> The Government expended large sums of money in creating a system which, upon completion, was much more sophisticated than a high strength net made of plastic cord and detonating cord to be used for clearing mines. It also furnished significant amounts of technical expertise and experience. For example, while Mr. Wright did not suggest having a kevlar exoskeleton, the DET system uses the exoskeleton to absorb the load during deployment, enabling the detonation to spread further throughout the DET system. Tr. 697:20-698:8. The DET system can also be used without tangling. Tr. 695:24-696:3. According to Mr. Craig, the Government’s expert witness, none of Mr. Wright’s proposals to the Navy disclosed how to hang an array in a container so that it would not get tangled. Tr. 870:23-25. In fact, Mr. Craig testified that “[p]robably the biggest genius feature of the DET program is developing a system for deploying without it tangling. Nets notoriously tangle.” Tr. 871:23-25.

<sup>14</sup> This is confirmed by the testimonies of both Plaintiff and Plaintiff’s witness, Ms. Burrows. The Navy had no interest in working with Mr. Wright in developing devices for shallow mine clearance. It was clear, however, that Mr. Wright sought and wanted to work with the Navy because of the latter’s experience in the area, including “being able to propel nets, using rocket motors . . . .”

inventor also proposed to personally reduce to actual practice the claimed invention. *Id.* Here, Mr. Wright never proposed to do any engineering for the DET system.

Mr. Wright alleges that he had an oral agreement between himself, Ocean Technology, Incorporated (his employer), and Du Pont. Tr. 574:22-576:4. According to Mr. Wright, their complex arrangement would involve Du Pont doing the research and development and then passing a royalty to Mr. Wright through his employer. Pl.'s Ex. 108 at 1. Allegedly, Mr. Wright was to receive 10% of the cost of the labor and materials that Du Pont expended in researching and developing the DET system. Tr. 1131:14-18. Despite this testimony, Plaintiff's own expert witness, Mr. Musika, testified that he did not consider the supposed oral agreement a license. Tr. 544:11-25. In addition, it is quite unusual that an alleged agreement of such a complex and detailed nature would not be put in writing (despite Plaintiff's retention of a patent attorney). Moreover, Plaintiff failed to obtain any up-front money. According to Mr. Jackson, Defendant's expert witness, obtaining up-front money is standard industry practice in these types of transactions. Tr. 1098:1-24.

But regardless of whether or not Plaintiff had such an agreement, it is difficult to understand how the fact that Plaintiff was not paid for his role in RTD & E can be transformed into an expenditure of his that ought to be compensated by the Government. The only possible cause of action that the Court can discern in this arrangement would be a contract action by Plaintiff against Dupont. Plaintiff cannot include such RTD & E costs in the royalty base.

## B. Royalty Rate

Determination of a reasonable royalty requires not only a calculation of the appropriate royalty base, but also the determination of a reasonable royalty rate to apply to that compensation base. *See Decca Ltd. v. United States*, 225 Ct. Cl. 326, 354 (1980). In the absence of an established royalty rate, a court must retroactively construct a rate upon a determination of what the parties would have agreed to in a hypothetical negotiation. *Standard Manufacturing Co. v. United States*, 42 Fed. Cl. 748, 762 (1999). The analysis "requires consideration not only of the amount that a willing licensee would have paid for the patent license but also of the amount that a willing licensor would have accepted." *Georgia-Pacific*, 318 F. Supp. at 1121. It is also important to remember that "[w]here a willing licensor and a willing licensee are negotiating for a royalty, the hypothetical negotiations would not occur in a vacuum of pure logic." *Id.* Willing negotiators would consider not only their relative bargaining positions, but also any other economic factor that a normally prudent businessperson would consider important. *Id.*

### 1. The *Georgia-Pacific* Factors

There is a multitude of evidentiary factors that a court may examine in determining a reasonable royalty. The 15 factors set out in *Georgia-Pacific*, and recognized by the Federal Circuit, *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 926 F.2d 1161, 1168 (Fed. Cir. 1991), are as follows:

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

2. The rates paid by the licensee for the use of other patents comparable to the patent in suit.
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.
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 that monopoly.
5. The commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter.
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 his non-patented items; and the extent of such derivative or convoyed sales.
7. The duration of the patent and the term of the license.
8. The established profitability of the product made under the patent; its commercial success; and its current popularity.
9. The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.
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.
11. The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use.
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.
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.
14. The opinion testimony of qualified experts.
15. The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the 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. *Georgia-Pacific*, 318 F. Supp. at 1120.

The *Georgia-Pacific* factors, however, serve primarily as a general guide to the reasonable royalty rate inquiry. “While the *Georgia-Pacific* factors are often probative of a reasonable royalty rate, the court is neither constrained by them nor required to consider each one where they are inapposite or inconclusive.” *Brunswick Corp. v. United States*, 36 Fed. Cl. 204, 211-12 (1996); *accord Standard Mfg. Co., Inc. v. United States*, 42 Fed. Cl. 748 (1999). For example, a court may reduce the royalty rate where the government procurement was voluminous or there were non-infringing alternatives available, or adjust the rate upward if there were substantial capital expenditures associated with performance of the government contract. *Id.* at 211.

It is also useful, where possible, to determine a reference, or baseline, royalty rate before application of the *Georgia-Pacific* factors. “This rate can be adjusted upward or downward depending on the relative strengths of the parties’ bargaining positions under each *Georgia-Pacific* factor and under any additional factors worthy of consideration.” *Standard Mfg.*, 42 Fed. Cl. at 764.

Plaintiff initially proposed a royalty rate of 5% on a more comprehensive royalty base, plus an up-front royalty licensing fee of between \$1.3 million and \$1.5 million. Tr. 525:9-12.

Defendant’s expert proposed a 4% rate on a much smaller base, plus a \$50,000 up-front payment. Tr. 1093:25-1094:1; 1096:11-25. With no prior licenses for this particular technology to use as a guide and no evidence of customary royalty rates in this general field, the Court is swayed by the fact that an actual proffer by Plaintiff constitutes credible evidence of a ceiling on a hypothetical royalty rate. *Hughes Aircraft Co. v. United States*, 31 Fed. Cl. 481, 488 (1994); see also *Pitcairn v. United States*, 212 Ct. Cl. 168, 186 (1976). Similarly, Defendant’s proffered rate is evidence of a reasonable rate floor. On that basis, the Court considers the midpoint between them, 4.5%, to be a reasonable baseline rate from which to apply the *Georgia-Pacific* factors.<sup>15</sup>

## 2. Analysis under the *Georgia-Pacific* Factors

After considering the various factors enumerated in *Georgia-Pacific*, the Court believes that Plaintiff was, at best, in a modest bargaining position. As discussed below, factors 3, 4, 5, 9, 10, and 11 appear to have the most bearing on this case. Factors 1, 2, 8, 12, 14, and 15 are either inapplicable, neutral, or of negligible consequence. Therefore, the Court need not address them. The pertinent factors, the first three of which tend to militate against Plaintiff in the hypothetical rate negotiations and the latter three of which work in Plaintiff’s favor, and factors 6, 7, and 13 are addressed as follows. In sum, they lead this Court to endorse a compromise rate of 4.5% with an up-front licensing fee of \$250,000.

*Nature and Scope of the License.* With respect to factor 3, the Court examines the nature and scope of the license, and whether it is exclusive or non-exclusive. Licenses taken by the Government are generally characterized as non-exclusive as a matter of law, *Standard Mfg.*, 42 Fed. Cl. at 768, and a hypothetical licensee would normally value a non-exclusive license less than one that would enable it to corner the market for a patented product. While Plaintiff may have wanted to sell the technology to other governments, Pl.’s Ex. 108 at 1, the United States Government would likely have opposed this in light of the product’s strategic importance. As a result, with no non-government market for the product, as would likely be the case for a detonating net weapon, the license would be de facto exclusive. While this appears to militate in favor of a higher rate, the court in *Standard Manufacturing* held that a de facto exclusive license for a patented product that had no market other than the Government, rather than enabling the patentee to exact a higher rate, works against such a patent holder. With no other outlet for its product, “[plaintiff] would have had greater incentive to complete a licensing agreement and,

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<sup>15</sup> Plaintiff’s expert, Mr. Musika, actually later recommended a royalty rate of 4.5% on the larger base without any up-front payment, once he took into consideration the *Georgia-Pacific* factors. Tr. 526:14-18.

thus, would have been more yielding in its terms.” *Id.* Consonant with the analysis in *Standard Manufacturing* and with the likely inability of Plaintiff to license other governments, this Court considers factor 3 a negative for Plaintiff in this hypothetical rate negotiation.<sup>16</sup>

*Licensors’ Established Policy and Marketing Program.* With respect to factor 4, the Court examines the licensor’s established policy and marketing program to maintain his patent monopoly. This factor clearly works against Plaintiff. Plaintiff had no established policy and marketing program at the time of the Government’s infringement. Tr. 519:1-7; Tr. 544:3-10. Plaintiff avers that he attempted to team up with Ocean Technologies and Du Pont to provide a more thorough proposal to the Government, but he never entered a written agreement with Du Pont nor executed a license with Du Pont, and there is no evidence that Du Pont ever paid him for any such collaboration. Tr. 544:11-25. Plaintiff’s expert, Mr. Musika, acknowledged that Plaintiff is “not a manufacturer” and offered no evidence that Plaintiff sought to maintain his monopoly by not licensing others to use the invention or by granting licenses under special conditions to preserve his monopoly. Pl.’s Ex.108. This factor would have negatively affected Plaintiff’s posture in rate negotiations.

*Commercial Relationship Between the Licensor and Licensee.* With respect to factor 5, the Court examines the commercial relationship between the parties. Plaintiff would logically have sought a high royalty rate to the extent that he was hypothetically negotiating with a commercial competitor, but obviously the parties were not competitors. Plaintiff was not a commercial manufacturer and the Government did not intend to manufacture the product commercially. Rather, the two parties would have had an inventor-promoter relationship, thereby lowering the royalty. Defendant’s expert, Mr. Jackson, testified that the fact that Plaintiff had only a “paper patent” that “had never been reduced to practice” was “a very strong negative.”<sup>17</sup> The Court

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<sup>16</sup> It could also be argued, however, that depending on the utility, comparative advantage, and nature of the patent, the Government would have been more yielding in *its* terms so as to proceed with the development and use of a weapon of significant military importance. This analysis, however, actually goes to factors 9 and 10.

<sup>17</sup> Mr. Jackson testified:

The commercial relationship between the licensor and the licensee, such as whether they are competitors in the territory, in the same business, or whether they are inventor and promoter. I find this to be negative . . . we had somebody come to the Government with what we refer to in the patent business as a “paper patent.” It had never been reduced to practice, there [are] no prototypes, there is nothing hardly more than a piece of paper, and he’s asking the Government to develop it. The Government had to assume the entire cost of the development, and all of the associated costs relating to it to the tune of millions of dollars. In the course of that development, they had to make multiple inventions to come up with a product that functioned satisfactorily. And even today, they have never used this in detonating mines in the surf. It’s all still experimental. So I thought [it] was a very strong negative.

entirely agrees. It is only logical that Defendant would have utilized the unproven status of Plaintiff's patented "idea" to enhance its bargaining posture in favor of a lowered royalty rate.

Further, in offering to license the Government to utilize Plaintiff's patent, Plaintiff would necessarily have contemplated that the Government would in turn have sought third-party manufacture of the product. Thus, by this factor, the Government would have had every incentive to negotiate a lower rate and Plaintiff would have had less bargaining strength, in this respect, to have held out for more. Even Mr. Musika testified for Plaintiff that this factor would have negatively impacted Plaintiff at the bargaining table. Tr. 520:5-16.

*Effect of Selling Patented Speciality in Promoting Sales of Other Products of Licensee; Value of Invention as a Generator of Sales of Non-Patented Items; Extent of Derivative or Convoysed Sales.* Plaintiff characterized this factor 6 as "somewhat positive" in that the sale of the patented product would have involved collateral items, such as the rocket motor, control and delivery systems, etc., even though they would not necessarily have been included in Plaintiff's royalty base. Tr. 520:19-521:5. In other words, in the negotiation process, to the extent that the potential licensee would likely have anticipated sales of collateral items, its prospects for greater profits overall would presumably have led it to agree to a somewhat higher royalty rate for the license. In fact, however, the Defendant is neither a commercial manufacturer nor a seller of collateral items. Thus, while this Court can theoretically accept Plaintiff's positive characterization of this factor, because it cannot quantify factor 6 with much precision, factor 6 is only slightly positive for Plaintiff, and in fact is offset by factor 13 (discussed below).

*Duration of Patent and the Term of the License.* Plaintiff is correct that, as between private parties, factor 7 would have had an impact in its favor on hypothetical negotiations in 1990, where Plaintiff's license would have extended through the expiration date of 2007. Pl.'s Ex. 108 at 2. "Factor 7 embodies the conventional wisdom that the longer the remaining duration of a patent term, the more willing a hypothetical licensee is to pay a higher royalty rate." *Brunswick*, 36 Fed. Cl. at 214. Even though Section 1498 "grants the government the absolute power to take a compulsory, nonexclusive license to a patented invention at will," *Id.* at 207, the test under *Georgia-Pacific* is how these various factors would have influenced negotiations between the patent holder and a *willing* licensee. Viewed in this light, while not a significant factor, factor 7 works to Plaintiff's advantage at least to some small degree.

*Utility and Advantage of the Patent Property over Old Modes or Devices.* With respect to factor 9, the Court must examine the patent's utility and advantage. Plaintiff presented compelling testimony that the DET system provided technology critical to the military's countermeasure measures in shallow water. According to a report of the U.S. General Accounting Office, one of the lessons of Operation Desert Storm was that countermeasure capability of this sort was one of the Navy's "greatest challenges and key priorities." Pl.'s Ex. 108 at 3. Factor 9 and the closely related factor 10, *Nature of the Patented Invention*, weigh significantly in Plaintiff's favor.

*Extent to which the Infringer has Made Use of the Invention.* Even Defendant has acknowledged that factor 11 is "slightly positive" for Plaintiff. Tr. 1106:22-1107:1. In holding that this factor

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Tr. 1104:21-1105:14.

is positive for Plaintiff, however, the Court only includes in the royalty base the 18 research and development units with live detonating cords.<sup>18</sup>

*Portion of Realizable Profits Credited to Invention as Distinguished from Non-Patented Items, Manufacturing Process, Business Risks, Significant Features or Improvements Added by Infringer.* Factor 13 has negligible impact as there have been no sales, and thus no profits. Even if sales and profits were hypothesized, this factor calls for distinguishing such profits from those relating to non-patented items (addressed in factor 6) as well as from the manufacturing process, business risks, and features added by the infringing party. “Factor 13 lowers the reasonable royalty rate according to the infringer’s addition of (unpatented) features, shouldered business risks, or improved manufacturing processes.” *Brunswick*, 36 Fed. Cl. at 216. While Defendant characterizes this factor as “strongly negative” because the “Navy or its contractors [were] responsible for all manufacturing and risk,” Tr. 1107:7-13, it is more appropriate, given the absence of profits, to characterize factor 13's hypothetical impact as offsetting whatever positive benefit factor 6 may have contributed to Plaintiff in these rate negotiations.

On balance, the *Georgia-Pacific* factors give Plaintiff only a slight advantage in terms of its bargaining position. Overall, the Court believes a compromise rate of 4.5% is appropriate.

### 3. Calculations

The 4.5% compromise rate, however, cannot be viewed apart from the question of what up-front royalty payment would have been negotiated in order to reach agreement on a smaller royalty base. Plaintiff did not expect an up-front payment on a larger royalty base, but if the base were less, Plaintiff would have expected an up-front payment. As Plaintiff’s expert, Mr. Musika, testified, “So if you begin shrinking the royalty base that had the developmental stage costs in it . . . then yes, his rate should go up or give him an up-front. I’d go back to saying he should get an up-front payment.” Tr. 528:16-23. This Court has significantly decreased the royalty base that Plaintiff claims. It is appropriate, therefore, to provide Plaintiff a greater up-front payment. Given the unproven status of Plaintiff’s patent, his suggested royalty payment of \$1.3 million to \$1.5 million is clearly overstated. Plaintiff bases this request on payment for many items which the Court has deemed above, according to its analysis of the *Georgia-Pacific* factors, to be beyond the scope of reasonable and entire compensation. Defendant’s proposed up-front royalty proffer of \$50,000 is also inappropriate in light of the Court’s analysis of the *Georgia-Pacific* factors. Payment for certain items excluded by Defendant are necessary to reasonably and entirely compensate Plaintiff. Based on its analysis, the Court concludes that a royalty payment of \$250,000 would more likely have been negotiated between the parties in conjunction with agreement on a smaller royalty base and a compromise royalty rate.

Based on the above analyses of royalty base and rate, a reasonable royalty owed to Plaintiff is as follows: 18 units costing a total of \$4,955,248 (royalty base) X 4.5% (royalty rate) = \$222,986.16; plus up-front payment of \$250,000 = TOTAL of \$472,986.16.

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<sup>18</sup> Despite Defendant’s acknowledgment that “a substantial number of units will be produced,” Tr. 1106:25-1107:1, the Court reiterates its refusal to compensate the Government for what it purports to do.

#### 4. Delay Compensation

After the royalty for the infringement is determined, there is an additional calculation of damages to account for the passage of time between the date of the infringement and the date that judgment is paid. *Decca*, 225 Ct. Cl. at 337. The infringement dates from when the item is first manufactured or used by the Government. *Id.* at 335. Defendant has acknowledged that the DET program began in June 1993 and has calculated delay damages based on the production cost of the 18 research and development units from that date. Def.’s Post-Tr. Br. at 40. The Court will accept June 1993 as the date of infringement for the purposes of calculating delay damages.

The purpose of delay damages is to put the patentee “in the economic position it would have held had royalties been timely paid and prudently invested to produce return and preserve the principal.” *Brunswick*, 36 Fed. Cl. at 218-19. Although the determination of the amount of delay damages is left to the sound discretion of the trier of fact, “there is a strong judicial policy in just compensation cases favoring the establishment of uniform rates in order to avoid discrimination among litigants.” *Id.* at 219. Numerous decisions of this Court have utilized the rate of return on U.S. Treasury Bills, compounded annually, for purposes of this calculation. *Id.*; *Standard Mfg.*, 42 Fed. Cl. at 779; *Gargoyles, Inc. v. United States*, 37 Fed. Cl. 95, 109 (1997); *see also Allen Archery, Inc. v. Browning Mfg. Co.*, 898 F.2d 787, 789 (Fed. Cir. 1990) (affirming trial court’s use of 3-month Treasury Bill rates).

Based on investment yields of 52-week Treasury Bills, compounded annually, for the period from June 1993 until August 28, 2002, the damages owed to Plaintiff by the Government totals \$755,174.59.<sup>19</sup>

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<sup>19</sup> The Court has calculated damages based on investment yields ascertained from “Historical Securities Search Results” available at <http://www.publicdebt.treas.gov/of/ofaicqry.htm>, cited in Defendant’s Post-Trial Brief, at 40. The yields selected were those obtained from June auctions of each year for the years 1993-1999, the May auction for year 2000 (there was apparently no June auction that year), and the web site table’s latest available 52-week yield for 2001, in February of that year. Finally, the Court has added one month and 28 days of delay damages (from June 30, 2002, to August 28, 2002) at the same Treasury Bill rate of February, 2001, to account for the August 28, 2002, date of issuance of this opinion ( $\$749,891.62 \times 4.442\% \text{ yield} / 12 = \$2,775.85$  for July, 2002; plus  $\$2,775.85 / 31 \times 28 = \$2,507.12$  up to August 28, 2002).

<u>Year</u>	<u>Cumulative Royalty Damages</u>	<u>Investment Yield %</u>	<u>Interest after 12 months</u>
6/93	\$ 472,986.16	3.54	\$ 16,743.71
6/94	489,729.87	5.31	26,004.66
6/95	515,734.53	5.53	28,520.12
6/96	544,254.65	5.89	32,056.60
6/97	576,311.25	5.65	32,561.59
6/98	608,872.84	5.413	32,958.29

#### IV. Conclusion

In granting Plaintiff reasonable and entire compensation for the Government's use of the '417 Patent, the Court finds that Plaintiff is entitled to a reasonable royalty of \$472,986.16 which is based on an up-front payment of \$250,000, and a royalty base of \$4,955,248 multiplied by a 4.5% royalty rate. When adjusted for delay compensation, Plaintiff is entitled to \$755,174.59.

The Clerk shall enter judgment accordingly.

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EDWARD J. DAMICH  
Chief Judge

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6/99	641,831.13	5.163	33,137.74
6/00	674,968.87	6.375	43,029.27
6/01	717,998.14	4.442	31,893.48
6/02	749,891.62	4.442	5,282.97
8/28/02	<u>755,174.59</u>	<u>TOTAL</u>	