No. 641-85C and 95-431C

FILED: January 25, 1999

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STANDARD MANUFACTURING CO, INC. AND DBP, LTD.,	*	**Patent Infringement,**
	*	**28 U.S.C. § 1498; Damages**
Plaintiff,	*	
v.	*	
UNITED STATES,	*	
Defendant.	*	
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JOHN FARGO, Assistant Director, Commercial Litigation Branch, Civil Division, United States Department of Justice, Washington, D.C., with whom were **Vito J. DiPietro**, Director, and **Frank W. Hunger**, Assistant Attorney General, attorneys of record for the defendant. **Gary L. Hausken**, attorney, of counsel.

O P I N I O N

HORN, J.

This matter comes before the court for a determination of damages pursuant to the court's previous holding that United States Patent No. 4,522,548, issued to plaintiff Standard Manufacturing Company (Standard) in 1985, was valid and infringed by the procurement and use of certain weapons loaders by the United States. After careful consideration of the record, the parties' filings, and the relevant law, the court holds that the compensation base for a reasonable royalty includes a total of $64,195,217.00 for

the 136 infringing MHU-196/M trailers and a total of $32,798,003.58 for the thirty-six infringing MHU-204/M trailers. The court further holds that Standard Manufacturing Company and DBP, Ltd., to whom Standard later assigned the rights in the '548 patent, are entitled to a 16.31% reasonable royalty on the value of infringing procurements which took place during their respective periods of ownership of the '548 patent rights.

FACTUAL BACKGROUND

Plaintiff Standard Manufacturing Company, Inc. (Standard), was the original holder of United States Patent No. 4,522,548 (the '548 patent), which issued June 11, 1985, for an "Aerial Weapons Handling Trailer." On October 28, 1985, Standard filed suit under 28 U.S.C. § 1498 (1994) seeking reasonable and entire compensation for the defendant's use of its patented invention in two aerial weapons handling trailers, designated as the MHU-196/M and MHU-204/M trailers. These trailers are used to load weapons into the B-52, B-1B and Advanced Technology (B-2) Bombers used by the United States Air Force. The United States conceded that it had made use of the invention embodied in the '548 patent, but argued that the patent was invalid and unenforceable. The issues of liability and damages were bifurcated, with the issue of damages deferred until after the court's determination of liability.

After the first trial to determine liability, this court found that the '548 patent was valid and that the defendant had infringed Claim 9 of the patent:

the court finds that the patent as issued is valid and enforceable. The court also finds that infringement has occurred, in accordance with a stipulation entered into by the parties that if any asserted claim of the patent-in-suit is valid and enforceable, such claim is infringed by both the MHU-196/M and MHU-204/M trailers.

Standard Mfg. Co., Inc. v. United States, 25 Cl. Ct. 1, 100 (1991). A second trial was subsequently held to determine appropriate damages. While the published liability decision should be referenced for a complete and thorough description of the facts of this case, a brief synopsis of the facts pertinent to the damages trial is set out below.

Standard is a privately held corporation organized under the laws of the State of Texas.[(1)] For over forty years, Standard has been in the business of designing, developing, testing, manufacturing and supporting vehicles and special equipment for military and industrial use. Until recently, a major part of Standard's business was the design, development, manufacture and support of munitions handling equipment (variously known as munitions handling trailers (MHT), munitions handling units (MHU), or munitions lifting trailers (MLT)), also known as weapons loaders, for the United States Armed Forces. These trailers are employed to load bombs, missiles, and other aerial weaponry into or onto military aircraft. Thousands of weapons loaders designed, developed and manufactured by Standard are in u

Air Launched Cruise Missile Program/Development of the MHU-173/E Trailer

In the 1970s, a program which developed under the Air Launched Cruise Missile Program, known as the Cruise Missile Integration Program, evolved to provide B-52 bombers with the capability of delivering air launched cruise missiles from rotary launchers contained in the bomb bay or pylon adapter packages on the wings of B-52 bombers.[(2)] Boeing, as the prime contractor for the program, was responsible for the support equipment and modifications to the B-52. Boeing issued a request for proposals soliciting bids for the design, development and manufacture of a trailer capable of loading both rotary launchers

and pylon adapters into the bomb bay and onto the wing stations of a B-52 bomber. Both Standard and its competitor, Aircraft Armaments Incorporated (AAI), submitted bids in response to the request. Boeing awarded AAI the contract to design, develop and manufacture this trailer, which came to be designated the MHU-173/E.

The MHU-173/E loaders had problems from the time of their initial use. They were expensive, overly complex and considerably more difficult to operate and maintain than existing trailers. In their first months of operation, the trailers experienced almost daily failures which impaired their operational and nuclear safety. The in-commission rate for their first six months of field operation was only slightly better than 50% and never got much better than 70% to 80%. By the end of 1982, the Strategic Air Command (SAC) concluded that the MHU-173/E loader was not a good engineering design and that action needed to be taken to remedy the situation.

The B-1B Program

Prior to 1981, the Air Force had identified a need for approximately 150 munitions trailers capable of loading cruise missiles onto its fleet of B-52 bombers. In 1981, the President reactivated the B-1 Bomber project, which had been canceled in 1977. With the resumption of this program, the Air Force recognized that it would also need approximately ninety trailers capable of loading the new aircraft, which became known as B-1B bombers. In addition, during the same time frame, the Air Force was making plans to acquire a third generation of strategic bomber. This bomber later became known as the Advanced Technology Bomber (ATB), or Stealth bomber, and is now designated the B-2 bomber. Persons knowledgeable in the industry, including personnel at Standard, believed that the B-2 fleet would number between 100 and 150 planes, and would require at least 100 munitions loaders.

It was readily apparent to everyone in the industry that the Air Force's requirements could not be met with then-existing munitions handling equipment, such as the MHU-173/E trailers. The MHU-173/E was inadequate because it was (1) complex, (2) costly to maintain, (3) could not lift the required weight or achieve the lift height needed to load the B-1B bomber, and (4) could not load the B-2 bomber. Standard recognized that there might be a need for an improved, simplified, less expensive weapons loader that could load both the B-52 and B-1B bombers without auxiliary equipment.

Because of differences in the heights of the B-52 and B-1B bombers, as well as in the vertical and horizontal clearances needed for the bomb packages, it was a challenging problem to design a single trailer for loading both bombers in a single-stage process. Standard began conceptual work on such a loader in late 1981. After devoting more than a month to the problem, Standard's inventors conceived the solution which is embodied in the '548 patent. Work on the loader design commenced in January of 1982 with five or six employees of Standard working on the project full time until July, 1982, at which point the basic design was complete. Standard referred to its design as the "60K Loader" because the loader was designed to have a lift capacity of 60,000 pounds to meet what Standard believed would be future Air Force requirements. On September 28, 1982, Standard filed a patent application on the 60K Loader that led to the issuance of the '548 patent on June 11, 1985.

On July 9, 1982, Standard formally submitted to the Air Force an unsolicited proposal to supply 60K Loaders for loading weapons packages into and out of the Air Force's strategic aircraft. Standard proposed to produce two 60K Loaders for test and evaluation by the Air Force for a lot fixed price of $1,250,000 including hardware only. The Air Force would then have the option to purchase a single lot of approximately fifty trailers for a price not to exceed $385,000 per trailer.[(3)] In that event, Standard

also offered to provide complete production drawings, including unlimited rights in data at no extra charge. If the government alternatively decided not to purchase any additional trailers, it would pay an additional $1,000,000[(4)] and receive copies of the drawings for the Loaders and unlimited rights in data. The unsolicited proposal also stated that a U.S. patent application had been filed covering the 60K Loader and that Standard would convey rights in the patent application with the rights to the data.

The price at which Standard offered to sell the two prototypes was below its expected cost of production, and the unit price Standard quoted for production units did not include Standard's normal profit. The development and procurement approach offered by Standard, and the relatively low prices that were reflected in the unsolicited proposal represented an effort by Standard to "get a foot in the door." The company was making a strategic effort to overcome its competitors and what Standard believed was the entrenched bureaucracy in the Air Force, as well as to obtain all future contracts for that type of trailer.

As of July, 1982, when Standard submitted its unsolicited proposal, the Air Force thought it would need approximately 150 large capacity loaders for the modified B-52 program. The Air Force had already acquired forty-two MHU-173/E loaders from AAI for that purpose, and had contracted to purchase twenty-eight more at a cost of about $724,000 apiece. Standard has stated that it knew the Air Force was having serious problems operating and maintaining the delivered MHU-173/E trailers because of their complex and faulty design. The Air Force's future requirements also included about ninety loaders for B-1B bombers, and Standard also believed that the Air Force would need at least 100 loaders for its projected fleet of B-2 bombers. Standard's 60K Loader, unlike the MHU-173/E, was capable of loading the B-52, B-1B and B-2 bombers without the use of a costly "lift adapter" or any other additional mechanism. Standard believed, therefore, that its proposal, if accepted by the Air Force, would generate sales of more than 300 of its loaders to the Air Force. If the Air Force started using Standard's loaders, the company was convinced that the Air Force would stop purchasing the MHU-173/E trailers and would look to Standard to supply future loaders.

After an initial review of Standard's unsolicited proposal, in August, 1982, an Air Force representative wrote to the plaintiff that "the proposed effort appears to offer significant improvement over existing development programs and equipment in this field. It is anticipated that funds sufficient to acquire this effort will be available in the near future. When this occurs, you will be contacted through contracting channels." Between August of 1982 and December of 1983, Standard employees proceeded to brief personnel throughout the United States Air Force on the proposed 60K Loader. In total, the company presented more than thirty briefings to more than 100 Air Force personnel. These briefings generated considerable interest and encouragement on the part of the Air Force.

Because the Initial Operational Capability date for the B-1B bomber was September 30, 1986, Standard concluded that if it were forced to wait another year or two before its unsolicited proposal were approved, it would be too late to meet the B-1B's fielding and support requirements. Accordingly, in an attempt to demonstrate the feasibility of the 60K Loader design to the Air Force, Standard committed eighteen members of its twenty-five person engineering department for a period of six or seven months to design an actual prototype. By September 30, 1983, Standard had constructed the prototype, and in November, 1983, the company conducted a demonstration of the 60K Loader for various Air Force organizations at Standard's facility. Designing and building this prototype cost Standard more than $1.9 million out of its own research and development funds.

In 1982, while Standard was promoting its 60K Loader concept throughout the Air Force, AAI was proposing that a powered lift adapter be mounted on top of the MHU-173/E to add the additional lift height required to load the B-1B bomber. In January, 1982, AAI submitted a study of alternative means for loading the B-1B bomber to International Rockwell, the prime contractor for the B-1B aircraft. Subsequent to AAI's submission, Rockwell issued a Request For Proposal (RFP) which included the powered lift adapter. Both AAI and Standard submitted bids, with Standard proposing to furnish packages consisting of a powered lift adapter and necessary modifications to the MHU-173/E trailer for approximately $106,000 per package. Standard states that, in the fall of 1983, it learned from Rockwell that it was the successful bidder.

In the meantime, AAI had become aware of Standard's 60K Loader design and price when it obtained a copy of Standard's unsolicited proposal in a briefing room at Andrews Air Force Base on July 29, 1982. Soon after, AAI completely abandoned the powered lift adapter concept and instead redesigned the MHU-173/E trailer, eliminating more than two-thirds of the trailer's parts, significantly reducing the complexity of its design, and providing it with a new lift system which enabled it to load the B-1B without auxiliary equipment. The new lift system appropriated and copied the concept of Standard's patented invention by using a hydraulic lift system employing lift arms with offset portions. AAI submitted its new trailer design in draft form to the Aeronautical Systems Division at Wright-Patterson Air Force Base as a proposed Value Engineering Change Proposal (VECP).[(5)] Upon receipt of AAI's informal VECP, the Air Force canceled the powered lift adapter requirement. On December 23, 1983, AAI formally submitted its VECP, and it was approved by the Air Force on December 30, 1983. At that time, the Air Force expected that, because of the new trailer's simplified design, procurement and use of seventy-three VECP trailers would result in total savings of about $69.9 million.

AAI was subsequently awarded a sole source contract for the VECP trailer, which is now designated the MHU-196/M, and AAI manufactured and delivered all of the 136 infringing MHU-196/M trailers which the Air Force has purchased. After the negotiations for the contract, the Air Force reported that AAI's expected profit would be 10% of the contract cost excluding the cost of money, or approximately 8.7% of the total contract price. AAI's original contract with the Air Force for trailer production was modified to state that AAI's developmental implementation cost for the VECP was $2,791,358. Both Standard and the Air Force agree that this figure represents a reasonable approximation of the value of the prototype trailer for loading the B-52. The contract modification also stated that AAI's share of collateral savings due to lower operational and support costs was $270,000. Under other terms of the modification, AAI received $4,512,180 as its share of the anticipated production cost savings resulting from the acquisition of MHU-196/M trailers instead of MHU-173/E trailers. Thus, AAI eventually received VECP payments of more than $7.5 million from the Air Force.

Besides the B-52 prototype, the Air Force also requested and received a prototype trailer for loading the B-1B bomber. For this trailer, the Air Force paid $535,015. With respect to the other MHU-196/M trailers which the Air Force eventually purchased from AAI, the transfers were accomplished in four lots. For the twenty-five trailers in Lot VI,[(6)] the Air Force paid $454,779 per trailer. For the next forty-six trailers, Lot VII, the Air Force paid $440,000 per trailer. For Lot VIII, the Air Force paid $435,385 for each of nineteen trailers. The last forty-four MHU-196/M trailers were purchased in Lot IX for $412, 117 per trailer. Thus, the total cost, exclusive of VECP payments, for all 136 MHU-196/M trailers including the two prototypes was $61,341,311. Additionally, the Air Force purchased $3,348,201 worth of supplies and services from AAI to support those trailers.

When minor modifications were later made to the MHU-196/M design for use with the B-2 bomber, the trailers were redesignated as MHU-204/M trailers. A principal difference between the MHU-196/M and

MHU-204/M trailers is that the overall height of the former is greater than that of the latter, because the lift arms of the former are attached to the upper surfaces of the trailer frames, while the lift arms of the latter are attached to the lower surfaces of the frames. Because of its extra height, the MHU-196/M is unable to load the B-2 bomber. The MHU-204/M trailer is unable to achieve a lift height sufficient to load the B-1B bomber.

The Air Force has procured thirty-six MHU-204/M trailers from Northrop Corporation and AAI through sole source contract with the Air Force. AAI and Northrop agreed to a final contract price for these sales which included an anticipated profit for AAI of 15%. The first seven MHU-204/M trailers were sold by AAI to Northrop for a total of $11,077,943, and Northrop then delivered the trailers to the Air Force for a total of $14,951,803. The remaining twenty-nine MHU-209/M trailers were purchased by the Air Force directly from AAI at a total cost of $19,492,409. AAI and the Air Force had agreed that this price would include a profit for AAI of 14.32%.[(7)]

In addition to acquiring the trailers themselves, the Air Force and Northrop purchased supplies and services from AAI to support those trailers. Northrop paid AAI $49,864 for the preparation of a proposal, $35,819 for the procurement of technical orders, and $873,055 for data. The Air Force paid AAI $1,831,833 for data and drawings, $42,000 for testing, and $500,000 for refurbishing MHU-173/E trailers before converting them to MHU-204/M trailers.

Standard's assignment of its patent rights to DBP Ltd.

While the Air Force's infringing procurements were still ongoing, Standard Manufacturing conveyed all of its interest and rights in the '548 patent to DBP, Ltd. (DBP) in an instrument effective April 22, 1993. DBP is a Texas limited partnership created in April of 1993 by the owners of Standard for the sole purpose of acquiring, by assignment, Standard's rights under the patent-in-suit, and financing and managing the litigation of its infringement suit against the Air Force. The individual limited partners of DBP are the same as the individual stockholders of Standard, and each has the same percentage interest in DBP as in Standard. The principal reasons for the transfer of rights were to relieve Standard of the continuing burden of litigation expenses associated with the maintenance of the infringement action, to eliminate the risk that economic hardship might compel Standard to settle the case prematurely and for a disadvantageous amount, and to avoid the possibility of unnecessarily exposing any recovery to potential claims by Standard's creditors.

As of the date of the assignment, all of the MHU-196/M trailers had been delivered to the Air Force. Additionally, the Air Force had received six of the seven MHU-204/M trailers procured from AAI by Northrop. Subsequent to the assignment, the Air Force received one more MHU-204/M trailer from Northrop and twenty-nine MHU-204/M trailers from AAI.

DISCUSSION

Use by the government of a patented invention without an express license from the patentee is properly viewed as a taking of property under the Fifth Amendment to the Constitution through the government's exercise of its power of eminent domain. Hughes Aircraft Co. v. United States, 86 F.3d 1566, 1571 (Fed. Cir. 1996), vacated on other grounds and remanded, 117 S. Ct. 1466 (1997), reinstated, 140 F.3d 1470 (Fed. Cir. 1998); Leesona Corp. v. United States, 599 F.2d 958, 967 (Ct. Cl.), cert. denied, 444

U.S. 991 (1979); Pitcairn v. United States, 547 F.2d 1106, 1114 (Ct. Cl. 1976), cert. denied, 434 U.S. 1051 (1978); see Gargoyles, Inc. v. United States, 37 Fed. Cl. 95, 99, aff'd, 113 F.3d 1572 (Fed. Cir. 1997). The patent holder's remedy for this infringement is prescribed by 28 U.S.C. § 1498(a) (1994):

Patent and copyright cases

(a) 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.

For the purposes of this section, the use or manufacture of an invention described in and covered by a patent of the United States by a contractor, a subcontractor, or any person, firm, or corporation for the Government and with the authorization or consent of the Government, shall be construed as use or manufacture for the United States.

See Hughes Aircraft Co. v. United States, 86 F.3d at 1571. Under the statute, the United States is not an ordinary infringer, but rather a compulsory, nonexclusive licensee. Motorola, Inc. v. United States, 729 F.2d 765, 768 (Fed. Cir. 1984); Leesona Corp. v. United States, 599 F.2d at 968; Brunswick Corp. v. United States, 36 Fed. Cl. 204, 207 (1996), aff'd, 152 F.3d 946 (Fed. Cir. 1998). Thus, the patent owner cannot prevent the government from taking such a license, but the owner is entitled to its "reasonable and entire compensation for such use and manufacture." Hughes Aircraft Co. v. United States, 86 F.3d at 1571; Brunswick Corp. v. United States, 36 Fed. Cl. at 207.

When determining just compensation for any type of eminent domain action, including the unlicensed use of a patent, equitable principles of fairness control. Tektronix, Inc. v. United States, 552 F.2d 343, 351 (Ct. Cl.), modified, 557 F.2d 265 (Ct. Cl. 1977), after remand, 575 F.2d 832, cert. denied, 439 U.S. 1048 (1978) (citing Almota Farmers Elevator & Warehouse Co. v. United States, 409 U.S. 470, 478 (1973)); Dow Chem. Co. v. United States, 36 Fed. Cl. 15, 19 (1996). Because recovery is based on eminent domain, the proper measure of compensation is "what the owner has lost, not what the taker has gained." Leesona Corp. v. United States, 599 F.2d at 969 (citing United States v. Chandler-Dunbar Co., 299 U.S. 53, 76 (1913)). This rule continues to be cited with approval. See, e.g., Hughes Aircraft Co. v. United States, 86 F.3d at 1571-72; ITT Corp. v. United States, 17 Ct. Cl. 199, 202 (1989). However, avoidance of excessive compensation to the patent owner is equally important as ensuring that the owner is not paid too little. Tektronix, Inc. v. United States, 552 F.2d at 351.

While a section 1498 action resembles in several ways the right of action against a private infringer provided under the Patent Act, see 35 U.S.C. §§ 271,[(8)] 284,[(9)] the actions are only parallels and not identical. See Motorola v. United States, 729 F.2d at 768; Leesona Corp. v. United States, 599 F.2d at 969. Title 35 provides remedies which would grant recovery in excess of the just compensation required by the Fifth Amendment, and, thus, also in excess of the reasonable and entire compensation provided for in section 1498. Id. For example, injunctive relief, increased damages and attorneys fees available against private infringers under 35 U.S.C. §§ 283, 284 and 285, respectively, are not permitted in eminent domain proceedings. Motorola v. United States, 729 F.2d at 768 n.3 (citing Leesona Corp. v. United States, 599 F.2d at 968-70). Furthermore, the government can only be sued for direct patent infringement, and not for inducing infringement by another or for contributory infringement (available against private infringers via 35 U.S.C. § 271(b) and (c), respectively.) Id. (citing Decca Ltd. v. United States, 640 F.2d 1156, 1167 (Ct. Cl. 1980), cert. denied, 454 U.S. 819 (1981)). Punitive damages elements appropriate in a private patent dispute are not appropriate when claiming infringement by the

government under section 1498. See Leesona Corp. v. United States, 599 F.2d at 968-70. The government, however, is not automatically entitled to infringe a patent "at a cheaper rate than a private infringer." Bendix Corp. v. United States, 676 F.2d 606, 607-08 (Ct. Cl. 1982) (per curiam).

Section 1498 does not instruct a court on what method to use when computing "reasonable and entire compensation" for the government's taking of a compulsory license. A trial court has discretion both in selecting the method and calculating the damages. See Hughes Aircraft Co. v. United States, 86 F.3d at 1572; Mahurkar v. C.R. Bard, Inc., 79 F.3d 1572, 1579 (Fed. Cir. 1996), cert. denied, -- S. Ct. -- , 1999 WL 16084 (1999). Generally, the preferred manner is to require the government to pay a reasonable royalty for its license as well as damages for its delay in paying the royalty.[(10)] Hughes Aircraft Co. v. United States, 86 F.3d at 1572; Decca Ltd. v. United States, 640 F.2d at 1167; see Gargoyles, Inc. v. United States, 37 Fed. Cl. at 99.

1. Reasonable royalty
2.

The parties are in agreement that the reasonable royalty approach is the most appropriate method for calculating infringement damages in the present case. A reasonable royalty is the amount that a person who desires to manufacture, use, or sell a patented article would be willing to pay as a royalty and yet still be able to make a reasonable profit. Trans-World Mfg. Corp. v. Al Nyman & Sons, 750 F.2d 1552, 1568 (Fed. Cir. 1984). Calculation of a reasonable royalty necessarily depends on the particular facts of a case, Mahurkar v. C.R. Bard, Inc., 79 F.3d at 1579, and the patent owner bears the burden of proof on damages, Fromson v. Western Litho Plate and Supply Co., 853 F.2d 1568, 1574 (Fed. Cir. 1988). The royalty computation involves two steps: (1) determination of a reasonable compensation base, i.e., the total value of the infringing items on which the plaintiffs are entitled to royalty payments, and (2) determination of a reasonable royalty rate to apply to that compensation base. See Decca Ltd. v. United States, 640 F.2d at 1173.

1. Reasonable compensation base
2.

The parties are in agreement on much of what should constitute the compensation base in this case. They agree that the value of 136 infringing MHU-196/M trailers and 36 infringing MHU-204/M trailers must be included in the base as well as supplies and services relating to those trailers. However, with respect to the MHU-196/M trailers, the government contends that Value Engineering Change Proposal (VECP) payments which were made to AAI should not be included in the royalty base. With respect to the MHU-204/M trailers, the parties disagree as to whether the general contractor's price mark-up on particular trailers should be included in the value of those weapons loaders.

In determining the proper components of the compensation base, the court is mindful of the guidance provided by the court in Leesona Corp. v. United States that "[t]he proper measure [of damages] in eminent domain is what the owner has lost, not what the taker has gained." 599 F.2d at 969; accord Hughes Aircraft Co. v. United States, 86 F.3d at 1572. Therefore, the most appropriate way to constitute the royalty base in this case is to examine what AAI received through the sale of the infringing trailers,

and, hence, what Standard could have received.

1. The MHU-196/M trailers

The parties have stipulated to the various amounts which the government paid for the 136 infringing MHU-196/M trailers. The parties agree that a reasonable value approximation for the prototype which could load the B-52 bomber was AAI's cost of $2,791,358.00 for development and implementation of that prototype. Through other stipulations, the parties have also agreed to the prices which the Air Force paid for the rest of the MHU-196/M trailers, and these figures are set out below.

Trailer grouping	Quantity	Cost per trailer	Group cost
B-52 prototype	1	$2,791,358.00	$2,791,358.00
B-1B prototype	1	$535,015.00	$535,015.00
Lot VI	25	$454,779.00	$11,369,475.00
Lot VII	46	$440,000.00	$20,240,000.00
Lot VIII	19	$435,385.00	$8,272,315.00
Lot IX	44	$412,117.00	$18,133,148.00
		TOTAL COST OF ALL GROUPS	$61,341,311.00

Including the stipulated development cost of the B-52 prototype, the total cost of all 136 MHU-196/M trailers was $61,341,311.00, which becomes the first component of the royalty compensation base in this case.

The parties do not dispute that, in connection with the Air Force's purchase of the MHU-196/M trailers, the Air Force paid AAI an additional amount of $4,782,180.00 as AAI's share of the cost savings expected to result from the purchase of the infringing trailers rather than the MHU-173/E trailers. Standard contends that these VECP payments should be included in the royalty base because they represent a portion of the total cost of the MHU-196/M trailers to the government. Plaintiff argues "the price that the government contracted to pay for each infringing trailer was not merely the line item unit price, but rather the unit price plus the portion of the [Value Engineering Change Proposal] payment triggered by acquisition of that unit."

The court disagrees with plaintiff. First and foremost, Standard never had the original contract with the Air Force for production of the MHU-173/E trailers. Therefore, unlike AAI, Standard could not have received VECP payments had it been manufacturing the cost-saving MHU-196/M trailers instead of AAI. The court cannot accept Standard's contention that "[w]hat the Air Force might have paid Standard

to manufacture patented trailers has no bearing on [the] issue." The VECP payments are not included in "what the owner has lost," and their inclusion in the royalty base would overcompensate the plaintiff in violation of the principle quoted above from Leesona Corp. v. United States. See 599 F.2d at 969; accord Hughes Aircraft Co. v. United States, 86 F.3d at 1572.

Furthermore, the structuring of the VECP payments to AAI demonstrates that they were distinct from the trailers' cost. The VECP payments were either separate line items in the government's contracts with AAI or they were separate lump sum payments. If Standard had been able to step in and manufacture the trailers, it would have only received the payments for the trailer production. Accordingly, the $4,782,180.00 in VECP payments to AAI should not be included in the royalty compensation base.[(11)]

The parties also do not dispute that $2,853,906.00 in supplies and services furnished by AAI for the MHU-196/M trailers should be included in the compensation base. Adding to this the $61,341,311.00 cost of the MHU-196/M trailers purchased by the Air Force, the court holds that the portion of the royalty compensation base attributable to the 136 MHU-196/M trailers is $64,195,217.00. This figure divides to $472,023.65 per MHU-196/M trailer.

1. The MHU-204/M trailers
2.

Northrop Corporation was the prime contractor for production of what is now known as the B-2 bomber, and it was required to develop all necessary support equipment for the aircraft, including munitions handling trailers. In order to fulfill its obligations, Northrop negotiated a series of purchase order subcontracts with AAI to develop trailers capable of loading weapons onto the B-2 and to provide services related to those trailers. The parties have stipulated to the various amounts which AAI received from Northrop for the purchase of these trailers, designated MHU-204/M trailers, and the amounts are set forth below.

Item	Quantity	Cost per unit	Total cost
Original trailers	3	$1,518,963.67	$4,556,891.00
Converted trailers	3	$1,101,010.00	$3,303,030.00
"New build" trailer	1	$1,277,921.00	$1,277,921.00
Non-recurring engineering charges	N/A	$619,225.00	$619,225.00
Special tooling	N/A	$394,553.00	$394,553.00
Technical orders	N/A	$730,271.00	$730,271.00
Contract change -- increased data costs	N/A	$142,784.00	$142,784.00
Contract change -- preparation	N/A	$49,864.00	$49,864.00

proposal costs			
Contract change -- price increase for converted trailers	N/A	$3,404.00	$3,404.00
Additional trailers	29	$672,152.02	$19,492,408.58
		TOTAL COST OF ALL ITEMS	$30,570,351.58

As it did with respect to the MHU-196/M trailers, Standard again argues that the royalty compensation base should include more than just the procurement value of the MHU-204/M trailers. In particular, plaintiff asserts that the additional "mark-up" of $3,873,860.00, which Northrop charged to the government when acting as the middleman, should be included in the compensation base. According to Standard, adding the mark-up would allow the compensation base to reflect more accurately the true value of the MHU-204/M trailers, namely, the price which the Air Force paid.

While Standard maintains that inclusion of the mark-up is supported by eminent domain principles, the case law on section 1498 actions counsels otherwise. As noted earlier, the court in Leesona Corp. v. United States declared that "[t]he proper measure [of damages] in eminent domain is what the owner has lost, not what the taker has gained." 599 F.2d at 969; accord Hughes Aircraft Co. v. United States, 86 F.3d at 1572. Adding the Northrop mark-up to the royalty compensation base would give Standard something which it could never have lost in the first place.

This logic also refutes plaintiff's additional argument that Northrop, serving as a middleman, was a "user" of its patented invention within the meaning of section 1498. The emphasis should not be on what the government paid for the invention or what contractors acting at the government's behest paid for the invention. Rather, recognition of what AAI received is the best measure of what Standard lost. As defendant points out, the mark-up was "due solely to the method by which the Government procured the trailers rather than the value of the invention." For the above reasons, the court will not include the mark-up charged by Northrup to the Air Force in the royalty compensation base.

In connection with the MHU-204/M trailers, the Air Force purchased $2,769,652.00 worth of supplies and services for the trailers from Northrop and AAI. These supplies and services consisted of technical orders, data and drawings, proposal preparation, testing, and refurbishment of MHU-173/E trailers before their conversion to MHU-204/M trailers. The parties agree that the compensation base should include all of these items except for the testing ($42,000.00) and the refurbishment of the MHU-173/E trailers ($500,000.00). The total cost of MHU-204/M trailer supplies and services included in the royalty compensation base is, thus, $2,227,652.00, and the portion of the base attributable to the thirty-six MHU-204/M trailers is $32,798,003.58. This number divides to $911,055.66 per MHU-204/M trailer. Combining this with the $64,195,217.00 attributable to the MHU-196/M trailers, the court holds that the overall royalty compensation base in this case shall be $96,993,220.58.

1. Reasonable royalty rate
2.

When determining a reasonable royalty rate, a court first looks for an established royalty applicable to the patent at issue. See Trell v. Marlee Elecs. Corp., 912 F.2d 1443, 1445 (Fed. Cir. 1990) (citing Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d 1075, 1078 (Fed. Cir. 1983)); Gargoyles, Inc. v. United States, 37 Fed. Cl. at 103. "Where an established royalty rate for patented inventions is shown to exist, that rate will usually be adopted as the best measure of reasonable and entire compensation." Tektronix, Inc. v. United States, 552 F.2d at 347; see Calhoun v. United States, 453 F.2d 1385, 1393 (Ct. Cl. 1972); Gargoyles, Inc. v. United States, 37 Fed. Cl. at 103. A court may, for example, adopt a royalty rate if a substantial number of licensees in a relevant market have considered it reasonable. See Rude v. Westcott, 130 U.S. 152, 165 (1889).

Without an established royalty rate, a court will retroactively construct a hypothetical "arms-length" negotiation between a willing licensor and a willing licensee to determine the royalty rate upon which the parties would have agreed. TWM Mfg. Co. v. Dura Corp., 789 F.2d 895, 898-901 (Fed. Cir.), cert. denied, 479 U.S. 852 (1986); Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d at 1078; Brunswick Corp. v. United States, 36 Fed. Cl. at 209. The hypothetical negotiation is considered to have taken place on the date of first infringement by the government, Minco, Inc. v. Combustion Eng'g, Inc., 95 F.3d 1109, 1119 (Fed. Cir. 1996), because "just compensation is the value of the property taken at the time of the taking." Brooks-Scanlon Corp. v. United States, 265 U.S. 106, 123 (1924). However, in order to ensure that a plaintiff receives full compensation, the Court of Appeals for the Federal Circuit has held that a court also properly may consider events which occurred, and facts which were known, after the original infringement:

The [hypothetical negotiation] 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 to events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators.

Fromson v. Western Litho Plate and Supply Co., 853 F.2d at 1575 (footnote omitted); see Sinclair Ref. Co. v. Jenkins Petroleum Co., 289 U.S. 689, 698-99 (1933) (referring to later experiences as a "book of wisdom" which can correct uncertainties present at the time of negotiation); Dow Chem. Co. v. United States, 36 Fed. Cl. at 20. Consideration of later-occurring events may be necessary to approximate a fair royalty to which negotiators with access to such knowledge would have agreed. Dow Chem. Co. v. United States, 36 Fed. Cl. at 20.

The "willing-buyer/willing-seller" approach was outlined in Georgia-Pacific Corp. v. United States Plywood Corp., 318 F. Supp. at 1120 ("Georgia-Pacific"), and the court in that case gave a comprehensive list of factors relevant to the determination of the amount of a reasonable royalty for a patent license:

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 promot[e]r.

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.

Id. at 1120. The Georgia-Pacific factors have been recognized and utilized by the United States Court of Appeals for the Federal Circuit on numerous occasions. See, e.g., Unisplay S.A. v. American Elec. Sign Co., 69 F.3d 512, 517 n.7 (Fed. Cir. 1995) ("A comprehensive list of relevant factors in determining a reasonable royalty is set out in Georgia-Pacific . . . ."); Rite-Hite Corp. v. Kelley Co., Inc., 56 F.3d at 1555 (citing Georgia-Pacific for the proposition that a "wide range of factors" are relevant for the hypothetical negotiation analysis); Smithkline Diagnostics, Inc. v. Helena Labor. Corp., 926 F.2d 1161, 1168 (Fed. Cir. 1991) ("The district court correctly considered the factors enumerated in . . . Georgia-Pacific . . . ."); Railroad Dynamics, Inc. v. A. Stucki Co., 727 F.2d 1506, 1518 (Fed. Cir.), cert. denied, 469 U.S. 871 (1984) (affirming lower court decision which "thoroughly analyzed the evidence on damages in light of the fifteen factors in Georgia-Pacific.").

In addition to the Georgia-Pacific factors, a court has discretion to consider additional factors such as reducing the royalty rate when the government procurement is voluminous or where there are non-infringing alternatives available. Brunswick Corp. v. United States, 36 Fed. Cl. at 211. A court might also adjust the rate upward if there were substantial capital expenditures associated with performance of the government contract. Id. Another consideration is a comparison of an infringer's profits with the patent holder's risks and ability to license the subject matter. Id. In any case, a court should not feel constrained by the Georgia-Pacific factors, nor is it required to consider each of them if conflicting or inconclusive. Dragan v. L.D. Caulk Co., 1989 WL 133536, at *9 (D. Del. Apr. 21, 1989), aff'd, 897 F.2d 538 (Fed. Cir. 1990). According to the court in Dragan, "no cases have relied on all fifteen of these factors. Therefore, to support an award of damages based on a reasonable royalty, a party must adduce evidence only with respect to the factors relevant in that case." Id.

Prior to examining the factors pertinent to determining a reasonable royalty rate in the instant case, the court notes that reasonable royalty hypothetical negotiations often deal with only two parties, a patent holder and an infringer. When a section 1498 action is involved, the situation is more complex, and this is true of the present case. The court will shape its consideration of the rate-determining factors here to reflect that, in some instances, both AAI and the Air Force can and should be individually considered to be negotiating as potential licensees. See Penda Corp. v. United States, 29 Fed. Cl. 533, 579 (1993), appeal dismissed, 44 F.3d 967 (Fed. Cir. 1994), cert. denied, 514 U.S. 1110 (1995). As Standard's '548 patent issued on June 11, 1985, the Air Force would have required a license at about that time to avoid infringement. Discussion of the hypothetical negotiation, therefore, will assume that the negotiation took place in early June, 1985.

Furthermore, it is also prudent to initially establish a reference, or "baseline," royalty rate. 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. Due to its significance in the determination of the final royalty rate, this baseline rate is a point of strong disagreement between Standard and the government. With no prior licenses for this technology, and no evidence from the parties of customary royalty rates in this industry, both Standard and the government have proposed their own divergent theories for an appropriate baseline royalty rate.

Standard takes the position that the parties would have negotiated the royalty rate to be a percentage of the expected cost savings. In support of this assertion, plaintiff contends that "the Air Force was highly motivated by cost saving considerations," the "nature and useful life of the invention were such that its value consisted in large measure of the cost savings . . . that would result from its use," and the Air Force had generated cost savings estimates which were "the type . . . that price negotiators work with in almost every situation." While it is unclear what Standard's expert licensing witness, Mr. Brian G. Brunsvold, used as his exact baseline figure, he explained his starting point as follows:

I was involved in [a] situation looking into cost savings for a client and assessing possible damages in a patent infringement action. [I] was involved in working with an expert witness that had been retained on behalf of the client in that case who was from an aircraft systems company.

In his experience, the range that he had run into for cost savings awarded to or negotiated by the licensor from the licensee was twenty-five to fifty percent. As he expressed it, the lower part of that range usually applied when the . . . only advantage of [the] patented invention over the prior art was the cost savings, but where the patent owner could show that in addition to the cost savings there were other advantages of the invention over the best commercially available competing product, . . . the cost savings that the licensor could negotiate would be in the upper end of the range, forty to fifty percent.

Mr. Brunsvold then used that 25-50% range, examined the Georgia-Pacific factors, and arrived at a

reasonable royalty rate of 40% of the Air Force's expected cost savings. Standard then converted this to a 29% royalty rate on the royalty compensation base which it calculated from the overall value of the trailers.

The court rejects Mr. Brunsvold's approach. Instead of using the reasonable royalty approach which plaintiff claims to embrace and which both parties agree is appropriate, Standard's expert, in effect, improperly employed a cost-savings analysis which is not now in favor for determining patent infringement damages. See Brunswick Corp. v. United States, 36 Fed. Cl. at 209. As the court noted in Decca Ltd. v. United States, the cost savings approach has been rarely used, and, according to the Decca court, only prior to 1950. See generally, 640 F.2d at 1167 n.20. The reasonable royalty method is preferred; it involves two steps: (1) determination of a reasonable compensation base and (2) determination of a reasonable royalty rate to apply to that compensation base. Id. at 1173. As the compensation base does not include the Air Force's cost savings, but rather the value of the infringing trailers and associated supplies and services, Standard's royalty percentagewhich Mr. Brunsvold based on cost savingsshould not logically be applied to the proper compensation base.

It also does not justify plaintiff's position that Standard then converted the royalty rate (40%) used with the cost savings to a second rate (29%) to be used with the proper compensation base. Using this "backdoor" method does not change the fact that the Georgia-Pacific factors were improperly used to adjust the first royalty rate (40%) used with the cost savings rather than the second royalty rate used with the royalty compensation base. This can make a significant difference when the royalty compensation base and the cost savings to the government are not equal.[(12)] For example, in Standard's calculations, the royalty rate of 40% was scaled down to 29% based upon the 40:29 ratio of Standard's alleged governmental cost savings to Standard's alleged compensation base established through procurement value. Since analysis of the Georgia-Pacific factors was performed prior to the scaling, any increase or decrease in the royalty percentage which the factors dictated was also inappropriately scaled down in a 40:29 ratio. For example, if there was a 10% decrease called for by the Georgia-Pacific factors in Standard's methodology, it eventually resulted in only a 7.25% decrease in the royalty rate which was applied to the proper compensation base.

The unequal treatment of similarly situated parties, which could result from use of Standard's methodology, is apparent. It is easy to see how use of Standard's methodology could lead to nonuniform results if a court failed to exercise care, and the court in the present case will not sanction its use. The court does note, however, that when determining a reasonable royalty rate using the factors laid out in Georgia-Pacific, cost savings may be a relevant consideration. See, e.g., Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d at 1080-81. Thus, the court will consider the Air Force's potential cost savings when it examines the individual Georgia-Pacific factors below.

Returning to the subject of a proper "baseline" royalty rate, the defendant proposes that the "25% rule" is an appropriate method for establishing a baseline rate. According to the government:

The 25% rule is a shorthand phrase for a method of dividing expected profit between a licensor and licensee. It divides net pretax profit with normally 25% of that profit being paid to the licensor as a reasonable royalty, while 75% is reserved to the licensee as its profit for the risks attendant manufacturing and marketing. Normally, the net profit that is divided is . . . that of the licensee. Sometimes the licensor's net profit rate may be used, however, where the licensee's profit rate is not known.

While a trial court is not limited to selecting one or the other of the specific royalty figures proposed by the opposing parties, Smithkline Diagnostics, Inc. v. Helena Labs. Corp., 926 F.2d at 1168, the court

here finds that the 25% rule is an appropriate rationale for determining a base royalty rate. Defendant's licensing expert, Mr. Robert Goldscheider, noted that he first became familiar with the 75%/25% distribution of licensing profits when he began to do licensing work in 1959 and 1960. Since that time, defendant's expert has participated in several hundred licensing negotiations involving intellectual property, and, according to Mr. Goldscheider, he and "at least two other highly respected pioneers in the field of licensing" have written published works concerning the 25% rule.

In addition, the 25% rule or a close variant of it has been recognized by a number of other federal courts as a "rule of thumb" or "typical" in the licensing field. See, e.g., Ajinomoto Co., Inc. v. Archer-Daniels-Midland Co., No. 95-218-SLR, 1998 WL 151411, at *52 n.46 (D. Del. Mar. 13, 1998) ("'[L]icensing rule of thumb' dictates that only one-quarter to one-third of the benefit should go to the owner of the technology . . . ."); W.L. Gore & Assocs., Inc. v. International Med. Prosthetics Research Assocs., Inc., No. CIV 84-559 PHX CLH, 1990 WL 180490, at *23 (D. Ariz. July 9, 1990) ("As a general rule of thumb, a royalty of 25 percent of net profits is used in license negotiations."). Other cases note, without further comment, experts' use of variants of the 25% rule, see, e.g., Fonar Corp. v. General Elec. Co., 107 F.3d 1543, 1553 (Fed. Cir.), cert. denied, 118 S. Ct. 266 (1997) (expert witness testified that one-quarter to one-third of anticipated profits would have constituted reasonable royalty), and a leading treatise recognizes that courts give considerable weight to an infringer's profits based on the theory that the parties in a hypothetical licensing negotiation would set a royalty rate which would divide the economic benefits between them. 7 Donald S. Chisum, Chisum on Patents § 20.03[3][iv] at 20-188, 20-189 (1993 & Supp. 1997). The court is persuaded that the parties to the hypothetical negotiation in this case would have used the 25% guideline for determining a base royalty rate.

Mr. Goldscheider began his analysis of a proper royalty rate by immediately reducing the 25% share of profits to 20% for three reasons. First, since AAI had already developed its loader design at the time of the hypothetical negotiation, the Air Force needed only a naked patent license.[(13)] Second, the government was entitled to a greater share of the profits because, in Mr. Goldscheider's opinion, it had created the market for the invention. Third, at the time of the negotiation, the MHU-196/M would have only undergone prototype testing and there would still be a risk that the invention would fail. Mr. Goldscheider then took 20% of Standard's 18.2% historical profit rate during the 1979-86 time period, which was the peak of Standard's profitability and encompassed the time of the hypothetical negotiation in June of 1985. Then, he increased the resulting 3.64% royalty rate to 5% after considering the Georgia-Pacific factors.

The court, however, disagrees with Mr. Goldscheider's initial reduction of the 25% rule to 20%. Each component which Mr. Goldscheider employed in his determination can be properly analyzed, if the court finds it necessary, under various Georgia-Pacific factors. For example, the fact that the Air Force needed only a naked license, if relevant, is a consideration which could be examined under Georgia-Pacific factor #3, which examines "[t]he nature and scope of the license . . . ." Thus, the court will start with a baseline royalty rate of 25% of the licensee's profits.

The next step calls for a determination of the licensee's profit rate. Here, the court has been presented with several different possible numbers. Both parties have chosen a profit rate of the plaintiff, instead of AAI's profit rate. Defendant's expert used Standard's historical net profit rate of 18.2%, while Standard claims that it would have earned its incremental profit rate of 29%.[(14)] After reviewing the disagreement presented by the plaintiff and the defendant, the court is unconvinced by the unsupported arguments presented by both sides. Instead, the court will use AAI's profit rate on the sale of the trailers.[(15)] This is a more realistic and reliable estimation of profits which were lost to Standard by the infringement since they are derived from the actual sale of the trailers.

The parties have stipulated that the original contract price between AAI and Northrop for the MHU-204/M trailers included an anticipated profit of 15% for AAI, and that a subsequent contract for the last twenty-nine MHU-204/M trailers included an expected profit of 14.32%. There is no agreed upon profit rate for the MHU-196/M trailers, but Mr. Goldscheider calculated that profit rate to be 11% without the VECP payments or 18% if they were included. Lacking a persuasive reason to prefer one of these rates over the others, the court has chosen to average the rates based upon the number of infringing trailers to which each rate applied. Utilizing the VECP-inclusive 18% figure[(16)] for 136 MHU-196/M trailers, a 15% figure for the first seven MHU-204/M trailers, and a 14.32% figure for the last twenty-nine trailers, AAI's average profit rate comes to 17.26%. Application of the 25% rule then gives a baseline royalty rate of 4.31% which can be adjusted upward or downward depending on the strength of the parties' positions under the Georgia-Pacific factors and other appropriate considerations analyzed below.

Georgia-Pacific factor #1 "The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty."

The licensing experts for Standard and the government agreed that there was no evidence of any established royalty for the patent in suit. There was limited testimony regarding licenses of know-how and foreign patent rights by Standard to two foreign manufacturers. These licenses, resulting because the foreign governments in question would not purchase the products directly from a U.S. manufacturer, carried royalties of 5-10% of the net selling price and also called for certain parts to be bought from Standard. After being discounted by both parties, this evidence has little, if any, relationship to a hypothetical negotiation between Standard and the United States, and this factor, therefore, should not result in an adjustment of the royalty rate.

Georgia-Pacific factor #2 "The rates paid by the licensee for the use of other patents comparable to the patent in suit."

Neither licensing expert felt there were any royalties being paid under comparable patent licenses that would furnish a guide to a reasonable royalty rate. Accordingly, this factor also should not cause a change in the royalty rate.

Georgia-Pacific 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."

Standard contends that its "patented invention was custom designed specifically for the United States Air Force, and was so highly specialized that there is no other potential customer for it." The plaintiff also claims that "the Air Force's purchases of infringing trailers from AAI and Northrop satisfied its entire requirements for strategic weapons loaders." While a license that is being valued for section 1498 purposes is a compulsory, nonexclusive license as a matter of law, see Motorola Corp. v. United States, 729 F.2d at 768, Standard claims that the license would have been de facto exclusive because it had no non-governmental market for the trailers. Thus, plaintiff feels it would have been able to exact a royalty rate higher than that for a non-exclusive license.

The government, on the other hand, argues that Standard made no investigation of the civilian market and made no attempt to contact anyone outside the company who might have had knowledge of the

relevant markets. While Standard's officers may or may not have been sufficiently experienced in the field to make the assessment without further inquiry, a determination of no civilian market still works against Standard. Having no outlet besides the Air Force for a potentially lucrative product, Standard would have had greater incentive to complete a licensing agreement and, thus, would have been more yielding with its terms.

Furthermore, the Air Force had no need for an exclusive license and probably would not have tried to obtain one if it could. In all likelihood, the Air Force would have obtained the license to either manufacture the trailers itself or to contract for their manufacture by another entity. It needed the trailers for its own use and had no plans to market and sell them, especially since there was no civilian market. On balance, this factor favors the government and would call for downward adjustment of the royalty rate.

Georgia-Pacific 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 that monopoly."

Standard contends that, as a manufacturing company, its policy was not to license manufacturing work unless absolutely necessary. It has never licensed a domestic company to manufacture any of its loaders, and only licensed two foreign companies to manufacture them because their governments refused to purchase directly from Standard. Therefore, if it were to lose the manufacturing revenue, plaintiff argues that it would have negotiated strenuously for a higher royalty rate.

Defendant raises two counter-arguments. First, defendant claims Standard was not reluctant to license its patents. The government notes that Standard's unsolicited proposal to the Air Force was willing to grant a patent license, as well as the rights to information that would have later permitted competing manufacturers to build the patented trailers. It cannot be casually overlooked, however, that Standard was only willing to release its rights if the government decided to purchase two prototype trailers and a production lot of fifty more trailers. Plaintiff's position in the unsolicited proposal was consistent with its reluctance to license.

The government's second counter-argument is stronger. Prior to the date of the hypothetical negotiation, the Air Force had determined that potential competitors to AAI would not be able to meet the production schedule for the MHU-196/M trailers because the Air Force lacked fully-approved production drawings. The Air Force believed that obtaining the trailers from a manufacturer other than AAI would be too risky and would require the trailers built by the other manufacturer to undergo a "full gamut" of testing, for which the Air Force did not have funding. Thus, plaintiff correctly notes that Standard, at the time of the hypothetical license negotiation, would not have been in a position to manufacture the trailers for the Air Force simply because the Air Force felt constrained to allow only AAI to manufacture them. The parties do not dispute that Standard had the capacity and financial resources to furnish the trailers; however, the government would not have needed to consider in the negotiation something (the manufacturing of the trailers) that Standard did not have the option to do.[(17)] Thus, under the circumstances of this case, this factor does not call for an adjustment to the royalty rate.

Georgia-Pacific factor #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."

Regarding whether the commercial relationship between Standard and the Air Force would have allowed plaintiff to command a higher royalty rate, there are legitimate arguments on both sides of the debate. The government was Standard's largest customer, both at the time of the hypothetical negotiation and for several years afterward. The licensing experts for both parties noted that when the licensee is the best customer of the patent owner, that tends to produce a lower royalty rate due to the size of the royalty base. To the contrary, however, since the best customer/licensee is purchasing regularly and presumably in large quantities, it has obviously come to value the patent owner as a producer of quality products and services. The licensee likely wants to maintain the relationship as much as the patent owner, and, therefore, is willing to pay higher royalty rates.

As noted above, however, in the instant case, the court might also consider AAI as the licensee in some instances. See Penda Corp. v. United States, 29 Fed. Cl. at 579. AAI's status as the licensee would have strongly influenced Standard at the hypothetical negotiation. The plaintiff notes that "[a]s a small corporation, dependent upon its manufacturing business, Standard could reasonably have demanded a high royalty rate for, in effect, licensing a competitor to manufacture products that it was willing and able to produce itself." The court agrees that Standard would have been understandably reluctant to grant a license to a direct competitor. Not only would Standard have been missing the opportunity to manufacture the trailers itself, but it would have been allowing AAI to demonstrate its capabilities first-hand to the Air Force for an extended period of time. Any reasonable company in Standard's position would recognize that the license could have a great impact on the Air Force's future purchasing decisions with respect to the trailers and other products which both Standard and AAI might produce. Thus, it is clear that this factor strongly favors an increase in the royalty rate which Standard would have been able to negotiate.

Georgia-Pacific 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 his non-patented items; and the extent of such derivative or convoyed sales."

Neither Standard nor the government believe that this factor should be considered when adjusting the royalty rate. Convoyed items, such as supplies and services, have already been included in the royalty compensation base. Considering them again here would be a form of double-counting.

Georgia-Pacific factor #7 "The duration of the patent and the term of the license."

Since the Air Force believed that the patented trailers would have a useful life of approximately twenty years, the parties agree that the defendant would have sought a license for the full seventeen-year term of the patent. Standard argues that this lengthy license duration ordinarily will increase the royalty rate commanded by the licensor because the negotiating licensee will not want to forego use of the patent for such a great time. An equally valid argument, however, is that the large royalty compensation base which would accrue during a lengthy license term would tend to depress the royalty rate. These effects tend to negate each other and this factor, thus, is not used to adjust the reasonable royalty rate in this case.

Georgia-Pacific factor #8 "The established profitability of the product made under the patent; its commercial success; and its current popularity."

Georgia-Pacific factor #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."

Georgia-Pacific 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."

With no issue concerning the marketability of the invention in the present case, the analyses of Georgia-Pacific factors 8, 9 and 10 overlap, for each factor involves examination of the benefits which the invention conferred upon the licensee. In this case, the Air Force had no intention of manufacturing and selling the patented trailers for a commercial market. Since the defendant would have been obtaining a license for its own use of the invention, profitability is irrelevant. The commercial success and current popularity concerns, however, favor Standard. As the plaintiff notes:

[b]y [the time of the hypothetical negotiation], Standard had built a prototype of the patented invention and had demonstrated it for the Air Force. In addition, having tested two prototypes manufactured by AAI, the Air Force knew that the MHU-196 trailer was far superior to the prior art trailers, and would meet the requirement of a single trailer capable of loading both the B-52 and the B-1B bombers.

Additionally, the defendant concedes that "[a]t that time, there had been prototype testing of the [MHU-196/M] loader, and this had indicated that there was low risk in some areas, and no risk in others, in terms of the loader achieving its objectives, in terms of cost, schedule and performance." In fact, the Air Force had already contracted for Lots VI and VII of the trailers and was, thus, aware of the procurement cost savings in comparison to the MHU-173/E loaders. The court agrees with Standard that these considerations would have influenced the Air Force to place a high value on obtaining a license.

As noted above, the infringing MHU-196/M and MHU-204/M trailers replaced the MHU-173/E loaders, which had problems from the time of their initial use. The MHU-173/E weapons loading trailers were expensive, overly complex and considerably more difficult to operate and maintain than previous trailers had been. They could not lift the required weight or achieve the lift height needed to load the B-1B bomber, and also could not load the B-2 bomber. The invention which Standard createdpublished in the '548 patent and embodied by the infringing MHU-196/M and MHU-204/M trailerssolved these problems for the Air Force.

The MHU-196/M trailer is capable of loading both the B-52 and B-1B bombers in a single stage operation without the need for a costly auxiliary adapter which the MHU-173/E would require, and the MHU-196/M costs considerably less. Similarly, the MHU-204/M trailer is capable of loading both the B-52 and B-2 bombers, a feat which prior loaders could not accomplish. Both the MHU-196/M and MHU-204/M trailers have rugged, simple designs which have made them more reliable and easier to operate and maintain than the MHU-173/E loaders. It is clear that Standard's patented invention represented a technological step forward.

Standard goes further, contending that the 60K Loader was a "break-through," or "pioneer" invention which would have commanded a high royalty rate. Plaintiff notes that its loader performed a function which no prior loader had been able to perform, and represented an "elegant" solution to a difficult design challenge. The court agrees with these latter statements, and also agrees that the infringing loaders enhanced the Air Force's ability to support its fleet of strategic bombers. However, while the

invention was important to this country's national security, it did not rise to the level of a "pioneer" invention which provides a totally new function. See Hughes Aircraft Co. v. United States, 31 Fed. Cl. 481, 489 (1994), aff'd, 86 F.3d 1566 (Fed. Cir. 1996).

In any case, characterization of the invention as something less than "pioneer" does not change the fact that it was highly advantageous in comparison to prior loaders. The benefits to the Air Force and the high value it would have placed on obtaining a license would have strongly favored an increase in the negotiated royalty rate for Standard. Furthermore, while factors 8, 9 and 10 were analyzed together, each has a significance of its own. The court will be mindful of this when finally presenting an adjusted royalty rate.

Georgia-Pacific factor #11 "The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use."

The court does not agree with Standard that a royalty rate in a hypothetical negotiation would have been set as a percentage of the Air Force's projected cost savings resulting from use of the infringing trailers. As noted earlier, however, it is proper to consider the Air Force's probable cost savings as one element which would have influenced the setting of the royalty rate to apply to the compensation base. Georgia-Pacific factor #11 is an appropriate way in which to account for cost savings because they can be used as an indicator of the infringing trailers' value to the Air Force.

There is no dispute that the Air Force's use of the MHU-196/M and MHU-204/M trailers instead of the MHU-173/E trailers resulted in substantial cost savings for the Air Force. At this later time, it is possible to look back in hindsight and see that the infringing trailers proved more reliable, easier to operate, and easier to maintain. While the parties agree to these facts, their opinions differ greatly as to the exact magnitude of the savings which the Air Force would have expected to achieve in procurement costs[(18)] and in operation and support (O&S)[(19)] costs. Apparently due to Standard's proposal of a damages theory in which the compensation base consists of these cost savings, both parties have set out greatly detailed positions on the Air Force's procurement and O&S savings. Because the court only will be utilizing the cost savings as one factor influencing the hypothetical negotiation, it does not feel compelled to discuss the cost savings in the same depth as did the parties. Rather, the court will seek to determine the reasonable magnitude of the savings. This will enable a decision on whether Georgia-Pacific factor #11 should lead to an adjustment in the royalty rate negotiation.

In sum, Standard contends acquisition of the MHU-196/M trailers saved the Air Force $13.7 million in procurement costs after taking into account the VECP payments to AAI.[(20)] With respect to the O&S costs, Standard claims that each of the 172 infringing trailers was expected to save $15,721.00, that the savings on each trailer were expected to occur over a twenty-year period, and that the total savings expected was thus $92.9 million when adjusted for inflation. Adding both cost savings, plaintiff states that, at the time of the hypothetical negotiation, the Air Force would have projected total savings of approximately $106.6 million. The government raises many arguments against plaintiff's analysis, and the court will examine those which could have a significant impact on plaintiff's $106.6 million estimation.

To start, defendant contends that Standard's $525,000.00 base price for the MHU-173/E loaders was too high. As the prices for the consecutive lots of MHU-173/E loaders had been decreasing, the government argues that this trend should have been projected to what would have been future lots. In total, the government believes that Standard's procurement cost savings estimate was $3.7 million too high. The

court, however, notes that the lot prices for the MHU-173/E trailers did not uniformly decrease as the defendant suggests. Rather, the $525,000.00 price most likely arose as a result of competition from Standard, which may or may not have continued in the future. As $525,000.00 was the lowest price which the Air Force had paid and was the most recent contracted price, it was reasonable for Standard to use this as a baseline price against which to measure procurement cost savings.

The remainder of defendant's major disagreements with Standard's cost savings estimate are focused on the O&S costs. Standard contends that savings on these costs would account for almost 90% of the Air Force's total cost savings over the useful life of the trailers. The government begins by criticizing Standard's use of a joint AAI/Air Force cost study in 1984. This report contained an analysis of the O&S cost savings that would be achieved by retrofitting MHU-173/E trailers to the VECP trailer configuration proposed by AAI (and later detailed in Standard's '548 patent.) The annual O&S cost for the MHU-173/E, based on historical data for that trailer, was estimated to be $29,612.43. The estimated annual cost per trailer for the MHU-196/M was $12,896.81. Standard's accounting expert then made adjustments to each of these figures based on another contemporaneous Air Force report that changed the preventative maintenance schedules for the trailers. The result was a cost savings per trailer per year of $15,751.00. Based on a useful life of twenty years, the Air Force could have thus expected a total cost savings (adjusted for inflation) of approximately $93 million.

The parties have stipulated that the cost figures used by AAI and the Air Force in reaching this conclusion were "mutually agreeable to each," were "based on current estimates of reliability, maintainability, and manpower [requirements]," and "represent[ed] the best available estimates of operation and support cost savings to be realized." Nevertheless, the government argues that the 1984 study was inaccurate and the accounting techniques used by Standard's expert, Mark A. Peterson, were flawed. First, defendant points out that the cost of maintaining the MHU-173 was much higher in 1983 than in 1984 or 1985. Second, since the trailers incorporated improvements which were not within the scope of the '548 patent, some of the cost savings would not have been attributable to the product which Standard was licensing. Third, Mr. Peterson improperly used a collateral report referring to changes in the preventative maintenance schedule for the MHU-173/E which said that excessive maintenance was being performed on that loader. The report reduced preventative maintenance by 46% on the MHU-173/E and reduced the number of depot actions from two to one for the MHU-196/M, but not for the MHU-173/E. Fourth, the government contends that a fifteen-year useful life should have been used for the cost estimates. Fifth, Standard improperly used a long term inflation factor, and sixth, Standard should have employed a factor to reduce the cost savings estimate due to the risk that the cost savings would not occur.

In addressing these concerns of the government, it is important to remember that the cost savings estimates are only being used as one factor important to the adjustment of the royalty rate in the hypothetical negotiation. If, as proposed by Standard, the cost savings were to be used as the royalty compensation base, the court would agree with defendant that some of Standard's cost savings estimation is overly speculative. However, as it is necessary only to derive an estimate of cost savings, the court does not find the government's above-listed contentions dispositive. When the contentions could greatly affect the magnitude of the estimate, they are simply incorrect.

First, even though the cost of maintaining the MHU-173/E decreased in 1984 and 1985, this is not sufficient to establish any sort of meaningful pattern. Finding otherwise would be the sort of speculation which defendant so forcefully argues to avoid. Second, for the argument that the infringing trailers might have contained improvements which were not within the scope of the '548 patent, the government has failed to put forth a convincing argument on this issue. Even if it had, and some cost savings were not due to Standard's invention, the Air Force could not effectively separate the value of some cost savings from others when negotiating for the license. It was an "all or nothing" proposition.

Third, regarding the collateral report on preventative maintenance, Standard has persuasively shown that the report, while addressing both the MHU-173/E and MHU-196/M at various points, only reduces the number of depot actions for the MHU-196/M. Furthermore, an Air Force cost analysis dated October 31, 1984, shows no change in prior depot costs for the MHU-173/E, but shows a reduction in depot costs of 50% for the MHU-196/M. Standard was correct to conclude that the preventative maintenance cost estimates for the MHU-196/M loaders were to be decreased more than those for the MHU-173/E trailers.

Fourth, plaintiff was correct to use a twenty-year useful life for the trailers. The parties had previously stipulated that the Air Force expected to use the MHU-196/M and MHU-204/M weapons loaders for that period of time. As to the government's fifth argument, that the plaintiff used an overestimated inflation factor for the years after 1993, the court does not feel that this would have drastically changed the magnitude of the savings calculation. Mr. Peterson applied an inflation rate of 4.22% for every year after 1993, while the government's expert, Daniel M. McGavock, used a rate of 3.22%. Besides 1994, when the actual inflation rate was 2.67%, the court has no evidence that Mr. Peterson's 4.22% rate was too high. It was based on a formula which compared the long-term government bond rate to the average real Treasury bill rate, and could, in the future, prove to be an underestimation as well as an overestimation. In any event, the 1% difference in the rates proposed by the experts would not change the court's view of the magnitude of the cost savings, namely a figure near $100 million over the lifetime of the infringing trailers.

Finally, the court does not agree that it was necessary to include a risk factor of 50% when projecting the cost savings over the useful life of the trailers. At the time of the hypothetical negotiation, Standard had already designed, built and demonstrated a prototype of its 60K Loader for the Air Force, and AAI and the Air Force had prepared the joint report anticipating substantial cost savings upon which Standard has relied. Besides this estimate, there were at least seven later reports presented on the extent of cost savings which the Air Force could expect to achieve, and Standard's estimate falls into the conservative end of the prediction range.[(21)]

Based on the foregoing, Standard has shown that the Air Force could have reasonably expected to achieve cost savings near $100 million over the useful life of the infringing trailers. As this is but one factor which would influence the hypothetical negotiation of the royalty rate, and it is not being used as the royalty compensation base, it is unnecessary to further pinpoint an exact savings figure. The court notes, however, that an expected cost savings figure of that magnitude, and hence Georgia-Pacific factor #11, would have significantly and strongly favored Standard and an increase in the royalty rate.

Georgia-Pacific 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."

Neither of the parties' licensing experts placed importance on the prevailing industry royalty rates. Both felt that the facts of an individual negotiation should be used to determine the reasonable royalty rate. See 7 Donald S. Chisum, Chisum on Patents § 20.03[3][b][ii] at 20-184 (1993 & Supp. 1997) (industry custom "is rarely given decisive or even substantial effect due to the generally unique character of patented inventions and of the circumstances under which they are developed and exploited.").

Georgia-Pacific 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."

There is some debate between the parties about the significance of certain components and whether these components were covered by the '548 patent. Specifically, these are the wheel motors, travel locks and X-Y pad jack system. The wheel motors in the MHU-196/M as implemented by AAI were separated from the brake drums, easing maintenance. Used for preventing travel during operation, the travel locks were also improved by AAI in the MHU-196/M. Sliding in and out by hand, rather than being operated by a screw, decreased their maintenance costs substantially. The stabilizing X-Y pad jacks in the MHU-196/M trailers developed by AAI used better hydraulic systems than the MHU-173/E loaders.

Whether or not these were improvements added by AAI is unimportant in the court's opinion for similar reasons to those noted above regarding what portion of the cost savings might be attributable to these components. As plaintiff notes:

The features that made the infringing trailers so much less costly to manufacture and that led the Air Force to believe that they would be so economical to operate and maintain were essential elements of the patented trailer a simplified design, based on the use of uniquely shaped, hydraulically-activated lift arms, and incorporating rugged components that were easily accessible. Without these features, the MHU-196 and MHU-204 trailers would have been of no greater value to the Air Force than the MHU-173.

What the government primarily valued in the infringing trailers was their ability to use essentially one trailer design to load three different bombers. This flexibility was far more important than any of the referenced improvements added by AAI. Despite this, however, in a case like the present, when the government is using the invention and not marketing it, the "realizable profit" from the invention is the ability to make that use. Because that influence on the royalty rate has already been considered under Georgia-Pacific factor #11, it would be improper to consider it again here.

Georgia-Pacific factor #14 "The opinion testimony of qualified experts."

The court found the parties' accounting and licensing experts all to be qualified and credible. Thus, the expert testimony offered in the case does not favor any movement of the reasonable royalty rate and the experts' testimony is considered under the other factors where pertinent.

Georgia-Pacific 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 the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licenseewho desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented inventionwould 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."

This factor is basically a summary description of the entire hypothetical negotiation process.

Other pertinent factors and the court's final determination of the reasonable royalty rate

There are a few additional factors addressed by the parties which are worthy of evaluation. First, Standard argues that the royalty rate should be increased because the company played a major role in creating the market for the patented invention, and undertook very substantial financial risks in doing so. The government, in contrast, contends that it created the market for the trailers. This "chicken-or-the-egg" question has no real answer here. The Air Force would never have needed the weapons loaders if it hadn't decided to utilize a bomber fleet; however, Standard made the Air Force aware of a possibility it had not previously considereda trailer design which could load three generations of strategic bombers. Whatever the answer to this dilemma, the court is not convinced that it would dictate an increase or decrease in the royalty rate.

Standard also claims that the royalty rate should be increased due to its lost economic benefits which resulted from the infringement. Its basic contention is that, but for the infringement, Standard would have enjoyed repeating contracts for successive generations of munitions handling units. This is speculation, especially in light of the competitive bidding process which the government is required to use for the majority of its procurements. Similarly, any harm which Standard suffered by not being able to actually manufacture the trailers has already been considered under Georgia-Pacific factor #4.

The government raises the notion that the royalty rate should be decreased because the government had a right to take a compulsory non-exclusive license under its power of eminent domain. It is true that, in the context of a section 1498 action, the United States is not in the position of an ordinary infringer. Motorola, Inc. v. United States, 729 F.2d at 768. With regards to this case, that only means that increased damages, attorney fees and other punitive measures are not available against the government. See id. at n.3; Leesona Corp. v. United States, 599 F.2d at 968-70. It does not mean that the government is automatically entitled to infringe a patent "at a cheaper rate than a private infringer." Bendix Corp. v. United States, 676 F.2d at 607-08. The court emphasizes that its task here is to construct a hypothetical negotiation between a willing licensor and a willing licensee. As the negotiation is considered to be "arms-length," the court will assume that each party has rational expectations and intentions of fair dealing. The government cannot use its eminent domain power to excuse itself from accepting terms which would be acceptable if it were a private party from whom Standard could walk away. At the same time, there would be a disincentive for Standard to dedicate resources to assist the Air Force in the future if Standard knew that innovative efforts on different projects would be more lucratively rewarded by the private sector. In view of these factors, the government's ability to take a compulsory license does not suggest a decrease in the royalty rate.

Finally, Standard contends that the royalty rate should be increased because the government had no non-infringing alternatives.[(22)] The licensing experts for both parties are in agreement that there were no alternatives at the time of the hypothetical negotiation. As Standard points out, "it is undisputed that the MHU-173 could not load the B-1B or B-2 bombers, that the Air Force could not resurrect the previously abandoned powered lift adapter concept without missing the Initial Operational Capability date for the B-1B bomber, and that the prospective [B-2 loading trailer initially selected by the Air Force], as then designed, would not meet the Air Force's requirements."

Even if the Air Force could have postponed the readiness date for the B-1B bomber, its non-infringing alternative would have been the MHU-173/E in combination with an adapter. The Air Force's problems with the MHU-173/E have already been discussed at length, and it appears that this would have been an

extremely unattractive option. The Air Force, nearly two years prior to the hypothetical negotiation date, had expressed an "urgent need" for trailers which could load all three generations of strategic bombers, and by the time of the negotiation it had already been procuring infringing trailers from AAI. Therefore, the government's lack of non-infringing alternatives at the time of the negotiation favors an increase in the royalty rate.

After careful consideration of the parties' briefs, arguments, testimony, exhibits and the applicable law, the court has concluded that Standard Manufacturing would have been able to negotiate a 16.31% royalty rate at the hypothetical negotiation which would have taken place in early June, 1985. This conclusion was most strongly influenced by (1) the great magnitude of the cost savings which the Air Force could have reasonably expected to achieve through the use of the patented invention, (2) the numerous advantages of the invention over the previous trailers which the Air Force had employed, and (3) the fact that Standard was effectively granting a license to a direct competitor, AAI. After determining that 4.31% was an appropriate baseline royalty rate, the court (1) increased or decreased the royalty rate by 1% if a factor favored an increase or decrease; (2) increased or decreased the royalty rate by 2% if a factor strongly favored an increase or decrease; and (3) increased or decreased the royalty rate by 4% in the event that a factor significantly and strongly favored an increase or decrease. The results are summarized below:

Factor	Result	Change in royalty rate
Georgia-Pacific #1	No adjustment	No change
Georgia-Pacific #2	No adjustment	No change
Georgia-Pacific #3	Favored a decrease	-1 percent
Georgia-Pacific #4	No adjustment	No change
Georgia-Pacific #5	Strongly favored an increase	+2 percent
Georgia-Pacific #6	No adjustment	No change
Georgia-Pacific #7	No adjustment	No change
Georgia-Pacific #8	Strongly favored an increase	+2 percent
Georgia-Pacific #9	Strongly favored an increase	+2 percent
Georgia-Pacific #10	Strongly favored an increase	+2 percent
Georgia-Pacific #11	Significantly and strongly favored an increase	+4 percent
Georgia-Pacific #12	No adjustment	No change
Georgia-Pacific #13	No adjustment	No change
Georgia-Pacific #14	No adjustment	No change
Georgia-Pacific #15	No adjustment	No change

Other pertinent factors	One factor favored an increase	+1 percent
TOTAL ADJUSTMENT IN ROYALTY RATE		+12 percent
FINAL ADJUSTED ROYALTY RATE		16.31 percent

1. Delay damages
2.

In a suit under section 1498, a patent owner is entitled to recover delay damages in the form of interest to compensate for loss of the use of royalties. Wiate v. United States, 282 U.S. 508, 509 (1931); Hughes Aircraft Co. v. United States, 31 Fed. Cl. at 492. "The well-recognized standard for delay damages mandates that a patentee whose exclusive rights to the patent have been infringed is entitled to receive that measure of compensation that would place it in the economic position it would have held had royalties been timely paid and prudently invested . . . ." Brunswick v. United States, 36 Fed. Cl. at 218-19. Determining delay compensation is a factual question and it is a judicial function left to the sound discretion of the trier of fact. See Studiengesellschaft Kohle v. Dart Indus., Inc., 862 F.2d 1564, 1580 (Fed. Cir. 1988) (citing Bio-Rad Labs. Inc. v. Nicolet Instrument Corp., 807 F.2d 964, 969 (Fed. Cir. 1986), cert. denied, 482 U.S. 915 (1987)); Miller v. United States, 620 F.2d 812, 837 (Ct. Cl. 1980). However, there is a strong judicial policy in just compensation cases which favors establishing uniform interest rates in order to avoid discrimination among litigants. Hughes Aircraft Co. v. United States, 31 Fed. Cl. at 492; Miller v. United States, 620 F.2d at 838. Additionally, it is well-settled that a trial court has discretion on whether to award simple or compound interest. Rite-Hite Corp. v. Kelley Co., 56 F.3d at 1555.

In the above captioned case, the parties are in agreement that the period to be covered by an award of delay compensation is the period between the year of delivery of each infringing trailer and the date of payment of the court's judgment. While the parties also agree that it is appropriate to use compounded interest, they dispute the proper rate of return which should be used for the delay compensation.

Standard first proposes that its Weighted Average Cost of Capital (WACC) best compensates for the lost use of funds and is the most economically realistic and just rate to apply. Plaintiff argues that it would have invested its royalty income in its own business, and that its WACC represents the cost to the company of obtaining alternative financing for projects which would have been undertaken had royalty funds been available. However, using Standard's WACC for a delay compensation interest rate would clearly be against the aforementioned judicial policy favoring the establishment of uniformity. The court agrees with the rejection of the WACC approach by several courts. See, e.g., Gargoyles, Inc. v. United States, 37 Fed. Cl. at 109; Brunswick Corp. v. United States, 36 Fed. Cl. at 219; see also Hughes Aircraft Co. v. United States, 31 Fed. Cl. at 492 & n.12 ("Adoption of the plaintiff's proposal to award delay damages to it on the basis of its unique return on equity would result in obvious discrimination between it and other just-compensation claimants entitled to delay damages . . . .").

Alternatively, Standard argues that Moody's Corporate Bond Rates should be used to calculate delay damages. As these rates are average rates for long-term corporate bonds, the court agrees with defendant that use of these rates would overcompensate the plaintiff. In effect, Standard was "loaning" the royalty monies to the government prior to this judgment. As there was no risk of default which would have been

present if Standard had invested in corporate bonds, using the Moody's rates here would give Standard a higher-risk rate of return when no risk was present. With this consideration in mind, it is more appropriate to use a rate of return which more closely approximates the risk which Standard had while the government was in possession of plaintiff's assets.

The government proposes that 1-year Treasury Bill rates should be employed. The court concludes that this is a reasonable measure and should be used as the rate of return for the purposes of delay compensation. These rates account for inflation while avoiding a reward for risks which the plaintiff did not undertake. The Court of Appeals for the Federal Circuit and other courts have previously utilized this approach. See Allen Archery, Inc. v. Browning Mfg. Co., 898 F.2d 787, 789, 792 (Fed. Cir. 1990) (affirming trial court's use of 3-month Treasury Bill rates); Datascope Corp. v. SMEC, Inc., 879 F.2d 820, 829 (Fed. Cir. 1989), cert. denied, 493 U.S. 1024 (1990); ITT Corp. v. United States, 17 Cl. Ct. at 243 (applying 1-year Treasury Bill rate in section 1498 claim); Gargoyles, Inc. v. United States, 37 Fed. Cl. at 109 (applying 1-year Treasury Bill rate in section 1498 claim). Likewise, Congress has approved 1-year Treasury Bill rates for pre-judgment interest in land condemnation cases in the Declaration of Takings Act, 40 U.S.C.A. § 258e-1 (West 1994 & Supp. 1998), for post-judgment interest in district court actions, 28 U.S.C. § 1961(a) (1994), and for post-judgment interest in later-affirmed non-tax cases before the United States Court of Federal Claims, 28 U.S.C. §§ 2516(b), 1961(c)(3) (1994).

Finally, the government proposes that any award of delay compensation will overcompensate Standard if the court does not account for taxes which plaintiff would have paid when it received royalties. This approach has previously been rejected for numerous reasons, including (1) its repeated rejection in case law, (2) its highly speculative nature, (3) its discriminatory and inconsistent treatment of just compensation claimants in different tax brackets, and (4) congressional silence on requiring any abatement of damages interest. Brunswick Corp. v. United States, 36 Fed. Cl. at 219-20; see also Hughes Aircraft Co. v. United States, 86 F.3d at 1575. This court is satisfied that appropriate taxation will occur at the time when an award is received in this case, and declines to apply defendant's approach.

1. Assignment of the '548 patent
2.

The last issue which must be addressed in this case is the status of plaintiff DBP, Ltd. Due to the assignment of the '548 patent from Standard to DBP in late April, 1993, DBP claims that it should be joined as a named plaintiff under Rule 25(c) of the Rules for the United States Court of Federal Claims. [(23)] DBP argues that Standard and DBP should jointly share the recovery in this case, and they should be allowed to distribute the award in any manner they choose. On the other hand, it is defendant's contention that DBP should be allowed to join permissively as a plaintiff under Rule 20(a),[(24)] but any recovery should be distributed severally, rather than jointly, between Standard and DBP. In support of this notion, the government argues that the Assignment of Claims Act, 31 U.S.C. § 3727 (1994), renders void, as to the United States, any assignment of an unliquidated claim against the United States. Thus, the Act would bar DBP from recovering for any infringement which occurred prior to the assignment of the '548 patent.

31 U.S.C. § 3727(b) provides that for claims against the United States, "[a]n assignment may be made only after a claim is allowed, the amount of the claim is decided, and a warrant for payment of the claim has been issued." Section (a) defines an assignment as "(1) a transfer or assignment of any part of a claim against the United States Government or of an interest in the claim" or "(2) the authorization to

receive payment for any part of the claim." An assignment to a financial institution under prescribed circumstances is the only exception which the statute gives to its general prohibition on assignment of claims against the government. See 31 U.S.C. § 3727(c). There are, however, a number of judicially-made exceptions. This court's predecessor court, the United States Court of Claims, has stated:

Despite the broad language of the [Assignment of Claims] Act, and the courts' tendency at an earlier time to read it as an all-inclusive prohibition, numerous classes of assignments, although literally within the statutory ambit, have been judicially exempted from its operation. The largest category of excised assignments are those which, in one form or another, occur by operation of law. Various such assignments which are regularly held to be unaffected by the Act include passage of claims to heirs or devisees, transfers made incident to proceedings in bankruptcy or receivership, transfers by the succession of one business entity for another, assignments made by judicial sale or order, and assignments produced by operation of the law of subrogation. These classes of assignments are all thought to be outside the statute's scope because none of them threatens the dangers Congress sought to avoid by enacting the prohibition.

Keydata Corp. v. United States, 504 F.2d 1115, 1118 (Ct. Cl. 1974) (citations omitted).

The Supreme Court recognized the dangers which Congress sought to avoid when it identified the purposes of the predecessor statute to the Assignment of Claims Act in United States v. Shannon, 342 U.S. 288, 291-92 (1952) (citing United States v. Aetna Casualty & Surety Co., 338 U.S. 366, 373 (1949)). The Court listed the Act's primary purposes as (1) the prevention of claim trafficking by persons of influence who might improperly urge them upon government officers, (2) the prevention of multiple payment of claims, (3) the elimination of the necessity of reviewing alleged assignments, (4) enabling the government to deal only with the original claimant, and (5) preserving the government's defenses against the assignor which might not be applicable to the assignee. See id.; see also MDS Assocs., Ltd. v. United States, 31 Fed. Cl. 389, 393 (1994).

While the Act would seem to clearly prohibit, due to the assignment of the infringement claim, the joint recovery which DBP seeks in this case, plaintiff advances two arguments which it sees as supporting its position. First, DBP asserts that the Supreme Court validated the assignment of a patent infringement claim against the United States in Richmond Screw Anchor Co. v. United States, 275 U.S. 331 (1928). The Richmond Screw case involved a patent which had issued in 1917. Id. at 337. Subsequently, Congress passed the Act of July 1, 1918,[(25)] which was to

relieve the contractor entirely from liability of every kind for the infringement of patents in manufacturing anything for the government, and to limit the owner of the patent and his assigns and all claiming through or under him to suit against the United States . . . for the recovery of his reasonable and entire compensation for such use and manufacture.

Id. at 343. The passage of this Act, in combination with the already-existing Assignment of Claims Act, could have left the assignee plaintiff without an infringement remedy against any party. See id. at 345. The Supreme Court, however, noted that voiding the 1921 assignment which gave the plaintiff its patent rights could have raised a Fifth Amendment constitutionality issue with respect to the Act of July 1, 1918. Id. To avoid that problem, the Court presumed that "Congress in the passage of the act of 1918 intended to secure to the owner of the patent the exact equivalent of what it was taking away from him." Id. The Court held that the Assignment of Claims Act did not apply to the 1921 assignment of the claim against the United States which was created by the 1918 Act. Id. at 346.

The court agrees with the defendant that the Richmond Screw decision does not exempt all assignments

of patents from operation of the Assignment of Claims Act. When the patent in Richmond Screw issued in 1917, the patent owner had the right to bring a freely assignable infringement claim against a government contractor. The Act of July 1, 1918, however, limited the patent owner to bringing that claim only against the government. Thus, prior to July 1, 1918, the patent owner could have freely assigned the infringement claim because it was a claim against a private party. After July 1, 1918, the claim had to be brought against the government. As a result, the claim no longer would have been freely assignable if the Anti-Assignment Act were applied. The Supreme Court was rightfully concerned that combining the effects of the 1918 Act and the Assignment of Claims Act would have taken away a valuable right to assign an infringement claim. See id. at 345.

In contrast, for patents issuing after July 1, 1918, such as Standard's in the present case, patent owners do not start with the right to bring an infringement claim against a private party government contractor. Their infringement claims against government contractors, from the claims' moments of creation, must always be brought against the government. The claims, from their creation, therefore are always subject to the Assignment of Claims Act and never have the free assignability of claims arising from patents which issued prior to July 1, 1918. There is no possibility, as in Richmond Screw, that the value of assignability can be taken away from the claims because they never possess that value at their inception. [(26)] In light of the clear language of the Assignment of Claims Act, it would be improper to accept a broad reading of the Richmond Screw case and hold that it allows an assignment of the infringement claim here.

DBP's second argument is that the Assignment of Claims Act does not apply to its situation because there was no change in equitable ownership. In support of this contention, DBP points to two cases which held the Assignment of Claims Act inapplicable when claim assignments did not involve the dangers against which the Act was to guard. See generally, MDS Assocs., Ltd. v. United States, 31 Fed. Cl. at 393-94; Kingan & Co. v. United States, 44 F.2d 447, 450-51 (Ct. Cl. 1930). Along these lines, DBP then argues that none of the basic purposes of the Act are applicable to the circumstances of its case.

On first examination, nothing indicates that claim trafficking is a motive here, that the government will have to deal with more than one claimant since the same individuals own Standard and DBP in the same proportions, or that the government could not raise applicable defenses against DBP. Neither party has attempted at this time to completely assess the full impact that the infringement claim assignment might have on past rights or in the future, but Standard and DBP have admitted that a principal reason for the assignment was to avoid the possibility of exposing any recovery in the instant action to claims for which Standard is responsible to its creditors.

The court concludes that Standard's assignment of past claims against the government to DBP is clearly within the prohibitions of the Assignment of Claims Act. While DBP is correct that courts do not always apply the Act when application will not serve the Act's purposes, the court is nevertheless hesitant to create an exception to the Act's applicability. This is especially true when Congress included one specific exception within the statute and the exception was not for the subject matter involved here. The inconsistency of past decisions regarding the applicability of the Act to patent infringement cases demonstrates that presiding courts have a fair amount of discretion in this area. Compare Foster v. United States, 230 Ct. Cl. at 939-40 (Act applies to claim which arose prior to time plaintiff became owner of patent rights because Richmond Screw exception does not apply), with MDS Assocs., Ltd. v. United States, 31 Fed. Cl. at 393-94; (Act did not apply because transfer of claims perpetrated no fraud upon the government when the same individuals or partners possessed equitable ownership of the claims for purposes of infringement); Rel-Reeves, Inc. v. United States, 606 F.2d 949, 955, 957-58 (Ct. Cl. 1979) (transfer of patent rights in bankruptcy did not violate the purposes of the Act and was within

judicially created exception).

Given the facts of this case, the words of the Assignment of Claims Act, and the apparent purpose for the assignment from Standard to DBP, the prudent course of action, and the one which will be employed here, is to join DBP in case numbers 641-85C and 95-431C; the court, however, will only allow a several recovery by the plaintiffs. Standard separately will be awarded royalty damages for infringing procurements which took place prior to its assignment of the '548 patent rights to DBP, and DBP separately will be awarded royalty damages for infringing procurements which took place after the assignment, both in accordance with the formula detailed above.

CONCLUSION

For the foregoing reasons, Standard Manufacturing is to receive royalty damages in the amount of 16.31% of the value of its individual royalty compensation base. Standard's royalty compensation base will include the value of all 136 infringing MHU-196/M trailers, calculated by the court to be $472,023.65 per trailer.[(27)] Standard's royalty compensation base will also include the value of six infringing MHU-204/M trailers which were delivered prior to the date of the assignment of patent rights to DBP, Ltd. The court has calculated the value of these trailers to be $911,055.66 per trailer.[(28)] In addition, Standard is to receive delay compensation for the royalty damages at interest rates equal to the applicable 1-year Treasury Bill rates for the pertinent time periods. This royalty damage delay compensation will be measured from the point in time at which each infringing trailer was delivered to the Air Force.

DBP is to receive royalty damages in the amount of 16.31% of the value of its individual royalty compensation base. DBP's royalty compensation base will include the value of thirty infringing MHU-204/M trailers which were delivered after the date of the assignment of patent rights to DBP. The court has calculated the value of these trailers to be $911,055.66 per trailer.[(29)] In addition, DBP is to receive delay compensation for the royalty damages at interest rates equal to the applicable 1-year Treasury Bill rates for the pertinent time periods. This royalty damage delay compensation will be measured from the point in time at which each infringing trailer was delivered to the Air Force.

Upon issuance of this decision and in accordance with its conclusions, the parties will jointly prepare for the court a schedule which itemizes (1) each infringing trailer, (2) each trailer's date of receipt by the Air Force, (3) the applicable royalty damages for each trailer, and (4) the applicable delay compensation for the royalties due on each trailer. This schedule should detail the 1-year Treasury Bill rates used for calculating the delay compensation. At the conclusion of the schedule, the parties shall submit a calculation for the final resolution of this case. The response shall be due on or before Monday, March 1, 1999.

IT IS SO ORDERED

MARIAN BLANK HORN

Judge

IT IS SO ORDERED.

MARIAN BLANK HORN

Judge

1. The other plaintiff in this action, DBP, Ltd. (DBP), is a Texas limited partnership created in April of 1993 by the owners of Standard for the sole purpose of acquiring, by assignment, Standard's rights under the patent-in-suit and managing the litigation of this suit. The individual limited partners of DBP are the same as the individual stockholders of Standard, and each has the same percentage interest in DBP as in Standard.

2. Rotary launchers and pylon adapters are made to carry cruise missiles on the B-52 in multiple packages.

3. On January 10, 1983, Standard modified its pricing scheme and purchase requirements for the production lot trailers. The revised prices were segregated according to quantity ordered and the presence or absence of a Position Monitor and Alignment Device (PM/AD). With the PM/AD, purchasing ten trailers would cost $405,000 per trailer, purchasing thirty trailers would cost $395,000 per trailer, and purchasing fifty trailers would cost $385,000 per trailer. Without the PM/AD, purchasing ten trailers would cost $370,000 per trailer, purchasing thirty trailers would cost $365,000 per trailer, and purchasing fifty trailers would cost $355,000 per trailer.

4. On October 14, 1982, Standard modified its proposal to delete this requirement.

5. A VECP is a proposal which is supposed to reduce the Air Force's overall cost for the subject of the proposal. Under the VECP, the savings are then shared between the contractor and the government, in this case the Air Force, usually on a fifty-fifty basis. A VECP is intended to give the Air Force the option of contracting for engineering changes which improve the overall design of a presently procured device. It is not intended to circumvent competition or to award contracts for entirely new equipment, nor is it intended to serve as a means of fixing problems in a basic design.

6. Purchases of trailers in Lots prior to Lot VI were of non-infringing MHU-173/E weapons loaders.

7. The profit of 14.32% was for all work performed except certain repair services which were subject to a series of profit rates between 7.46% and 11.38%.

8. 35 U.S.C. § 271 (1994) reads:

Infringement of patent

(a) Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.

(b) Whoever actively induces infringement of a patent shall be liable as an infringer.

(c) Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.

* * *

9. 35 U.S.C. § 284 (1994) reads:

Damages

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.

When the damages are not found by a jury, the court shall assess them. In either event the court may increase the damages up to three times the amount found or assessed.

The court may receive expert testimony as an aid to the determination of damages or of what royalty would be reasonable under the circumstances.

10. The court in Decca Ltd. v. United States noted two other valuation methods which are used less frequently than the reasonable royalty method: (1) awarding a percentage of governmental cost savings arising from governmental use of the patented invention, and (2) awarding lost profits. Decca Ltd. v. United States, 640 F.2d at 1167. The court noted only three instances when the cost savings approach had been used, all prior to 1950. See generally, id. at 1167 n.20. This approach continues to be in

disfavor. See, e.g., Brunswick Corp. v. United States, 36 Fed. Cl. at 209 ("Such a comparison often involves excessive speculation as to the costs associated with using an unpatented alternative, the effects of competition, and market fluctuation. This renders the cost savings analysis inherently unreliable and unsound in many cases.").

The lost profits approach is less frequently used because it places a heavy burden of proof on the plaintiff. To get lost profits under section 1498, the plaintiff must show by the "strictest proof" that it would have actually earned and retained such profits on sales to the government. Tektronix, Inc. v. United States, 552 F.2d at 349. The lost profits plaintiff must demonstrate an expectation of exclusivity for its invention such that, but for the infringement, the plaintiff would have had the benefit of the infringer's sales. Kearns v. Chrysler Corp., 32 F.3d 1541, 1551 (Fed. Cir. 1994), cert. denied, 514 U.S. 1032 (1995). Proof of this causation requires (1) demand for the patented product, (2) absence of noninfringing alternatives, (3) manufacturing and marketing capacity to exploit the demand, and (4) the profit amount that would have been made. Id. (emphasis deleted). In addition to the difficulty of proving causation, the entire validity of the lost profits approach is in doubt because it assumes a right to exclusivity which conflicts with the government's power of eminent domain. See generally 7 Donald S. Chisum, Chisum on Patents § 20.03[6], at 20-454 n.11 (1993 & Supp. 1997); Brunswick Corp. v. United States, 36 Fed. Cl. at 208.

It is not necessary for the court to examine either of these approaches in greater depth because the parties in the present case agree that the reasonable royalty method should be used to calculate the infringement damages. However, when determining a reasonable royalty rate using the factors laid out in Georgia-Pacific Corp. v. United States Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), modified and aff'd, 446 F.2d 295 (2d. Cir.), cert. denied, 404 U.S. 870 (1971), both cost savings and lost profits might be relevant considerations.

11. Standard also claims that, when determining the value of items for the royalty compensation base, several cases demonstrate uniform use of the price which the government paid. Among the cases which plaintiff cites are Bendix Corp. v. United States, 676 F.2d 606; Decca Ltd. v. United States, 640 F.2d 1156; Leesona Corp. v. United States, 599 F.2d 958; Tektronix, Inc. v. United States, 552 F.2d 343; and ITT Corp. v. United States, 17 Cl. Ct. 199. Each of these cases involves the application of the entire market value rule which permits a patentee to seek both the value of patented components and the additional value of unpatented components sold with the patented components. See Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1549-50 (Fed. Cir.) (en banc), cert. denied, 516 U.S. 867 (1995). The patented components, however, have to be considered components of a single assembly or together form a functional unit. Id. at 1550. These cases do not support Standard in the present case. The VECP payments cannot be considered to be functional components of value with the trailers.

Moreover, as the defendant in this case notes, Rite-Hite involved a Title 35 infringement action between private parties. If extending liability to goods having no functional relationship to the patented item was excessive in that context, it would seem even more so under a section 1498 action in which the government had exercised its power of eminent domain.

12. In the unlikely event that the royalty compensation base is equal to the cost savings, there will be no need to scale up or scale down the first cost savings royalty rate under Standard's approach.

13. A "naked" license requires no support or assistance from the patentee, just permission to use the invention.

14. Notably, Standard only puts forth this profit rate as a way to measure what it claims to be lost profits

as a result of the infringement. Plaintiff feels these lost profits would have been an important consideration in the hypothetical negotiation as an indication of the value of the invention to the company. As noted earlier, plaintiff's baseline royalty rate was based on a percentage of Air Force cost savings, not a percentage of its own profits.

15. See Mahurkar v. C.R. Bard, Inc., 79 F.3d at 1580 (district court did not err in calculating portion of award when it initially used infringer's net profit rate); TWM Mfg. Co. v. Dura Corp., 789 F.2d at 899 (affirming district court's computation of damages based on infringer's profits); Trans-World Mfg. Corp. v. Al Nyman & Sons, 750 F.2d at 1568 (among factors considered in determining reasonable royalty was the infringer's anticipated profit from invention's use, and evidence of infringer's actual profits is probative of anticipated profit).

16. The court sees no inconsistency in using the VECP-inclusive figure here, while refusing to include the VECP payments in the royalty base. Here, the court is attempting to determine exactly what AAI received in order to employ the 25% rule. The royalty base calculation, on the other hand, focuses on Standard and what it has lost.

17. Even if Standard had been able to use its desire to manufacture as a bargaining chip, the court is hesitant to say it would have made a significant difference. At the time of the hypothetical negotiation, there was no indication that Standard might not turn its manufacturing emphasis to other projects instead of the weapons loading trailers.

18. Procurement costs are those that relate to the decreased cost of purchasing the actual MHU-196/M and MHU-204/M loaders themselves instead of the MHU-173/E loaders.

19. O&S costs are those that relate to the trailers after their initial purchase, including, but not limited to, training personnel to use the trailers, purchasing spare parts, and performing precautionary maintenance.

20. Standard does not claim any procurement cost savings for the MHU-204/M trailers.

21. On June 6, 1984, a Strategic Systems Program Office (SSPO) analysis was presented to the Nuclear Certification Working Group. It stated that use of the VECP trailers would save $16,000.00 per trailer in annual O&S costs.

On August 28, 1984, in the Sole Source Justification attached to the Acquisition Plan for Lot VII trailers, the Air Force gave a collateral savings figure for the use of the VECP trailers which translated to an annual savings estimate of $15,541.00 per trailer.

On October 17, 1984, another SSPO analysis was presented to the Deputy Assistant Secretary of the Air Force for Strategic Systems. Using different figures than the June 6, 1984, analysis, it also stated that use of the VECP trailers would save $16,000.00 per trailer.

On October 31, 1984, a "Cost Analysis for MHU-173 MLT Retrofit Decision and Future Aircraft Trailer Requirements" was presented to various Air Force offices. It showed an expected annual savings of $21,427.00 per trailer for use of the VECP trailers.

On December 7, 1984, another SSPO analysis was presented to the Vice Commander of the Aeronautical Systems Division. It estimated annual O&S cost savings to be $21,000.00 per trailer for use of the VECP trailers. This same analysis was later presented to a briefing of the San Antonio Air Logistics Command, Strategic Weapons Systems group on January 21, 1985.

On January 11, 1985, an Air Force negotiating team completed a price negotiation memorandum summarizing the negotiation of the VECP. It estimated an annual savings of $19,014.00 per trailer for use of the VECP trailers.

On May 21, 1985, a General Accounting Office report estimated that support costs savings would be $20,800.00 per trailer if the MHU-196/M were used instead of the MHU-173/E.

22. The government also contends that there are three "reality checks" which argue for a lower royalty rate than that advocated by plaintiff: (1) Standard's unsolicited 60K Loader proposal to the Air Force in 1982, (2) Standard's 1984 Best and Final Offer (BAFO) in the bidding process for the loader which was to compete with the VECP design, and (3) the value appraisal of the infringement claim which was prepared for Standard in connection with its assignment of its patent rights to DBP, Ltd. These items were all prepared for different situations than the hypothetical negotiation. The purposes for which they were created and the circumstances under which they were developed differ greatly from those which would have been present at the time of the negotiation. Thus, these situations should have little bearing on the hypothetical negotiation of the royalty rate.

23. Rule 25(c) addresses **"Substitution of Parties"** and states in part that "[i]n case of any transfer of interest, the action may be continued by or against the original party, unless the court upon motion directs the person to whom the interest is transferred to be substituted in the action or joined with the original party."

24. Rule 20(a) reads as follows:

Permissive Joinder. All persons may join in one action as plaintiffs if they assert any right to relief jointly, severally, or in the alternative in respect of or arising out of the same transaction, occurrence, or series of transactions or occurrences and if any question of law or fact common to all these persons will arise in the action. A plaintiff need not be interested in obtaining all the relief demanded. . . .

25. This Act was the predecessor to what is now 28 U.S.C. § 1498 (1994).

26. For an interpretation of Richmond Screw consistent with that of this court, see Foster v. United States, 230 Ct. Cl. 938, 939-40 (1982), in which the Claims Court stated:

Plaintiff's reliance on [Richmond Screw] to support his contention that the Anti-Assignment Act does not apply to patents granted after 1918 is misplaced. [Richmond Screw] dealt with the limited situation in which a patent had been issued and the rights therein assigned prior to 1918 (when a patent owner had the right to proceed against an infringing Government contractor personally), but the infringement occurred after 1918 (when the new laws limited the patent owner's remedy solely to suits against the Government and thus allowed the anti-assignment statute to come into play). Strict application of the anti-assignment provisions under the circumstances in the [Richmond Screw] case would have deprived the patent owner of a valuable claim for infringement. In order to avoid the constitutional question of fifth amendment taking without compensation, the Supreme Court interpreted the Anti-Assignment Act as not applying to the situation in that case.

27. As noted earlier, this figure includes a prorated share of supplies and services purchased in connection with the infringing MHU-196/M trailers.

28. As noted earlier, this figure includes a prorated share of supplies and services purchased in connection with the MHU-204/M trailers.

29. As noted earlier, this figure includes a prorated share of supplies and services purchased in connection with the MHU-204/M trailers.