IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF NEW YORK

CORNELL RESEARCH FOUNDATION, INC., and CORNELL UNIVERSITY,

Plaintiffs,

vs.

Civ. Action No.
5:01-CV-1974 (NAM/DEP)

HEWLETT-PACKARD COMPANY,

Defendant.

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DAVID E. PEEBLES
U.S. MAGISTRATE JUDGE

REPORT AND RECOMMENDATION

Precipitated by the manufacture and sale by defendant Hewlett-Packard Company ("HP") of a series of computer processors, beginning with their introduction into the marketplace in or about 1996 and extending over the remaining lifetime of the patent at issue in this case, plaintiffs Cornell University ("CU") and Cornell Research Foundation, Inc. ("CRF") (collectively, "Cornell") commenced this action against HP, alleging patent infringement. At the heart of this high-stakes infringement suit is a now-expired patent issued in 1989 to Dr. Hwa C. Torng, and assigned to CRF, describing an "instruction issuing mechanism for processors with multiple functioning units." Plaintiffs assert that the accused processors infringe various of the means-plus-function and method claims of the patent.

Now that both fact and expert discovery, which have proven to be

both expansive and contentious, is closed, HP has moved for the entry of partial summary judgment seeking to narrow the claims to be tried by invoking several familiar defenses, including laches, invalidity, non-infringement, and patent exhaustion, and additionally urging a narrowing of the base plaintiffs have proposed for calculation of reasonable royalties, in the event of a finding of infringement. HP's five dispositive motions, which are vigorously opposed by the plaintiffs, together with objections voiced by both sides to certain evidentiary materials offered in connection with those motions, have been referred to me for the issuance of a report and recommendation, pursuant to 28 U.S.C. § 636(b)(1)(B). *See also* Fed. R. Civ. P. 72(b). Having carefully considered the extensive submissions of the parties and oral argument conducted on December 5, 2006, I make the following recommended findings with regard to the pending motions.

I. BACKGROUND

On February 21, 1989, United States Patent No. 4,807,115 (the "'115 Patent") issued to plaintiff CRF, as assignee of the named inventor, Dr. Torng. Amended Complaint (Dkt. No. 43) Exh. 1 (hereinafter cited as the "'115 patent"). The patent discloses the invention which it describes

as an instruction issuing system and method for computer processors with multiple functioning units. The object of the architecture and techniques specified in the '115 patent claims is the detection of dependencies within a series of instructions, or directions which specify certain operations which a computer is to perform, in order to permit concurrent execution of multiple, dependency-free instructions in a single machine cycle, thereby enhancing the speed at which the device can operate. '115 Patent, 1:10-2:40.

For purposes of this action, the parties are in agreement that a processor is "[a] device that interprets and executes instructions." *Cornell Univ. v. Hewlett Packard Co.*, 313 F. Supp.2d 114, 129 (N.D.N.Y. 2004). The typical high performance processor to which the '115 patent is addressed is a multiple functional unit, comprised of two sections, including an instruction unit, designed to store and issue instructions retrieved from memory, and an execution unit, charged with performing the operations specified by the instructions. Instruction units, in turn, generally contain instruction buffers, also sometimes referred to as "instruction stacks", "issue buffers" or "instruction issue buffers", which are designed to temporarily house instructions for eventual issuance to the

execution unit.

In order to better appreciate the technology in issue, it is helpful to understand certain elementary principles associated with computer instructions. While there is no single, universally accepted format for computer instructions, the '115 patent adopts an exemplary, representative format with four instruction fields: OP S1 S2 D.[1] Under this framework the first field, in this instance identified as OP, specifies the type of operation to be performed; a typical designated operation may include, for example, multiplication ("MULT"), addition ("ADD"), subtraction ("SUB"), or division ("DIV"). The second and third fields denote the sources of input data, or operands, to which the operation code is to be applied. The last field, or D, dictates the destination of the result achieved from the ordered calculation.

The operands and results of calculation specified in typical instructions are held within a particular row or cell, each reserved for a single instruction. The locations of the sources and destinations held within those cells are given distinctive, temporary designations which are

[1] According to Cornell's expert, at least some of the HP accused processors utilize a similar operating instruction format. Fujiyama Decl. (Dkt. No. 728) Exh. G (Dr. Smith Report) at 48-49, ¶¶ 106-08.

often referred to as registers. Because those registers are limited in number, they are constantly being reused or overwritten – a phenomenon which, it will be seen, takes on considerable significance in this case.

Utilizing the exemplary format specified in the '115 patent, an arithmetic instruction requiring multiplication of two numbers, held in registers F1 and F2, to arrive at a result whose destination is to be register F3, could be written as MULT F1, F2, F3. Under this configuration, F1 and F2 identify the sources of input data, whereas F3 represents the destination for the result of the computation.

The concepts in play in this case can be illustrated by considering the following set of instructions:

ADD F1, F2, F3

SUB F4, F5, F6

MULT F3, F6, F7

Historically, computers only performed one functional operation in a single cycle.[2] Accordingly, an early computer would be required to process each of these instructions separately, encumbering three machine cycles. As can be seen, however, performance of the first two operations specified

[2] The amount of time required to complete a processor cycle is generally fixed, and dependent upon the speed of the computer. This attribute is often quantified in terms of megahertz, or "MHz", which essentially informs as to how many million computer cycles can be completed in a second.

are completely independent of one another, in that one does not need to be performed before the other calculation can then occur. The third instruction, by contrast, is dependent upon the results of both of the prior two operations, since source operands F3 and F6, which must be multiplied together to determine F7, both hinge upon the first and second calculations.

The dependency illustrated in the foregoing example is commonly referred to as essential, or read-after-write ("RAW"), since the reading of F3 and F6, both of which are sources in the third specified instruction, and thus must be read in order for the third calculation to go forward, must await the writing of the results of the first two calculations. There is a second type of dependency which comes into play – one which is commonly referred to as "non-essential", or "false". One class of false dependency is known as write-after-read ("WAR"), and involves a register which by operation of a sequence of instructions is set to be overwritten after being read by an earlier instruction. When presented with such a WAR dependency, the second operation must wait for the read to take place before the register can be reused, and overwriting can occur. WAR dependency can be as illustrated by the following example:

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SUB F1, F5, F6
MULT F1, F2, F5
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While the second instruction would seem to be immediately available for processing, since it is not dependent on the first, if the second calculation is completed prior to the first, the F5 source will be overwritten with a new value, and thus the first calculation will be incorrect based upon what was intended by the programmer.

A second type of false dependency, often referred to as write-after-write ("WAW"), occurs because a register is written after an earlier instruction writes to it and, accordingly, the processor must defer to the first write, which is required to take place before it can perform its subsequent overwrite. The following illustrates a WAW dependency:

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SUB F1, F5, F6
SUB F6, F5, F6
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Once again, if the second instruction is executed prior to the first, the final value of register F6 would be the result of the first instruction, when it was instead intended to be the result of the second.

False, or nonessential, dependencies reflect the reality that there are a finite number of available registers in any particular processor. Accordingly, while essential dependencies cannot be eluded, but instead must be cleared through proper sequencing of operations pursuant to a

given set of instructions, false dependencies are avoidable. One way in which false dependencies can be eliminated is by adding and renaming registers, as the following illustrates:

Original Program	Renamed Program
MULT F1, F3, F5	MULT F1, F3, F5
SUB F1, F5, F6	SUB F1, F5, F6
MULT F6, F4, F7	MULT F6, F4, F7
MULT F1, F2, F5	MULT F1, F2, R8
SUB F6, F5, F6	SUB F6, R8, R9
SUB F6, F7, F6	SUB R9, F7, R10

As can be seen, in this example all false dependencies have been eliminated by adding registers R8, R9 and R10 and renaming certain source and destination registers accordingly.[3]

The ’115 patent teaches a technique which permits a processor to detect dependencies, and in that way to permit execution of multiple, dependency-free instructions in a single cycle. In simplistic terms, the ’115 patent provides for enrichment of the instruction buffer – referred to in the patent as a “dispatch stack” – in which the instructions are held to detect such dependencies and to allow for concurrent operation of

[3] At the time of the ’115 patent application filing, register renaming was known as a technique available to avoid or eliminate false dependencies, through the addition of registers, although it was not then in widespread use.

instructions which do not contain any such dependencies. In this way, the processor can identify those instructions which contain no dependencies, and thus are available to be "fetched" for execution. Utilizing the '115 patented technology, a processor could simultaneously complete the first and second operations in the first example, resulting in an increase in throughput, or the number of instructions susceptible of execution in a single clock cycle.

The concurrency detection technique described in the '115 patent is illustrated in the preferred embodiment set forth within the patent.[4] Utilizing the typical OP S1 S2 D instruction format, the preferred embodiment supplements the dispatch stack by addition of data dependency detection fields, with accompanying logic, to track dependencies, including α(S1) and α(S2) fields to detect essential dependencies presented in the corresponding source registers, or in the case of a processor limited to two source registers, α(S1) and α(S2) fields, and a β(D) field to track nonessential dependencies. In order to detect

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[4] The preferred embodiment of Dr. Torng's invention is included within the '115 patent as a result of a regulation of the United States Patent and Trademark Office, requiring that any patent application must describe a specific embodiment of the invention claimed. *See* 37 C.F.R. § 1.71; *see also* Manual of Patent Examining Procedure § 608.01(a).

when an instruction is free of data dependencies, the dispatch stack is further enriched to include an I^2 count, representing the sum of the α(Si) and β(D) values. A zero in the I^2 count reflects an instruction which is free of all dependencies, both essential and nonessential. Employing this technique, instructions set forth in the first of the two examples which follow will yield the results reflected in the second illustration, after enrichment pursuant to Dr. Torng's technique:

Basic Instructions

ADD	F0	F1	F0
ADD	F2	F3	F2
ADD	F0	F2	F0
ADD	F4	F5	F4
ADD	F6	F7	F6
ADD	F6	F7	F6
ADD	F4	F6	F4
ADD	F0	F4	F0

'115 Enrichment

Instruction Tag	OP	S1	α(S1)	S2	α(S2)	D	β(D)	I^2
1	ADD	F0	0	F1	0	F0	0	0
2	ADD	F2	0	F3	0	F2	0	0
3	ADD	F0	1	F2	1	F0	1	3
4	ADD	F4	0	F5	0	F4	0	0
5	ADD	F6	0	F7	0	F6	0	0
6	ADD	F4	1	F6	1	F4	1	3
7	ADD	F0	2	F4	2	F0	2	6

As can be seen, in the preferred embodiment the dispatch stack is enriched by implementing Dr. Torng's novel data dependency detection technique three times, resulting in the addition of two essential dependency α(Si) fields and one false dependency β(D) field, with corresponding logic. As dependencies are cleared through retirement of instructions upon which they rely, the appropriate α(Si) and β(D) fields are readjusted, and the I^2 count is decremented accordingly. The claims set forth in the '115 patent are as follows:

I claim:

1. An instruction issuing system for a processor including an execution unit having multiple functional units comprising:

an instruction issuing unit receiving instructions from a memory, operating on instructions and forwarding instructions to said execution unit, said instruction issuing unit including means for detecting the existence of concurrencies in said instructions received from said memory; and

said instruction issuing unit further including means for issuing multiple instructions and non-sequential instructions to said execution unit within a single processor cycle when a concurrency is detected by said means for detecting the existence of concurrencies in said instructions.

2. The instruction issuing system of claim 1 wherein said means for detecting the existence of concurrencies comprises a dispatch stack receiving instructions from said memory and operating in a first-in first-out manner, said dispatch stack

receiving instructions having instruction fields of OP, S1, S2, D, where:

OP is the arithmetic/logic operation to be performed,

S1 specifies a register which provides the first of two or the only operand called for,

S2 specifies a register yielding the second operand, and,

D specifies a register receiving the result of the arithmetic/logic operation.

3. The instruction issuing system of claim 2, wherein said means for detecting the existence of concurrencies in said instruction issuing unit further comprises a precedent count memory, said precedent count memory providing fields of a first value (α) to instruction fields S1 and S2 indicative of the number of times a register S1(S2) is used as destination register in preceding, uncompleted instructions and, a second value (β) to register field D indicative of the number of times that register D is designated as a source register in preceding, uncompleted instructions.

4. The instruction issuing system of claim 2 wherein said means for detecting the existence of concurrencies includes a precedent count memory for providing values to each instruction loaded into said dispatch stack indicative of the number of times a register for a particular field is designated as a source register in preceding, uncompleted instructions.

5. The instruction issuing system of claim 3 wherein said means for detecting the existence of concurrencies determines an issue index (I^2) for each instruction in said dispatch stack wherein: $I^2 = \alpha(S1) + \alpha(S2) + \beta(D)$ such that when an instruction having $I^2 = 0$ is encountered by said means for detecting the existence of concurrencies, said means for issuing multiple instructions reserves an available functional

unit and issues said instruction to it.

6. A method of issuing instructions for a processor having multiple functional units comprising the steps of: reading in and storing instructions from an instruction stream into a dispatch stack, said instructions having an instruction formate of OP, S1, S2, D, where:

OP is the arithmetic/logic operation to be performed;

S1 is the register which provides the first of two or the only operand called for;

S2 is the register yielding the second operand, and

D is the register receiving the result of the arithmetic/logic operation;

detecting the existence of concurrencies in instructions stored in said dispatch stack and;

issuing multiple instructions and non-sequential instructions within a given processor cycle when the existence of concurrencies is detected.

7. The method of claim 6 wherein said step of detecting further comprises the steps of;

determining the number of times that individual registers in said processor are used as destination registers in preceding, uncompleted instructions, determining the number of times the individual registers in said processor are used as source registers in preceding uncompleted instructions, and providing an indication of the determination in said instruction format for each instruction in said dispatch stack.

8. The method of claim 7 wherein said step of issuing multiple instructions further comprises the step of immediately issuing

a first instruction from said dispatch stack to an available functional unit when said instruction does not have any data dependencies with preceding issued instructions which have not yet been completed.

9. The method of claim 8 wherein an instruction is data dependent upon a preceding, uncompleted instruction if one of its source registers is the destination register of the uncompleted instruction.

10. The method of claim 8 wherein an instruction is data dependent upon a preceding, uncompleted instruction if its destination register is a source register of the uncompleted instruction.

11. The method of claim 7 wherein said step of determining comprises providing first values (α) to register fields S1(S2) indicative of the number of times register S1(S2) is used as destination registers in preceding, uncompleted instructions and a second value (β) to register field D indicative of the number of times that register D is designated as a source register in to preceding, uncompleted instructions.

12. The method of claim 11 further comprising the steps of content addressing the S1, S2 and D fields following the completion of an issued instruction and, appropriately decrementing the values of α's, the values of β's and updating the dispatch stack by advancing subsequent instructions stored therein and adding new instructions from said instruction stream occupy empty portions at the bottom of said dispatch stack.

13. The method of claim 11 further comprising the steps of updating the values of α and β such that when a register is assigned to an instruction as a source register its present α value is used as α(S1) or α(S2) and its β value is incremented by 1 and, when a register is assigned to an instruction as its destination register, its present β value is used as the β(D) field and its α-value is incremented by 1 and further when an

issued instruction is completed the β values of each of its source registers is decremented by 1 and the α value of its destination register is decremented by 1.

14. An instruction issuing system for a processor including an execution unit having multiple functional units comprising:

an instruction issuing unit receiving instructions from a memory, said instruction issuing unit operating on instructions and forwarding instructions to said execution unit, said instruction issuing unit including means for detecting the existence of a plurality of instructions received from said memory which are concurrently executable; and

said instruction issuing unit further including means for issuing multiple instructions and non-sequential instructions to said execution unit within a single processor cycle when concurrently executable instructions are detected by said means for detecting the existence of concurrently executable instructions in said instructions.

15. A method of issuing instructions for a processor having an execution unit with multiple functional units comprising the steps of:

reading in and storing instructions from an instruction stream into a dispatch stack;

detecting the existence of plurality of instructions which are concurrently executable from those instructions stored in said dispatch stack; and

issuing multiple instructions and non-sequential instructions within a given processor cycle when said plurality of concurrently executable instructions are detected.

16. The method of claim 15 wherein said step of detecting further comprises the steps of;

determining the number of times that individual registers in said processor are used as destination registers in preceding, uncompleted instructions, determining the number of times the individual registers in said processor are used as source registers in preceding uncompleted instructions, and providing an indication of the determination in said instruction format for each instruction in said dispatch stack.

17. The method of claim 16 wherein said step of issuing multiple instructions further comprises the step of immediately issuing a first instruction from said dispatch stack to an available functional unit when said instruction does not have any data dependencies with preceding issued instructions which have not yet been completed.

18. The method of claim 15 wherein an instruction is data dependent upon a preceding, uncompleted instruction if one of its source registers is the destination register of the uncompleted instruction.

19. The method of claim 15 wherein an instruction is data dependent upon a preceding, uncompleted instruction of its destination register is a source register of the uncompleted instruction.

As can be seen, the '115 patent is comprised of nineteen claims, including both means-plus-function claims and method claims. Two of the means-plus-function (claims 1 and 14) and two of the method (claims 6 and 15) claims are independent, while the remaining fifteen are dependent upon other claims contained within the patent.

In August of 1996, HP introduced a line of processors designated as its PA-8000 series. Introduction of the PA-8000 family of processors

represented a continuation of HP's strategy to move away from then-prevailing computer architecture which involved more intricate instruction sets, contained within "complex instructions sets computers", or "CISC", to microprocessors which simplify their instruction sets, known as "reduced instructions sets computers", or "RISC". HP was among the companies which developed reduced instructions sets computers in the 1980's, in its case under the designation PA-RISC. Over the years, various iterations of the PA-8000 family processors have been marketed by HP, including PA-8000 (Onyx), PA-8200 (Vulcan), PA-8500 (Cuba), PA-8600 (Landshark), PA-8700 (Piranha or Payara), PA-8800, and PA 8900 (Short Fin).[5]

When it was introduced, the PA-8000 processor was promoted by HP as the world's fastest, based largely upon its ability to issue multiple, out-of-order instructions in a single clock cycle. *See* Fujiyama Decl. (Dkt. No. 736) Exh. G (4/5/02 letter from Stewart Brown, Esq. to the court) at 2; *see also id.* at Exh. II (Kumar Paper on PA-8000) at HP 000904 ("The PA-8000 RISC CPU is the first of a new generation of Hewlett-Packard microprocessors. Designed for high-end systems, it is among the world's

[5] Throughout this proceeding the parties have sometimes referred to these accused devices collectively as the "PA-8000 family of processors", or simply the "PA-8000 processors", and I will do likewise.

most powerful and fastest microprocessors. It features an aggressive, four-way, superscaler implementation, combining speculative execution with on-the-fly instruction reordering. The heart of the machine, the instruction reorder buffer, provides out-of-order execution capability."). In simplistic terms, the PA-8000 increases efficiency by addressing essential dependencies through the operation of a launch queue, or instruction reorder buffer ("IRB"), consisting of fifty-six slots, each capable of holding one instruction, and corresponding initialization of a master slave-latch loop within the source operand field which counts the number of times that prior instructions are to be written to a given source register. The PA-8000 also handles the detection of false dependencies through both register renaming and, in some instances, by a process characterized as nullification.

While the evidence presented to the court during the pendency of this case has been equivocal on this score, it now appears that some of the accused PA-8000 processors were sold over time by HP either separately, or as part of central processing units, or "CPUs". The balance of those units have been included as components within larger systems sold by HP, including servers and workstations.

II. PROCEDURAL HISTORY

Plaintiffs commenced this action on December 29, 2001, Dkt. No. 1, and have since interposed an amended complaint which was filed on September 6, 2002, and remains as the operative pleading on their behalves. Dkt. No. 43. Plaintiffs' complaint, as amended, alleges direct, inducing and contributory infringement of the '115 patent, and seeks assorted relief including a permanent injunction and damages. *Id.* "Wherefore" clause. HP has since responded to plaintiffs' amended complaint, denying infringement and asserting various affirmative defenses, including estoppel, laches, inequitable conduct, patent invalidity, and patent exhaustion, and additionally counter-claiming seeking declaratory relief on various of its defenses. Answer (Dkt. No. 47) Affirmative Defenses ¶¶ 1-31, Counterclaims ¶¶ 1-15.

Following the issuance on March 26, 2004 of a decision by Chief District Judge Norman A. Mordue construing various of the disputed claim terms contained within the '115 patent,[6] Dkt. No. 225 (reported at 313 F. Supp. 114 (N.D.N.Y. 2004)), and the completion of discovery, HP

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[6] The court's claim construction function was carried out in accordance with *Markman v. Westview Instrums., Inc.*, 52 F.3d 967 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370, 116 S. Ct. 1384 (1996).

interposed five separate summary judgment motions seeking dismissal of 1) portions of plaintiffs' damage claims, in light of their delay in filing suit despite longstanding awareness of the allegedly infringing conduct of HP, Dkt. No. 688; 2) a portion of plaintiffs' damage claims, related to processors manufactured by Intel Corporation ("Intel"), based upon the doctrine of patent exhaustion, Dkt. No. 689; 3) portions of plaintiffs' infringement claims, on the basis of non-infringement, Dkt. No. 690; 4) certain of plaintiffs' infringement claims, on the ground of patent invalidity, Dkt. No. 691; and 5) a part of plaintiffs' damage claim, alleging the lack of any basis to include HP's sale of peripherals, including workstations and servers, containing the accused processors within the base to be used in calculating reasonable royalties, Dkt. No. 692. The five pending dispositive motions, which are opposed, have been fully briefed, and are now ripe for determination.[7]

III. DISCUSSION

A. Summary Judgment Standard

[7] In addition to opposing defendant's motions, Cornell has moved to strike certain materials offered in support of three of them, arguing that they were improperly submitted and should not be considered by the court. HP has similarly challenged plaintiffs' filing of various materials in connection with the pending motions, although for its part HP has registered those objections in its motion reply papers.

Summary judgment is governed by Rule 56 of the Federal Rules of Civil Procedure. Under that provision, summary judgment is warranted when "the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits . . . show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." Fed. R. Civ. P. 56(c); *see Celotex Corp. v. Catrett*, 477 U.S. 317, 322, 106 S. Ct. 2548, 2552 (1986); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247, 106 S. Ct. 2505, 2509-10 (1986); *Security Ins. Co. of Hartford v. Old Dominion Freight Line, Inc.*, 391 F.3d 77, 82-83 (2d Cir. 2004). A fact is "material", for purposes of this inquiry, if "it might affect the outcome of the suit under the governing law." *Anderson*, 477 U.S. at 248, 106 S. Ct. at 2510; *see also Jeffreys v. City of New York*, 426 F.3d 549, 553 (2d Cir. 2005) (citing *Anderson*). A material fact is genuinely in dispute "if the evidence is such that a reasonable jury could return a verdict for the nonmoving party." *Anderson*, 477 U.S. at 248, 106 S. Ct. at 2510.

When summary judgment is sought, the moving party bears an initial burden of demonstrating that there is no genuine dispute of material fact to be decided with respect to any essential element of the claim in issue; the

failure to meet this burden warrants denial of the motion. *Anderson*, 477 U.S. at 250 n.4, 106 S. Ct. at 2511 n. 4; *Security Ins.*, 391 F.3d at 83. In the event this initial burden is met, the opposing party must show, through affidavits or otherwise, that there exists a material issue of fact for trial. Fed. R. Civ. P. 56(e); *Celotex*, 477 U.S. at 324, 106 S. Ct. at 2553; *Anderson*, 477 U.S. at 250, 106 S. Ct. at 2511.

When deciding a summary judgment motion, a court must resolve any ambiguities, and draw all inferences from the facts, in a light most favorable to the nonmoving party. *Jeffreys*, 426 F.3d at 553; *Wright v. Coughlin*, 132 F.3d 133, 137-38 (2d Cir. 1998). Moreover, "[i]n rendering a decision on a motion for summary judgment, a court must 'view the evidence presented through the prism of the substantive evidentiary burden' that would inhere at trial." *Apple Computer, Inc. v. Articulate Sys., Inc.*, 234 F.3d 14, 20 (Fed. Cir. 2000) (citations omitted). Summary judgment is inappropriate where "review of the record reveals sufficient evidence for a rational trier of fact to find in the [non-movant's] favor." *Treglia v. Town of Manlius*, 313 F.3d 713, 719 (2d Cir. 2002) (citation omitted); *see also Anderson,* 477 U.S. at 250, 106 S. Ct. at 2511 (summary judgment is appropriate only when "there can be but one

reasonable conclusion as to the verdict.").

B. Objections to Party Submissions

As a preliminary matter, the court has been asked to address issues pertaining to the propriety of various submissions by the parties in support of and opposition to the pending dispositive motions. Plaintiffs' objections have been lodged by way of three separate motions to strike, addressing the HP partial summary judgment motions on the issues of laches, patent exhaustion, and royalty base. Dkt. Nos. 715, 723, 740. HP, in contrast, has chosen to include within its submissions in opposition to those motions a separate document registering its objections and setting forth the grounds upon which they are based. Dkt. No. 759.

Many of the objections raised by the parties pertain to materials which do not affect my recommendations concerning disposition of the five pending summary judgment motions; consequently, I find it unnecessary to address those portions of the parties' objections. *Maytag Corp. v. Electrolux Home Prods., Inc.*, 448 F. Supp.2d 1034, 1062-63 (N.D. Iowa 2006) ("[U]ntil and unless the court determines that a specific allegation of undisputed fact or allegation that the fact is, indeed, disputed becomes critical to the determination of any issue on summary judgment, the court

need not and will not indulge the parties in an assessment of the admissibility of the evidence supporting each and every challenged factual allegation."). To the extent that portions of the disputed submissions may be material to the outcome of the pending summary judgment motions, I will now address the specifics of those objections.

1. Plaintiffs' Motions To Strike

In response to HP's motions for partial summary judgment, plaintiffs have countered by asking the court to strike various materials submitted in connection with those motions. Those disputed items include 1) declarations of Tom Shrader, given in support of HP's patent exhaustion motion; of John Wheeler, offered by HP in connection with its laches defense; and of Gregg Huff, in support of HP's royalty base motion; 2) Intel/HP Planning Operations Guidelines; 3) an Intel/HP Alliance Agreement; 4) an agreement entered into between CRF and Intel pertaining to the '115 patent; and 5) reference to any negotiations with Intel or offers by CRF to license others to the '115 patent.[8] Plaintiffs' request is

[8] Certain additional arguments raised by the plaintiffs in their motion to strike, including those related to the court customer demand preclusion order, and HP's references to the Intel Xeon ® processor as a potential substitute for the PA-8000 family of processors, are addressed elsewhere in this report. *See*, *e.g.*, pp. 185-87 & n.51, *post.*

based upon a number of grounds including, *inter alia*, the failure to provide appropriate pretrial discovery with regard to those matters. HP opposes plaintiffs' motion to strike, both procedurally and on the merits.[9]

a) Shrader, Wheeler and Huff Declarations

In response to defendant's summary judgment motions, plaintiffs ask that three of the declarations offered in connection with those motions be disregarded. At the forefront of Cornell's call for rejection of those materials is the contention that they are impermissibly offered without indication of any basis for personal knowledge of the affiants regarding the substantive contents of their statements. Plaintiffs also challenge the

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[9] Procedurally, HP argues that plaintiffs' motions to strike should be denied as defective, in that they have failed to comply with the prescribed procedures under the Federal Rules of Civil Procedure and this court's local rules for challenging materials submitted in support of a motion for summary judgment. In reality, plaintiffs' motions to strike represent little more than the voicing of objections to HP's submission of allegedly inadmissible evidence in connection with their motions for summary judgment – an issue which ordinarily is properly raised in timely filed papers in opposition to those motions. *See John Hancock Property & Casualty Co. v. Universale Reinsurance Co., Ltd.*, 147 F.R.D. 40, 45 n. 11 (S.D.N.Y. 1993); *see also Pike v. Caldera*, 188 F.R.D. 519, 529 (S.D. Ind. 1999) (expressing no preference as between equally proper avenues of moving to strike or registering objections to inadmissible evidentiary submissions in summary judgment opposition papers); *but see* 10B Charles A. Wright, Arthur R. Miller & Mary Kay Kane, *Federal Practice and Procedure* § 2738 (3d ed. 1998) (objection to affidavit under Rule 56(e) must be made though timely motion to strike, or otherwise is waived). While not minimizing the importance of the requirements which, HP contends, were flouted, to accept HP's arguments would be to exalt form over substance, and would be particularly unfair in this instance since HP itself has objected to certain of plaintiffs' evidentiary submissions by the simple filing of objections within its reply papers, at a point in the proceedings when plaintiffs were effectively deprived of a meaningful opportunity to respond.

affidavits on the basis that none of the persons giving them has been properly identified by HP as an expert in the case.

The rule governing affidavits offered in support of or opposition to motions for summary judgment provides that they "shall be made on personal knowledge, shall set forth such facts as would be admissible in evidence, and shall show affirmatively that the affiant is competent to testify to the matters stated therein." Fed. R. Civ. P. 56(e); *see DeBari v. Town of Middleton, New York*, No. 97-CV-1422, 1998 WL 903633, at *1-*2 (N.D.N.Y. Dec. 23, 1998) (McAvoy, C.J.). The competency of a fact witness to offer testimony, in turn, is addressed by rule which provides that "[a] witness may not testify to a matter unless evidence is introduced sufficient to support a finding that the witness has personal knowledge of the matter." Fed. R. Evid. 602; *see also New York ex rel. Spitzer v. Saint Francis Hosp.*, 94 F.Supp.2d 423, 425 (S.D.N.Y. 2000).

Together, these rules require that a person whose affidavit is given in support of or opposition to a summary judgment motion possess personal knowledge as to the matters contained within it. *St. Francis Hosp.*, 94 F.Supp.2d at 425; *Cooper Indus., Inc. v. Agway, Inc.*, 987 F. Supp. 92, 109 (N.D.N.Y. 1997) (McAvoy, C.J.); *see* Wright, Miller & Kane, *supra*, § 2738.

Implicit in this mandate is the additional requirement that to qualify for consideration under Rule 56(e), an affidavit must contain more than a simple, conclusory statement to the effect that the maker possesses personal knowledge regarding the matters asserted; instead, a basis for the person's acquisition of such personal knowledge must be readily discernable from the face of the affidavit. *Cooper Indus.*, 987 F.Supp. at 109; *see also Kamen v. American Telephone & Telegraph Co.*, 791 F.2d 1006, 1011 (2d Cir. 1986). In the event that these requirements are not met, the disputed affidavit may be stricken, either wholly or in part, as necessary to insure adherence to these fundamental principles. *Brown v. BKW Drywall Supply, Inc.*, 305 F. Supp.2d 814, 821 (S.D. Ohio 2004); *see* Wright, Miller & Kane, *supra*, § 2738.

i) Shrader Declaration

HP's patent exhaustion motion is supported by a declaration given by Tom Shrader, who identifies himself as holding the position of commodity manager in the business critical servers division of HP. Brydges Decl. (Dkt. No. 698) Exh. 4 ¶ 1. Professing to possess personal knowledge regarding the matters set forth in his declaration, Shrader proceeds to describe the process associated with the manufacture of the PA-8500 and

PA-8600 products. *Id.* ¶¶ 5-11. In his declaration, Shrader also categorically states that "Intel manufactured the PA-8500 and PA-8600 processors", and "sold them to HP." *Id.* ¶¶ 13-16. The Shrader statement goes on to state that the manufacture of the accused processors occurred upon completion of "production fab" and "polyimide/bumping", two of the five manufacturing steps in the process which he describes. *Id.* ¶ 20.

Although excerpts of a deposition taken of Tom Shrader on October 13, 2005, which have been submitted to the court in support of plaintiffs' motion, give room for pause, and undoubtedly will provide great fodder for cross-examination should he testify at trial, I am unable to conclude definitively that Shrader lacks personal knowledge sufficient to testify concerning the basic steps associated with the manufacture of the PA-8500 and PA-8600 processors, particularly given his assertion that he possesses such personal knowledge.[10] In this regard, I construe the portions of Shrader's affidavit describing that manufacturing process as factual in nature, and thus governed by the competency requirements of Federal Rule of Evidence 601, and not as opinion testimony subject to the

[10] In reality, the basic manufacturing process described in Shrader's declaration, as distinct from its legal significance, is a matter which has been consistently disclosed by HP throughout the course of discovery in this action, and does not appear to be particularly controversial.

more rigorous requirements of Rule 702. *See Rice v. Kempker*, 374 F.3d 675, 681 (8th Cir. 2004); *Perez v. Hyundai Motor Co.*, 440 F.Supp.2d 57, 68-70 (D.P.R. 2006).

The portions of Shrader's affidavit which appear to draw conclusions by affixing the point in time at which manufacture occurs, and to characterize the transaction between Intel and HP as a sale, are considerably more problematic. It is true that as a fact witness, Shrader could properly offer opinions or testimony regarding inferences to be drawn from the facts presented. Fed. R. Evid. 701; *see Perez*, 440 F.Supp.2d at 68-70. In such a case, however, a witness may testify only "to those opinions or inferences which are (a) rationally based on the perception of the witness, (b) helpful to a clear understanding of the witness' testimony or the determination of a fact in issue, and (c) not based on scientific, technical, or other specialized knowledge within the scope of Rule 702." *United States v. Garcia*, 413 F.3d 201, 211 (2d Cir. 2005). Because it is readily apparent from available excerpts of his deposition testimony that Shrader lacks the specialized knowledge to testify as to inferences to be drawn regarding the manufacture of the PA-8500 and PA-8600 processors, and specifically whether those processors were manufactured

by Intel and sold to HP, or instead manufactured by HP utilizing Intel's facilities, I recommend that plaintiffs' motion to strike the Shrader declaration be granted, in part, and that the portions of Shrader's declaration which address those issues, including paragraphs thirteen through sixteen, twenty, twenty-two, twenty-four and twenty-five, be stricken and not considered in connection with HP's patent exhaustion motion.

ii) Wheeler Declaration

The evidentiary materials submitted by HP in support of its laches defense include a declaration, dated September 13, 2006, from John Wheeler. *See* Brydges Decl. (Dkt. No. 695) Exh. 6. That declaration is offered chiefly to provide a foundation for HP's claim of prejudice, resulting from Cornell's delay in filing suit, by quantifying in summary fashion the effort and expense associated with development of the various processors within the PA-8000 line. Plaintiffs urge the court to strike that affidavit, arguing that Wheeler has not been offered as an expert, and lacks both personal knowledge and an evidentiary basis to assert the facts set forth in his declaration.

As has been noted, the requirement that a fact witness who offers

testimony must possess personal knowledge concerning the subject matter is imposed by Rule 602 of the Federal Rules of Evidence, which sets forth a standard that is imported into the evidentiary requirements associated with a summary judgment motion. *See* Fed. R. Civ. P. 56(e). To reiterate, in order to qualify under Rule 56(e), an affidavit must therefore demonstrate, either on its face or based upon facts from which this can reasonably be inferred, that the declarant possesses the requisite personal knowledge and competence to testify on the matters set forth in the affidavit. *Barthelemy v. Air Lines Pilots Ass'n*, 897 F.2d 999, 1018 (9th Cir. 1990).

In his declaration, John Wheeler states that from May of 1990 through August, 2002, he was the lab manager for systems technology division engineering systems lab of HP, and that his areas of management responsibility throughout that period "involved microprocessor design and development", and during the latter portion also "involved both compiler design and development and chipset design and development." Brydges Decl. (Dkt. No. 695) Exh 6, ¶ 1. Wheeler's declaration goes on succinctly to state: "I have personal knowledge of all the facts hereinafter alleged and if called to testify could competently do so." *Id.*

Addressing the basis for his personal knowledge of the matters contained within his statement, Wheeler's declaration offers further refinement regarding his job duties, stating that he "was primarily responsible for approving the HP design team's investigation into the PA-8000 architecture and was primarily responsible for the decision to proceed with the PA-8000 processor development." Brydges Decl. (Dkt. No. 695) Exh. 6, ¶ 2. Wheeler further states that he "also was the individual with primary responsibility for the Systems Technology Division's business decisions regarding the development of the PA-8000 family of processors." *Id.* Wheeler concludes the prefatory portion of his declaration by stating: "[b]ased on that responsibility, I am aware of the financial and human resources HP expended in its research and development of the PA-8000 family of processors." *Id.*

It is true that the Wheeler Declaration purports to quantify the number of "engineer years" expended by HP in researching and developing various processors within the HP-8000 family, without providing underlying details concerning the calculations made to arrive at those figures. *See*, *e.g.*, Brydges Decl. (Dkt. No. 695) Exh. 6, ¶¶ 4-7. While this might provide a basis for cross-examining Wheeler concerning his

estimates at trial, it does not lead invariably to the conclusion that no reasonable juror could believe that he possesses the knowledge, ability and opportunity to observe and testify to those figures. *See United States v. Hickey*, 917 F.2d 901, 904 (6th Cir. 1990).

Among the bases for this portion of plaintiffs' motion to strike is their contention that the substance of Wheeler's declaration was not properly vetted during pretrial discovery, as reflected in excerpts of both Wheeler's deposition and HP's interrogatory responses. In response to an interrogatory addressed to its laches defense, however, HP did identify economic prejudice allegedly associated with plaintiffs' alleged procrastination in deciding whether to sue, stating that avenues other than development of the PA-8000 family, described as a "'runaway' bus" by the time this action was commenced, could have been explored had suit been brought earlier. This response plainly alerted plaintiffs to the probability that HP would urge the expense associated with developing PA-8000 processors as constituting an element of prejudice for purposes of the laches equation.

Insofar as the Wheeler deposition is concerned, I note that while the investments and expenditures associated with development of the PA-

8000 family of processors was discussed, and inquiry was made as to whether there were any documents which, to his knowledge, reflected calculation of those figures – to which he responded that there were not – during his questioning Wheeler was not asked to make any estimates or to give testimony regarding the precise number of engineer hours associated with those ventures.

In sum, I find no basis to strike the Wheeler declaration. Plaintiffs' recourse, instead, is to seek, through cross-examination, to convince the factfinder at trial that Wheeler's testimony regarding these matters is neither credible, nor based upon reliable data.[11]

iii) Huff Declaration

In support of its motion seeking to limit plaintiffs' royalty base, for purposes of any award of reasonable royalties in the case, HP offers, *inter alia*, the declaration of Gregg Huff, identified as director of high performance systems, in the enterprise servers and storage group, a position which he had held for nine months prior to giving his declaration. Brydges Decl. (Dkt. No. 707) Exh. 10. In that declaration, Huff offers his views regarding the reasons why customers purchase HP servers and

[11] The court doubts Cornell is seriously suggesting that development of the various HP-8000 accused models did not entail considerate time, effort, and expense.

workstations. *See*, *e.g.*, *id.* ¶¶ 6-8. Huff also volunteers opinions regarding the importance of the accused circuitry contained within the PA-8000 processors to larger systems. *Id.* ¶¶ 11, 12. Plaintiffs request an order striking that declaration, contending that it lacks the proper indicia of personal knowledge, and additionally contains opinions rendered by an expert who was not properly disclosed as such during the course of discovery.

For reasons similar to those articulated with regard to the Shrader and Wheeler declarations, I reject plaintiffs' contentions that the opinions set forth in the Huff statement are not properly offered under Rule 701 of the Federal Rules of Civil Procedure. While acknowledging that the question is a close one, in my view the matters contained within the Huff affidavit do not cross the line and enter the realm of expert opinions.

The more difficult issue is the basis for Huff's competence to testify regarding the matters stated, including the basis for customer demand of HP products. Unlike the Shrader and Wheeler declarations, in his statement Huff does not even state in conclusory terms that over time he has personal knowledge of the facts set forth in it. HP obviously invites the court to infer from Huff's statements regarding his job responsibilities at HP

that he has acquired personal knowledge regarding the matters stated, including his statement of the reasons why HP customers purchase servers and workstations. I am unprepared to draw that inference, particularly in favor of the party moving for summary judgment. *See Jeffreys*, 426 F.3d at 553. Instead, based upon my finding that the basis for Huff's personal knowledge of issues regarding customer demand is not disclosed, I recommend that the sections of his declaration, including paragraphs six and seven, addressing the issue of customer demand be stricken.

The portions of Huff's declaration which describe the various components of HP servers and workstations, by contrast, appear to contain information which a reasonable factfinder could find inferentially to be within Huff's competence, although this is less than wholly clear from his affidavit. Consequently, I recommend against exclusion of paragraphs eight, nine and ten of the Huff affidavit.

Paragraphs eleven and twelve of Huff's affidavit appear to address technical matters, offering opinions regarding the contribution of various components of a workstation and server to performance. Once again, nothing in the Huff declaration gives any indication as to his educational

and technical background or the grounds for those conclusions, including whether they are based upon personal knowledge. Consequently, I recommend that these two paragraphs also be stricken from the Huff declaration, for purposes of the instant motions.

2. Planning Guidelines

In their motion to strike, plaintiffs also request that the court exclude from consideration, on the issue of patent exhaustion, the document entitled "Intel/HP Planning Operating Guidelines." Offering selected snippets of the deposition testimony of one of at least three HP witnesses who testified regarding that document, plaintiffs maintain that they were precluded by assertions of attorney-client privilege from fully probing the circumstances surrounding formulation of that agreement and, in reliance upon such cases as *United States v. Bilzerian*, 926 F.2d 1285, 1292 (2d Cir.), *cert. denied*, 502 U.S. 813, 112 S. Ct. 63 (1991), argue that the privilege is being unfairly invoked by HP as both a shield and a sword. In their motion, notably, plaintiffs offer no suggestion as to what information might have been developed through responses to the objectionable questions that would have undermined HP's reliance upon the Guidelines in connection with its patent exhaustion motion.

I have carefully reviewed the selected portions of the transcripts of Frederick L. Mann, as well as those of Joe Stearns and Doug Wimer, all of whom testified extensively regarding the Guidelines. Based upon that review, I find no basis to conclude that plaintiffs were unfairly precluded, through assertion of the attorney-client privilege, from fully probing that document and its operation in order to flesh out arguments in opposition to HP's patent exhaustion defense. Accordingly, I recommend that this portion of plaintiffs' motion to strike be denied.

3. Alliance Agreement

Echoing objections raised with regard to the Guidelines, plaintiffs also object to certain evidence relative to the Alliance Agreement entered into between HP and Intel, once again on the ground that they were precluded from exploring those areas during discovery, principally through the deposition of Frederick L. Mann.

As was the case with regard to the Guidelines, I have reviewed the available relevant excerpts of the Mann deposition.[12] Based upon the record I am unable to conclude, particularly given that Joe Sterns and

[12] Portions of the cited excerpts from the Mann deposition are missing from plaintiffs' motion papers. *See*, *e.g.*, Plaintiffs' Memorandum in Support of Motion to Strike (Dkt. No. 723) at 6 (citing Fujiyama Decl. (Dkt. No. 724) Exh. H, at 42, 4-44:12, which are not included with that exhibit).

Doug Wimer were also questioned about the document, that plaintiffs did not have full and fair opportunity to probe circumstances surrounding negotiation and implementation of the Alliance Agreement. Plaintiffs' arguments in this regard must, of course, be judged against the backdrop of well-established authority teaching that such an agreement, absent any ambiguity, speaks for itself, and the court is capable of construing its terms as a matter of law, without resort to extrinsic evidence. *Kirschten v. Research Institutes of America, Inc.*, No. 94 Civ. 7947, 1997 WL 739587, at *6-*11 (S.D.N.Y. Sept. 24, 1997). In this instance plaintiffs have not pointed to any effort by HP to modify or clarify the terms of the Alliance Agreement through the offering of such extrinsic evidence; instead, HP has merely offered two further agreements which, rather than altering the Agreement, appear to augment its terms by speaking to their implementation. Defendant's Reply Memorandum in Support of Motion for Summary Judgment on its Exhaustion Defense (Dkt. No. 747) at 5-6. The cited references by HP to the Guidelines, for example, merely offer observations regarding the Agreement and its obvious, intended purpose. I therefore recommend that this portion of plaintiffs' motion to strike be denied.

4. Intel Agreement and CRF License Offers/Negotiations

Rule 408 of the Federal Rules of Evidence, provides, in pertinent part, that

> [e]vidence of the following is not admissible on behalf of any party, when offered to prove liability for, invalidity of, or amount of a claim that was disputed as to validity or amount . . .:
>
> (1) furnishing or offering or promising to furnish – or accepting or offering or promising to accept – a valuable consideration in compromising or attempting to compromise the claim; and
>
> (2) conduct or statements made in compromise negotiations regarding the claim, except when offered in a criminal case and the negotiations related to a claim by a public office or agency in the exercise of regulatory, investigative, or enforcement authority.

Fed. R. Evid. 408(a).[13] That rule goes on to provide that it "does not require exclusion if the evidence is offered for purposes not prohibited by

[13] Rule 408 was amended, effective on December 1, 2006. The determination of whether to apply the rule as constituted when the action was commenced, or instead the amended version, is a potentially complicated one. *See* Charles A. Wright & Kenneth W. Graham, Jr. 21 *Federal Practice & Procedure* § 5014 (2006 Supp.). It is not necessary to enter this thicket, however, inasmuch as the recent amendments do not materially affect either analysis of this portion of plaintiffs' motion to strike or the applicability of cases decided under prior versions of the rule.

subdivision (a)." Fed. R. Evid. 408(b).

Invoking Rule 408, plaintiffs argue that any consideration of the August, 1997 agreement between CRF and Intel, including the negotiations leading up to its execution, as well as evidence of CRF's efforts to negotiate licenses with other parties under the '115 patent, are inadmissible and thus not appropriately considered when addressing the issue of reasonable royalties, including the appropriate royalty rate to be applied as well as the proper royalty base to be utilized. Similarly, in a legal maneuver which is both novel and puzzling, plaintiffs argue that for the same reasons HP cannot offer, in support of its patent exhaustion defense, the very license entered into between HP and Intel upon which it depends. In support of their argument in this regard, plaintiffs characterize the negotiations between CRF and Intel, as well as their efforts to license other third parties, as having been made under threat of litigation, thus precluding their admission into evidence in this case under Rule 408.

Bottomed upon notions of public policy and fundamental fairness, Rule 408, which traces its roots to the common law, enshrouds settlement discussions conducted in the context of actual or threatened litigation with a privilege, precluding their admission into evidence for purposes of

proving either liability or the value of the claim sought to be compromised, and in that way serves to foster candor and promote resolution of disputed claims. *Commodity Futures Trading Comm'n v. Rosenberg*, 85 F. Supp.2d 424, 433-34 (D.N.J. 2000); *see also* 2-408 Jay Weinstein & M. Berger, *Weinstein's Federal Evidence* § 408.02 ("[Rule 408] is based on the policy of promoting the compromise and settlement of disputes.") (citing cases); 23 Wright & Graham, *supra*, § 5302. In order to fully effectuate its intended purposes, Rule 408 applies not only in cases involving the parties to the settlement negotiations, but additionally in other settings involving different parties where the settlement is offered against one of the parties to the negotiations. *United States v. American Soc. of Composers, Authors & Publishers*, Civ. No. 13-95, 1989 WL 222654, at *8 (S.D.N.Y. Oct. 12, 1989), *aff'd*, 912 F.2d 563, 580 (2d Cir. 1990).

As the text of the rule itself discloses, Rule 408 does not exclude evidence of offers or acceptances of compromise, as well as statements made during settlement negotiations, for all purposes. Fed. R. Evid. 408(b); *Doe v. Aramark Educ. Res., Inc.*, 206 F.R.D. 459, 461-62 (M.D. Tenn. 2002); *see also* Wright & Graham, *supra*, §§ 5308, 5314. And, while the rule catalogues various permissible uses of such compromise

evidence, that list was not intended by its drafters to be exhaustive. Wright & Graham, *supra*, § 5314; *see also* Advisory Committee's Note to Rule 408.

Undeniably, plaintiffs' position – urging a sweeping application of Rule 408 essentially to negate all of CRF's efforts to license other parties to the '115 patent from consideration in this case – draws some facial support from governing case law. In *PharmaStem Therapeutics, Inc. v. Viacell Inc.*, for example, a district court categorically held that license agreements with third parties, offered in support of a reasonable royalty calculation, are properly excludable under Rule 408 where they "arose in a context where litigation was threatened or at least probable[.]" No. C.A. 02-148, 2003 WL 22387038, at *2-*4 (D. Del. Oct. 7, 2003). Similarly, in *Century Wrecker Corp. v. E.R. Buske Mfg. Co., Inc.*, another district court held that as a general matter, Rule 408 precludes introduction into evidence, as bearing upon the issue of a reasonable royalty, of settlement agreements "specifically entered into under the threat of litigation or against the backdrop of continuing litigation, with the intention of avoiding the risks and expenses of that litigation." 898 F. Supp. 1334, 1340 (N.D. Iowa 1995) (citations omitted).

A careful reading of those and other cases which have addressed the issue reflect that, for the most part, they have proliferated from a core group of Federal Circuit cases to which the proposition is generally attributed. *See*, *e.g.*, *Studiengesellschaft Kohle, m.b.H. v. Dart Indus., Inc.*, 862 F.2d 1564 (Fed. Cir. 1988); *Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075 (Fed. Cir. 1983); *Deere & Co. v. Intern. Harvester Co.*, 710 F.2d 1551 (Fed. Cir. 1983). Despite that imputation, however, some of those cases do not hold that it is the working of Rule 408 which requires exclusion of such license agreements. In *Hanson*, for example, the Federal Circuit found it unnecessary to decide whether license offers made to others under the patent in suit were properly excluded under Rule 408, finding that in any event the excluded evidence would not have altered the trial court's findings regarding damages.[14] 718 F.2d at 1082. In *Dart Industries*, without so much as mentioning Rule 408, the Federal Circuit instead focused upon the question of relevance, and whether a license rate paid in settlement of a claim had been sufficiently "eroded by litigation" as to be no longer instructive on the question of a reasonable royalty. 862

[14] In a concurring opinion in that case, Circuit Judge Davis noted his view that the excluded licenses were admissible, citing his earlier opinion in *Deere & Co.*, 710 F.2d at 1559 (Davis, J. dissenting in part). *See Hanson*, 718 F.2d at 1083 (Davis, J. concurring).

F.2d at 1571-72. Similarly, in *Deere & Company* the license in question, though found by the Federal Circuit not to be excludable under Rule 408, was nonetheless determined to lack probative value on the question of reasonable royalty, and thus its exclusion by the court under Rule 408 was deemed to constitute harmless error. 710 F.2d at 1557-58.

Importantly, Rule 408 is not grounded in considerations of relevance. To the contrary, the rule is more in the nature of a privilege which, in many cases, excludes highly relevant evidence in order to further its underlying purposes. *See PharmaStem Therapeutics*, 2003 WL 22387038, at *2 ("[N]otwithstanding their relevance to a reasonable royalty calculation, the court may exclude license agreements between a patent holder and third parties under Rule 408[.]"). In this regard, many of the cases addressing the issue now presented tend to conflate two separate, often competing concepts both of which are often at play – the privilege interposed by Rule 408, under which otherwise potentially relevant information is excluded in order to foster the policy favoring compromise of disputed claims, and relevance under Rule 402 of the Federal Rules of Evidence.[15]

[15] Also implicated, of course, is the balance which a trial court must make under Rule 403 to insure that relevance is not outweighed by prejudice or other, similarly countervailing considerations.

Many of the cases typically cited which favor inadmissibility of licenses and compromises entered in the context, or in anticipation, of litigation in cases such as this do so not because they are properly excludable under Rule 408, but rather based upon their limited usefulness in determining a reasonable royalty based upon a hypothetical, arms length negotiation between willing patent holder and willing licensee. *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1164, n. 11 (6th Cir. 1978); *see also Hanson*, 718 F.2d at 1075 (citing *Panduit*). That agreements reached under the specter of litigation are rarely indicative of commercially reasonable terms resulting from unencumbered arms length negotiations is confirmed by the following observation, made by the Supreme Court more than a century ago:

> It is clear that a payment of any sum in settlement of a claim for an alleged infringement cannot be taken as a standard to measure the value of the improvements patented, in determining the damages sustained by the owners of the patent in other cases of infringement. Many considerations other than the value of the improvements patented may induce the payment in such cases. The avoidance of the risk and expense of litigation will always be a potential motive for a settlement.

Rude v. Westcott, 130 U.S. 152, 164, 9 S. Ct. 463, 468 (1889). Addressing the same principle, the Sixth Circuit more recently cautioned

that

> [a] royalty, if any, resulting from [settlement of a prior litigation] should not be considered evidence of an established royalty and thus a measure of adequate damages here. License fees negotiated in the face of a threat of high litigation costs may be strongly influenced by a desire to avoid full litigation.

Panduit Corp., 575 F.2d at 1164, n. 11 (quoting, *inter alia*, *Rude*, 130 U.S. at 164, 9 S. Ct. 463) (internal quotation marks omitted).

When attempting to assist the factfinder in placing a value upon plaintiffs' infringement claims in this case, the trial court will undoubtedly be required to assess whether the '115 patent agreement negotiated with Intel, which plaintiffs portray as having been entered into under the cloud of potential litigation, as well as the negotiations leading up to its formulation and offers made by CRF to license other entities under the '115 patent, should be received in evidence as establishing standards for use in determining a reasonable royalty under the patent for HP's allegedly infringing conduct. In addressing this confusingly complex issue the court will of necessity be required to navigate turbid waters created by the confluence of Rules 402 and 408, with precious little clear guidance from the Federal Circuit. *See Alpex Computer Corp. v. Nintendo Co., Ltd.*, No.

86 Civ. 1749, 1994 WL 681752, at *42-*45 (S.D.N.Y. Dec. 5, 1994) (noting importance of history of patentee's licensing practices and the fact that the court had considered the admissibility of such evidence on three separate occasions, had certified the issue of Rule 408 exclusion for interlocutory appeal, "and struggled to implement its rulings fairly during the trial."), *aff'd in part, rev' in part*, 102 F.3d 1214 (Fed. Cir. 1996), *cert. denied*, 521 U.S. 1104, 117 S. Ct. 2480 (1997). The determination of admissibility of the challenged evidence may well turn upon an analysis of context, informed by the history of the parties' negotiations, and the question of whether a threat of litigation was made and had advanced sufficiently, at the time of the negotiations, to undermine significance of the resulting license or the parties' discussions and effectively negate the reliability of any benchmarks established during those negotiations, for purposes of determining a reasonable royalty, and even perhaps warrant exclusion of such evidence altogether under Rule 408.[16]

It is unnecessary, however, for the court to stake out a position on this thorny issue at this juncture. While Rule 408 would potentially

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[16] The Intel License Agreement appears to be the only evidence potentially implicated in the reasonable royalty rate equation, since none of the other communications at issue, in which plaintiffs attempted to license others to the '115 patent, mention specific royalty figures. Brydges Decl. (Dkt. No. 707) Exh. 22.

preclude consideration of the Intel license as bearing upon the value of the claim in that case, and thus a reasonable royalty rate to be applied in this action, as was previously noted, Rule 408 does not require exclusion of such evidence to the extent that it bears relevance on other issues in dispute. *See* Fed. R. Evid. 408(b); *American Standard, Inc. v. Pfizer, Inc.*, MISC. 87-1-73-IP, 1988 WL156152, at *2 (S.D. Ind. July 8, 1988) *(*"[A]dmissibility under Rule 408 depends not only on the nature of the evidence offered, but on the purpose for which it is introduced[.]").

For purposes of the pending motions, evidence of the Intel License together with its underlying negotiations, as well as the offers by CRF to license other potentially infringing parties, is being offered by HP for a different purpose – to address CRF's licensing practices, in order to assist the factfinder in determining an appropriate royalty base, and specifically whether in the context of hypothetical negotiations it would have included peripherals in that royalty base, and, for purposes of patent exhaustion, for the legal effect of the Intel agreement itself. Since in neither instance are the license and negotiations at issue being offered either to establish liability or for the purpose of valuation of the claim between Intel and CRF, as distinct from these other, ancillary purposes, neither the letter nor the

spirit of Rule 408 requires exclusion of the disputed license and negotiations at this juncture, for those purposes. *American Standard, Inc. v. Pfizer, Inc.*, 722 F. Supp. 86, 136, n. 55 (D. Del. 1989) (admitting evidence otherwise excludable under Rule 408 as bearing upon the issue of commercial success). Accordingly, I recommend that plaintiffs' motion to strike such evidence be denied, without prejudice to their right to seek a ruling *in limine* from the trial court regarding these issues under Federal Rules of Evidence 402, 403, and 408.

2. HP Objections to Plaintiffs' Submissions

a) Expert Opinions

In their opposition to several of HP's pending summary judgment motions, plaintiffs have submitted reports of various of its experts, including James E. Smith, Marion Stewart, Robert G. Sterne, Peter Dane Elliott, Earl Swartzlander and Irving Rappaport. HP, despite itself having submitted an unsworn report from one of its own experts in connection with the pending summary judgment motions, *see* Brydges Decl. (Dkt. No. 698) Exh. 5 (report of HP expert Robert H. Wallace), has objected to consideration by the court of those reports as representing inadmissible hearsay, and thus not properly before the court under Rule 56(e). In an

attempt to cure any perceived defect, plaintiffs have since submitted to the court declarations of the five experts whose reports were previously included, attesting to the contents of their respective reports.[17] Dkt. No. 773. HP counters by arguing that this effort to cure is ineffective, both as untimely and procedurally improper, since the affidavits are not submitted in traditional format but instead simply attest to the wholesale accuracy of larger, comprehensive documents.

There are some cases tending to support plaintiffs' initial position that an unsworn expert report may be considered by the court, particularly in opposition to a summary judgment motion, following full disclosure which has included an adequate opportunity to depose the expert regarding the opinions set forth in his or her report. *See*, *e.g.*, *Medtronic Xomed, Inc. v. Gyrus ENT LLC*, 440 F. Supp.2d 1300, 1310 n. 6 (M.D. Fla. 2006) (unsworn expert report which was marked as exhibit during deposition of expert properly admitted and considered on motion for summary judgment). The far greater weight of authority, however, supports HP's

[17] The sixth expert at issue, Earl Swartzlander, was retained by HP. As a report generated by an adversary party's expert, this report, prepared at HP's request and disclosed in this litigation, is therefore not inadmissible as hearsay, but instead constitutes an authorized statement of an opposing party's representative properly before the court. Fed. R. Evid. 801(d)(2); *contrast Kirk v. Raymark Indus., Inc.*, 61 F.3d 147, 163-64 (3d Cir. 1995) (opinion of expert retained in unrelated litigation does not constitute admissible statement of an authorized agent of a party).

argument, to the effect that such reports constitute inadmissible hearsay and thus are not worthy of consideration on motion for summary judgment. *Maytag*, 448 F. Supp.2d at 1064 (collecting cases).

Despite the potential inappropriateness of submitting the unsworn report of a party's own expert to support or oppose a summary judgment motion, such a defect is, as plaintiffs argue, curable through the submission of an affidavit or a declaration verifying the report's contents. *Maytag*, 448 F. Supp.2d at 1064 ("This court concludes that subsequent verification or reaffirmation of an unsworn expert's report, either by affidavit or deposition, allows the court to consider the unsworn expert's report on a motion for summary judgment."); *see also Kidder, Peabody & Co., Inc. v IAG Intern. Acceptance Group, N.V.*, 28 F. Supp.2d 126, 130 (S.D.N.Y. 1998) (exercising discretion to permit the filing of affidavits purporting to authenticate previously unsworn materials challenged in connection with a summary judgment motion), *aff'd*, 205 F.3d 1323 (2d Cir. 1999); *Brenord v. Catholic Med. Ctr. Of Brooklyn & Queens, Inc.*, 133 F. Supp.2d 179, 183 n. 1 (E.D.N.Y. 2001) (defect, based upon submission of unsworn expert report in connection with summary judgment motion, cured through later submission of sworn affidavit attaching expert report); *Gache v. Town of*

Harrison, New York, 813 F. Supp. 1037, 1052 (S.D.N.Y. 1993) ("To the extent defendants seek to strike the submissions of . . . unsworn reports by experts, the issues have been mooted by plaintiff's submission of sworn declarations by each of these individuals swearing to the veracity of their statements.").

The court is inclined to follow those cases which permit the submission of affidavits to cure the defect raised by HP, and can discern no undue prejudice to the defendant resulting from adoption of this position. Each of the reports in issue was presumably produced in a timely fashion, in accordance with the requirements of Rule 26(a)(2) of the Federal Rules of Civil Procedure and the governing provisions of this court's various scheduling orders. In addition, the experts involved have all been fully deposed by HP. Under these circumstances, there is no patent unfairness to HP resulting from the court's consideration of the contents of those expert reports, now verified, in connection with the pending summary judgment motions.

A more troublesome issue is presented by HP with regard to declarations of James E. Smith, Ph.D., given in opposition to HP's non-infringement summary judgment motion, *see* Smith Decl. (Dkt. No. 729),

and in opposition to HP's patent invalidity motion, *see* Smith Decl. (Dkt. No. 733). In defendant's view, Dr. Smith's two recent declarations significantly expand his analysis beyond that disclosed in his initial and rebuttal reports, as well as his deposition testimony. HP contends that opinions included within those declarations do not fall within the scope of Dr. Smith's report, and thus the requirements of Rule 26(a)(2) of this court's orders governing disclosure of expert opinions have not been timely met in connection with certain of Dr. Smith's opinions.

Defendant's challenge of the Smith declaration is based principally upon the Federal Circuit's recent decision in *O2 Micro Intern. Ltd. v. Monolithic Power Sys., Inc.*, 467 F.3d 1355 (Fed. Cir. 2006). *O2 Micro*, however, is readily distinguishable. There, after the deadline for submission of expert reports had passed, a party sought permission to amend an expert report to include a theory which was not disclosed in the expert's earlier reports. *O2 Micro*, 467 F.3d at 1360-61. Applying an abuse of discretion standard, the Federal Circuit found that the district court had not erred in rebuffing such efforts. *Id.* at 1366-69.

In this instance, Dr. Smith's declarations do not interject new materials or theories that were not disclosed in his comprehensive reports

in this matter, and fully aired during his two day deposition. In his non-infringement declaration (Dkt. No. 729), for example, Dr. Smith seeks only to point out that his report does in fact address the bases for plaintiffs' contention that if literal infringement was not proven, then infringement under the doctrine of equivalents has occurred, and to explain why, in the body of his analysis, he did not make specific reference to the function-way-result test for determining equivalence.[18] Similarly, Dr. Smith's invalidity declaration (Dkt. No. 733) reiterates information and opinions set forth in meticulous detail in his expert reports, again explaining the need for flexibility in Dr. Torng's invention to accommodate the various potential environments in which it might operate and the types of dependencies it could be called upon to track. These are matters which are neither new nor at odds with the expert's reports and deposition testimony.

In light of my finding that no new theories or materials not contained within Dr. Smith's initial expert report are disclosed in the recent declarations, and the submission of a declaration from an expert that is consistent with his or her timely-disclosed expert report is perfectly proper when offered in support of or opposition to a summary judgment motion,

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[18] The doctrine of equivalents is discussed more fully in the portion of this report which addresses the merits of HP's non-infringement motion.

see Allgood v. General Motors Corp., No. 102CV1077, 2006 WL 2669337, at *5 (S.D. Ind. Sept. 18, 2006), I recommend that the reports of plaintiffs' experts not be stricken in accordance with HP's objection.

b) Other HP Objections

Various of the materials to which HP now objects consist of unsworn letters and other similar documents. *See*, *e.g.*, Fujiyama Decl. (Dkt. No. 720) Exh. V (Excerpts of HP Opposition to Plaintiffs' Motion to Compel); Fujiyama Decl. (Dkt. No. 732) Exhs. N (HP Markman Brief) and R (HP Reply Markman Brief); Fujiyama Decl. (Dkt. No. 736) Exhs. G and J (letters from HP's counsel to the court and to plaintiffs' attorneys, respectively). HP argues that those documents constitute inadmissible hearsay, and thus may not properly be considered under Rule 56(e). The vast majority of those documents, however, are properly admitted as either not constituting hearsay, as defined by Federal Rule of Evidence 801, or as falling within one or more recognized hearsay exceptions. Several of those materials, for example, represent submissions filed by HP, through counsel, in this very litigation. It is both quite peculiar, and indeed novel, for HP to suggest that it cannot now be bound by the contents of those submissions, which there is no basis to conclude it did not authorize. *See United States v.*

Martin, 773 F.2d 579, 583 (4th Cir. 1985). To the extent that HP seeks exclusion of such materials from the record now before the court, I recommend that the request be denied.

C. Non-Infringement

The portions of the '115 patent alleged to have been infringed by HP's PA-8000 family processors include claims 1 and 2, 6 through 12, and 14 through 19. Eight of those claims, including 7 through 12 and 16 through 17, have been construed by the court in such a manner as to require, either explicitly or inferentially, inclusion of a β(D) field as part of the dispatch stack, and corresponding logic capable of detecting false dependencies. Arguing that no reasonable factfinder could conclude the PA-8000 processors contain such a field, HP maintains that it is entitled to partial summary judgment on the question of literal infringement with regard to those claims. Based principally upon the alleged insufficiency of plaintiffs' expert submissions, defendant also contends it is entitled to a determination, as a matter of law, that its products do not infringe any of the asserted '115 patent claims under the doctrine of equivalents.

As a general rule, infringement occurs when one or more claims within a patent overlay an accused party's product. *Markman v. Westview*

Instruments, Inc., 517 U.S. 370, 374, 116 S. Ct. 1384, 1388 (1986); *Amstar Corp. v. Envirotech Corp.*, 730 F.2d 1476, 1481-82 (Fed. Cir.), *cert. denied*, 469 U.S. 924, 105 S. Ct. 306 (1984). The methodology which the Federal Circuit has endorsed for determining infringement is neither overly intricate nor particularly controversial, comprising two distinct steps. *Schoell v. Riegal Marine Indus., Inc.*, 247 F.3d 1202, 1207 (Fed. Cir. 2001); *Moore U.S.A., Inc. v. Standard Register Co.*, 229 F.3d 1091, 1105 (Fed. Cir. 2000), *cert. denied*, 532 U.S. 1008, 121 S. Ct. 1734 (2001). As a preliminary matter the scope and meaning of a patent's claims, and in particular any of its terms which are disputed, must be delineated; this step, generally referred to as claim construction, presents a question of law to be determined by the court. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1451-54 (Fed. Cir. 1998); *Moore U.S.A.*, 229 F.3d at 1105. Once this task has been accomplished, the accused device or method must next be compared to the patent limitations in play, as construed by the court, to determine whether it is encompassed within one or more of the patent holder's claims. *Schoell,* 247 F.3d at 1207; *Cybor*, 138 F.3d at 1454. This second inquiry constitutes an issue of fact.[19] *Abraxis Bioscience, Inc. v.*

[19] As will be discussed in more detail, *see pp.* 64-81*, post,* infringement can be either literal, or under the doctrine of equivalents. *Moore U.S.A.*, 229 F.3d at 1105;

Mayne Pharma (USA), Inc., 467 F.3d 1370, 1375 (Fed. Cir. 2006); *Optical Disc Corp. v. Del. Mar Avionics*, 208 F.3d 1324, 1333-34 (Fed. Cir. 2000).

1. Claim Construction

Although the court was also called upon to construe certain other disputed terms contained within the '115 patent, HP's non-infringement motion turns in large part upon Chief Judge Mordue's interpretation of the term dispatch stack as utilized within the various claims. As a prelude to addressing that term, Chief Judge Mordue identified two general areas of disagreement between the parties, including 1) whether the '115 teaches only one dispatch stack configuration, which must be consistently defined throughout the patent invariably to include the capacity to detect both essential and false dependencies – a contention advanced by the

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Bai v. L&L Wings, Inc., 160 F.3d 1350, 1353 (Fed. Cir. 1998). For purposes of the doctrine of equivalents, a patent claim may be narrowed through prosecution history estoppel under circumstances where rejection of an initial application for reasons related to patentability, including based upon relevant prior art, results in the inventor's refinement of a claim and a corresponding partial relinquishment of subject matter. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 733-34, 122 S. Ct. 1831, 1838 (2002); *Glaxo Welcome, Inc. v. Impax Labs., Inc.*, 356 F.3d 1348, 1351-53 (Fed. Cir. 2004). In such a case, the threshold question of whether prosecution history estoppel applies to limit the applicability of the doctrine in a particular case is a question of law which must be determined before next inquiring, as a matter of fact, whether equivalence has been proven. *Bai*, 160 F.3d at 1354. HP does not assert prosecution history estoppel in this case, and indeed such a claim would seemingly be unsupported, given that in his claim construction decision Chief Judge Mordue found no evidence of claim narrowing among the prosecution history materials before him. *Cornell Univ.*, 313 F. Supp.2d at 125.

defendant during the claim construction phase of the case; and 2) whether, as HP also argued, the structure and function of the dispatch stack, including its β(D) field, is limited to tracking only WAR false dependencies, as specified in the patent's preferred embodiment, without regard to detection of WAW nonessential dependencies as well.

The principal focus of Dr. Torng's invention is a novel technique developed by him for the detection of concurrencies among computer instructions, in order to permit simultaneous execution of non-sequential, dependency-free instructions in a single clock-cycle. *Cornell Univ.*, 313 F. Supp.2d at 120. Under Dr. Torng's invention, this is accomplished by enrichment of the instruction buffer in which the instructions are held prior to execution to add one or more additional fields to detect, though not eliminate, data dependencies. *Id.*

Recognizing that the invention was intended to operate in a variety of environments, some of which could be free of nonessential dependencies, in his claim construction decision Chief Judge Mordue rejected HP's contention that throughout the patent's nineteen claims the term dispatch stack should be imbued with a single, uniform interpretation which would require that it contain enrichment and supporting logic to detect both

essential and false dependencies in all cases, instead finding that in providing for enrichment of fields in order to detect dependencies, the patented invention was not intended to be limited to distinguishing only certain specific types of dependencies. *Cornell Univ.*, 313 F. Supp.2d at 137. The court therefore construed the term dispatch stack differently, depending upon the particulars of the claim in issue, in deference to the inventor's intent that in certain instances, the patented invention could be utilized to detect only essential dependencies, while in others it could be enhanced to also detect false dependencies, without regard to whether they were WAR, WAW, or both.

In support of his finding that the '115 patent in certain instances teaches enrichment and logic limited to detection of only essential dependencies, Chief Judge Mordue noted that a person of ordinary skill in the art would have understood it unnecessary to include within a dispatch stack, utilizing Dr. Torng's invention, a false dependency, or β(D) field in every instance, given the ability to eliminate such false dependencies in other ways, including through a technique known and understood in the field as register renaming. *Cornell Univ.*, 313 F. Supp.2d at 137-38. The court thus construed the term dispatch stack, as contained within claims 1,

14, and 15 of the '115 patent, to include only an essential source dependency detection field together with accompanying logic, without reference to false or nonessential dependencies. *Id.* at 145-47. Other claims, including pertinently 7 through 12, 16 and 17, on the other hand, were construed by the court to include a false dependency, or β(D) field, though without specification as to whether the field was designed to track WAR, WAW, or both types of nonessential dependencies.[20] *Cornell Univ.*, 313 F.Supp.2d at 145-47. The court thus attributed different meanings to the term, depending upon which claim was involved, requiring a β(D) field only for claims 7 through 12 and 16 and 17.[21] *Cornell Univ.*, 313 F.Supp.2d at 145-47. It is against this backdrop that Cornell's claims of infringement must be judged.

2. Infringement

Infringement of a patent claim may occur in one of two ways. Literal

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[20] The parties' experts are in accord that the '115 patent provides for a β(D) field that can detect either WAR, WAW, or both types of nonessential data dependencies. Fujiyama Decl. (Dkt. No. 728) Exh. D (Flynn Dep.) at 29 (111-12); Smith Decl. (Dkt. No. 68) ¶ 42; *see also Cornell Univ.*, 313 F. Supp.2d at 120, n.3 ("that the patent covers – but is not limited to – both types of false dependencies (*i.e.,* WAR and WAW) is clear from the wording of the patent. . .and the testimony of both experts. It is not necessary to distinguish them for the purposes of this decision.").

[21] While the portion of Chief Judge Mordue's decision in which he construed the term dispatch stack did not directly speak to claim 19, plaintiffs apparently acknowledge that it too requires inclusion of a β(D) field and additionally, as will be seen, a procedure for the detection of WAR dependencies. *See* p.68, n. 23, *post.*

infringement exists when each limitation contained within a particular patent claim is present in an accused product. *Abraxis Bioscience*, 467 F.3d at 1378; *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1310 (Fed. Cir. 2005). In the absence of a finding of such literal infringement, liability may attach through application of the doctrine of equivalents, under which an accused product which does not meet every element of a particular claim may nonetheless be found to be its equivalent because the differences between the two are insubstantial, when viewed from the standpoint of one of ordinary skill in the art. *Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 39-40, 117 S. Ct. 1040, 1054 (1997); *Abraxis Bioscience*, 467 F.3d at 1379; *Overhead Door Corp. v. Chamberlain Group, Inc.*, 194 F.3d 1261, 1269 (Fed. Cir. 1999). The requisite equivalence can be established in appropriate instances where an element of the accused product differs only insubstantially from a claimed limitation "and it performs substantially the same function in substantially the same way to achieve substantially the same result."[22]

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[22] In its reaffirmation of the doctrine in *Warner-Jenkinson* the Supreme Court deferred to the Federal Circuit, with its "special expertise" in the area, for "refine[ment] [of] the formulation of the test for equivalence in the orderly course of case-by-case determinations[.]" 520 U.S. at 40, 117 S. Ct. at 1054. While this quoted excerpt from the Federal Circuit's decision in *Wright Medical,* one of the first Federal Circuit doctrine of equivalents decisions to follow *Warner-Jenkinson*, with its use of the conjunction "and," could be construed as requiring *both* a showing of insubstantiality of any

Wright Med.Tech., Inc. v. Osteonics Corp., 122 F.3d 1440, 1444 (Fed. Cir. 1997) (citations omitted); *Abraxis Bioscience*, 467 F.3d at 1379. Under the doctrine, the test for equivalence is an objective one, to be applied on an element-by-element basis with respect to any limitation for which literal infringement is not proven. *Warner-Jenkinson*, 520 U.S. at 40, 117 S. Ct. at 1054; *Overhead Door*, 194 F.3d at 1269. Direct infringement, whether literally or through the doctrine of equivalents, must be proven by the patentee by a preponderance of the evidence. *Cross Medical Prods.,* 424 F.3d at 1310.

The entry of summary judgment in favor of an accused infringer on the issue of infringement is appropriate, in the absence of any genuinely disputed issues of material fact, regardless of whether the claimed infringement is literal, or instead resort is made to the doctrine of equivalents. *See PC Connectors Solutions LLC v. SmartDisk Corp.,* 406

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differences *and* compliance with the "function-way-result" catechism, in order to establish equivalence, both the Court's decision in *Warner-Jenkinson* and subsequent decisions from the Federal Circuit evince an intention to treat insubstantiality of differences as the cornerstone of the doctrine of equivalents, with satisfaction of the function-way-result test as but one way to make that required showing. *See generally Warner-Jenkinson*, 520 U.S. at 39-40, 117 S. Ct. at 1054; *Overhead Door*, 194 F.3d at 1269-70. Both the Supreme Court and the Federal Circuit have acknowledged, moreover, that the function-way-result test is more accurate as a barometer of equivalency when the patent in suit describes mechanical elements and "often provides a poor framework for analyzing other products or processes." *Warner-Jenkinson*, 520 U.S. at 39-40,117 S. Ct. at 1054; *see also Overhead Door*, 194 F.3d at 1269-70.

F.3d 1359, 1364 (Fed. Cir. 2005). In a literal infringement case, summary judgment for the accused infringer is properly entered when no reasonable jury could find that every limitation recited within a patent claim, as construed by the court, is contained within an accused device. *Bai*, 160 F.3d at 1353; *Sienna, LLC v. CVS Corp.*, No. 06 Civ 3364, 2007 WL 13102, at *4 (S.D.N.Y. Jan. 3, 2007) (citing, *inter alia*, *PC Connectors Solutions*). Similarly, summary judgment may be entered against a patentee claiming the benefit of the doctrine of equivalents when, based upon the evidence before the court, considered in a light most favorable to the patent holder, the court is convinced no reasonable factfinder could conclude that the two elements being compared are equivalent. *Warner-Jenkinson*, 520 U.S. at 39, n. 8, 117 S. Ct. at 1053, n.8; *Bai,* 160 F.3d at 1353-54. When contemplating the entry of summary judgment in a doctrine of equivalents case, however, the court must bear in mind that "[i]nfringement under the doctrine of equivalents requires an intensely factual inquiry." *Vehicular Techs. Corp. v. Titan Wheel Intern. Inc.*, 212 F.3d 1377, 1381 (Fed. Cir. 2000); *see also Leggett & Platt, Inc. v. Hickory Springs Mfg. Co.*, 285 F.3d 1353, 1357 (Fed. Cir. 2002) (quoting *Vehicular Techs. Corp.*). For this reason, the Federal Circuit has characterized the

summary judgment standard, in the context of the doctrine of equivalents, as "lofty", *Overhead Door*, 194 F.3d at 1269, and has observed that "[because] infringement under the doctrine of equivalents often presents difficult factual determinations, a summary conclusion that a reasonable jury could not find infringement is often illusive." *Leggett & Platt*, 285 F.3d at 1360 (citations omitted).

a) Literal Infringement

In its motion, HP argues that evidence of literal infringement is lacking with regard to claims 7 through 12, 16 and 17. The essence of HP's argument regarding the lack of literal infringement of those claims is that while under the court's construction of the term "dispatch stack", as it relates to those claims, requires the presence of a false dependency, or β(D), detection field, such a field is lacking in the accused PA-8000 processors.[23] As a basis for this contention, HP offers excerpted deposition testimony of Cornell's technical expert, Dr. James Smith, in

[23] While HP does not clearly articulate whether this portion of its motion also addresses claim 19, and plaintiffs' papers in opposition to this particular motion do not stake out a position on the issue, the reference in that claim to "the method of claim 15 wherein an instruction is data dependent upon a preceding, uncompleted instruction if its destination register is a source register of the uncompleted instruction" appears to implicate a false dependency field, with corresponding logic, capable of detecting WAR false dependencies – a point which is apparently conceded elsewhere by the plaintiffs. *See* Plaintiffs' Patent Invalidity Memorandum (Dkt. No. 730) at 1, 12.

which he was asked to compare the properties of the PA-8000 processors to the β(D) field specified in the preferred embodiment set forth within the patent, describing a field enriched to detect WAR false dependencies. *See*, *e.g.*, Brydges Decl. (Dkt. No. 701) Exh. 2 (Smith Dep.) at 2-3 (695-96).

In its opposition to HP's non-infringement motion, Cornell has supplied evidence from which a reasonable factfinder could conclude that each of the PA-8000 processors contains a false dependency, or β(D), field which tracks whether instructions contained within the device's IRB are free of WAW false dependencies. *See*, *e.g.*, Fujiyama Decl. (Dkt. No. 728) Exh. G (Dr. Smith Report) at 52-55, 82-86, 93-98, 107-13. Even so, HP asserts, this does not establish literal infringement of the disputed claims since the β(D) field described within the preferred embodiment, as the example posed to Dr. Smith in the excerpted deposition testimony offered by HP in support of its motion illustrates, utilizes a β(D) field which tracks only WAR type false dependencies. This argument, however, disregards the well-established principle that absent clear indication claim limitations were intended by the inventor to be wholly co-extensive with the embodiment specified in the patent, the appropriate comparison is not

between an accused product and a preferred embodiment, but instead with the patent claims, as construed by the court. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005), *cert. denied*, 126 S. Ct. 1332 (2006); *Brookhill-Wilk1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1300-02 (Fed. Cir. 2003). Since the court's construction makes clear that the β(D) field specified in the claims now at issue is not restricted to detection of a particular type of false dependency, the fact that HP's product may be capable of detecting only WAW false dependencies, without regard to the existence of WAR dependencies, does not negate a finding of literal infringement.

Despite evidence suggesting that HP's accused product contains a β(D) field potentially falling within the court's definition of "dispatch stack", Cornell nonetheless appears to concede that literal infringement of claims 7 through 12, 16, and 17, as well as the analogous claim 19, cannot be demonstrated in light of the additional detection steps specified in those claims. Method claims 7 through 12, 16 and 17 all recite a further element, consisting of "determining the number of times that individual registers in said processor are used as source registers in preceding, uncompleted instructions," thereby in essence requiring tracking of WAR type false β(D)

dependencies by a counting technique, utilizing the dispatch stack. Claim 19 similarly specifies a method of instruction issuance "wherein an instruction is data dependent upon a preceding, uncompleted instruction if its destination register is a source register of the uncompleted instruction." While adhering to its position that infringement of these claims is established through benefit of the doctrine of equivalents, Cornell now concedes that HP has not literally infringed these claims since the IRB contained within HP's accused processors does not perform this additional function. Accordingly, I recommend the entry of summary judgment in HP's favor finding no literal infringement of claims 7 through 12, 16 and 17, as well as the distinct but parallel claim 19.

b) Infringement Under Doctrine of Equivalents

The centerpiece of Cornell's equivalency theory is opinion evidence offered by its expert. Dr. James Smith, who has provided tutorials and a declaration in support of plaintiffs' proposed claim construction, comprehensive initial and rebuttal expert reports, and declarations in opposition to HP's motions, and has been thoroughly deposed, has opined that the PA-8000 processors infringe all of the disputed claims under the doctrine of equivalents. In its motion, HP challenges the sufficiency of this

evidence, arguing that it represents mere conclusory opinion testimony without analysis illuminating the basis for his finding of equivalence.

When confronted with a motion for summary judgment by an accused infringer arguing that evidence of infringement is lacking, to avoid dismissal a patentee must do more than simply provide an expert opinion which states, in effect, that the disputed claim element is found in the accused device in issue. *Arthur A. Collins, Inc. v. Northern Telecom Ltd.*, 216 F.3d 1042, 1047 (Fed. Cir. 2000). Instead, in a proper opposing submission

> the expert must set forth the factual foundation for his [or her] opinion – such as a statement regarding the structure found in the accused product – in sufficient detail for the court to determine whether that factual foundation would support a finding of infringement under the claim construction adopted by the court, with all reasonable inferences drawn in favor of the non-movant.

Id. at 1047-48. When applied to a claim of infringement under the doctrine of equivalents, this means that evidence offered in support of such a claim must address infringement on a limitation-by-limitation basis, supplying "particularized evidence and linking argument as to the 'insubstantiality of the differences' between the claimed invention and the accused device or process, or with respect to the 'function, way, result' test[.]" *Network Commerce, Inc. v. Microsoft Corp.*, 422 F.3d 1353, 1363 (Fed. Cir. 2005)

(quoting *Tex. Instrums. Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1567 (Fed. Cir. 1996)). Mere conclusory or generic statements will not suffice to successfully defeat a claim of non-equivalence, whether at trial or on motion for summary judgment. *Id.*; *see also PC Connector Solutions,* 406 F.3d at 1364; *Hewlett-Packard Co. v. Mustek Sys.*, 340 F.3d 1314, 1322-23 (Fed. Cir. 2003).

The type of case in which summary rejection of an equivalency argument supported only by conclusory expert opinion evidence is warranted is epitomized by *Mustek Systems.* At the trial in that case, plaintiffs' expert testified at length regarding his opinions on the question of literal infringement and, almost as an afterthought, followed that testimony by stating, in summary fashion, in essence that if the accused devices did not literally infringe then at a minimum they did under the doctrine of equivalents. 340 F.3d at 1322. The sole opinion evidence offered by the patent holder though that expert regarding the doctrine of equivalents consisted of the following sequence:

> Q. So, as to each claim element that you have analyzed with respect to all the [defendant's] devices, do they perform the same function as the claim element?
>
> A. Yes.

Q. And do they do it to achieve the same result?

A. Yes.

Q. And do they do it in the same way?

A. Yes.

Id. Asked whether the district court had erred when, in reliance upon this testimony, it ordered the entry of judgment as a matter of law on the issue of infringement under the doctrine of equivalents after rejecting the jury's finding of literal infringement, the Federal Circuit found that it had. *Id.* at 1322-23.

The record now before the court presents a very different situation. Dr. Smith, plaintiffs' expert, submitted a 138 page report dated June 22, 2006, principally addressing the issue of infringement. Fujiyama Decl. (Dkt. No. 728) Exh. G. Dr. Smith was deposed by HP's counsel for two days concerning that report. In his report, as explained in a supplemental declaration, *see* Smith Decl. (Dkt. No. 729), Dr. Smith outlined in considerable detail the similarities between the '115 patent claims and the accused processors, comparing the two in relation to the method for detecting essential dependencies, the function of the dispatch stack in carrying out the desired detection of instructions free of data

dependencies, and the manner in which it was done. Fujiyama Decl. (Dkt. No. 728) Exh. G ¶¶ 128-49. In a supplemental declaration, Dr. Smith has since clarified by stating how, in his view, the PA-8000 IRB is equivalent to the '115 claim limitations. Smith Decl. (Dkt. No. 729) ¶ 8.

While those terms do not explicitly appear in the body of his analysis, Dr. Smith's initial report closely mimics a function-way-result analysis, comparing the PA-8000 family processors to the method of detecting false, or nonessential, dependencies specified under the '115 patent and all but stating that in his opinion the controlling test has been met. Fujiyama Decl. (Dkt. No. 728) Exh. G ¶¶ 175-83. Dr. Smith's report concludes by explaining that, in his view, the PA-8000 IRB is equivalent to the '115 patent claims in its detection of nonessential dependencies.[24] *See* Smith Decl. (Dkt. No. 729) ¶ 11.

The fact that the body of Dr. Smith's expert report does not

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[24] The record reveals that Dr. Smith was questioned at some length by HP's counsel regarding his analysis of the IRB circuitry contained within the PA-8000 processors. *See*, *e.g.*, Fujiyama Decl. (Dkt. No. 728) Exh. H, at 99-100 (806-12). During the portion of his deposition addressing the doctrine of equivalents, Dr. Smith was asked whether he performed an element-by-element analysis for the purposes of his finding of equivalence. *Id.*, at 99 (808). In response the expert challenged HP's counsel, stating "[s]how me an element, and I'll show you the analysis." *Id.* HP's attorney obliged by giving, as an example, the element "essential dependency field", in response to which Dr. Smith outlined his equivalency analysis for that element. *Id.* at 99-100 (808-09).

specifically refer by name to the function-way-result test is an omission which he attributes to the fact that this is the first case in which he has prepared an expert report, and his belief – one which is justified under the case law – that the test is but one way to establish equivalency. Smith Decl. (Dkt. No. 729) ¶ 4. The mere fact that Dr. Smith's report does not incant those terms, however, does not compel a conclusion that his analysis lacks a basis upon which a reasonable factfinder could conclude that infringement under the doctrine of equivalents has been established.[25] While clearly "the doctrine of equivalents is not a license to ignore or 'erase. . . structural and functional limitations of [a] claim,' limitations 'on which the public is entitled to rely in avoiding infringement [,]'" *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1582 (Fed. Cir. 1996) (quoting *Perkin-Elmer Corp. v. Westinghouse Elec. Corp.*, 822 F.2d 1528, 1532 (Fed. Cir. 1987)), neither is it a wooden doctrine to be applied in a vacuum without necessary context provided by "'the patent, the prior art, and the particular circumstances of the case.'" *Abraxis Bioscience*, 467 F.3d at 1380 (quoting *Graver Tank*, 339 U.S. at 609, 70 S. Ct. at 856).

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[25] In his chart comparing the '115 claim terms to the PA-8000 processors, Dr. Smith did make reference to the terms "function", "way" and "result". *See*, *e.g.*, Fujiyama Decl. (Dkt. No. 728) Exh. G, at 109, 112, 113.

In this instance Dr. Smith's report is anything but conclusory, and does not suffer from the deficiency perceived in the cases relied upon by HP, in which expert opinions baldly stating that the function-way-result test is met, and thus equivalence established, have been flatly rejected. *See*, *e.g.*, *Moore U.S.A.*, 229 F.3d at 1113. Dr. Smith's report represents the converse; his report is at the opposite end of the spectrum, containing considerable analysis of the HP-8000 processors and comparison to the '115 claims, though without explicit analysis of the two utilizing a function-way-result framework. Dr. Smith's report does, however, contain a sufficient basis upon which a reasonable factfinder could draw its own conclusion on this score. Accordingly, I recommend a finding that plaintiffs' evidence is not legally deficient for failure of their expert to perform an analysis transcending beyond a mere conclusory statement that the governing test for equivalence has been satisfied.

Turning to the specifics of Cornell's equivalency claim, I note that in support of its argument that the PA-8000 processors infringe claims 7 through 12, 16, and 17 Cornell argues that the method used in HP's IRB to detect WAW false data dependencies, utilizing a β(D) field, is an equivalent step to the patent's specified use of a β(D) field to track to WAR

false dependencies. Examining the master slave latch loop of the HP IRB, corresponding to the β(D) field with accompanying logic in the dispatch stack specified in the '115 patent, Dr. Smith concludes that by tracking "the number of times an unnamed register is designated as the most recent destination register so that WAW dependencies can be resolved[,]" the IRB performs an equivalent function to the β(D) field specified in the '115 patent and the step contained within the disputed claims for detecting WAR false dependencies. Fujiyama Decl. (Dkt. No. 728) Exh. G (Smith Expert Report) at 107, 112; *see also id.* Exh. H (Smith Dep.) at 102 (817-18), 105 (831-33), 108-09 (841-47), 127-28 (920-21).

In his more recent declaration, Dr. Smith elaborates by stating his position that the function at issue is the tracking of false dependencies; the way in which this is done for nonessential dependencies is through an enriched β(D) field with accompanying logic corresponding to the destination register field; and the result achieved, after decrementing the count to zero, is the detection of an instruction free of nonessential dependencies involving destination register field D. Smith Decl. (Dkt. No. 729) ¶ 10. Applying the results of this dissection to the PA-8000 IRB, Dr. Smith concludes that the master-slave latch loop and associated logic

performs substantially the same function, in essentially the same way, and with substantially the same result as that specified in the '115 patent. *Id.* ¶ 11.

This analysis by Dr. Smith, however, ignores the additional steps specified in the disputed claims, which speak specifically to detection of WAR dependencies. It is undisputed that the accused circuitry in the HP-8000 processors, by contrast, at best track WAW false dependencies. Consequently, while a reasonable factfinder might well conclude that the PA-8000 processors perform the function of tracking false dependencies, a function specified in the disputed claims, and perhaps even in the same way as under the '115 patent, the result – detection of WAW dependencies – is not the same as the discernment taught in those claims. As Dr. Smith himself acknowledged, WAR and WAW are two distinctly difference species, and are not interchangeable. Brydges Decl. (Dkt. No. 701) Exh. 2 (Smith Dep.) at 9 (823). The detection of one of these two types of nonessential dependencies thus reveals no information as to whether the other type is present within the instruction buffer. Since no reasonable factfinder could conclude that the differences in detection of WAW and WAR dependencies is insubstantial, I therefore recommend the entry of

summary judgment in HP's favor dismissing all infringement claims, both literal and under the doctrine of equivalents, associated with those patent claims that include a β(D) field and logic for detection of false dependencies.

As to the remaining disputed claims, including 1 and 2, 6 through 12, 14, and 18, plaintiffs argue literal infringement, with the doctrine of equivalents being offered as an alternative theory of infringement. Citing excerpts of Dr. Smith's report, defendant once again contends that the required, element-by-element analysis for proving infringement under this model is lacking from Dr. Smith's report.[26] HP's argument, however, once again ignores Dr. Smith's detailed analysis, set forth in his report and repeated during his deposition, comparing the PA-8000's IRB with the '115 patent claims directed toward detection of essential dependencies, describing the manner in which the IRB operates and the result achieved, that being the detection of the instruction free of essential dependencies. Fujiyama Decl. (Dkt. No. 728) Exh. G ¶¶ 128-49; *id.* Exh. H (Smith Dep.) at

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[26] In support of this argument HP cites selected excerpts of Dr. Smith's report, characterized as "bald assertions", in which he concludes that particular claims are either literally infringed by the PA-8000 processors, or alternatively infringed under the doctrine of equivalents. *See*, *e.g.*, Brydges Decl. (Dkt. No. 701) Exh. 1 (Smith Report) at 103, 111, 113.

100 (809). In his report, for example, Dr. Smith noted that HP's IRB contains a latch, labeled sclato_4, and associated logic within the opfield 6 schematic which tracks essential dependencies, thereby performing the same function as that specified in the '115 claims. *Id.* Exh. G, at 65, ¶ 140*; see also* Smith Decl. (Dkt. No. 729) ¶ 8. As Dr. Smith explained, "[t]he way the latch tracks the essential dependencies is that it holds state (in this case a single bit) that indicates whether there is one outstanding write to the corresponding renamed source register or zero outstanding write to the corresponding renamed source register." Smith Decl. (Dkt. No. 729) ¶ 8. The accompanying logic causes the count to be decremented from one to zero when the number of outstanding writes to the corresponding renamed source register changes accordingly. *Id.* The result, which Dr. Smith describes is substantially the same in the HP-8000 processors as in the '115 patent claims, is that a zero count with the latch sclato_4 indicates freedom from essential dependencies associated with a given renamed source register.

Having carefully reviewed Dr. Smith's expert report and supporting declaration, as well as the excerpts of his deposition transcripts applied by the parties, I find that although the words function, way, and result do not

invariably appear throughout, and thus may not literally be incorporated within his analysis, Dr. Smith has gone well beyond simply stating, in conclusory fashion, that infringement has occurred under the doctrine of equivalents, instead providing a proper basis upon which a reasonable factfinder could conclude that although literal infringement may not have been proven with regard to claims 1, 2, 6, 14 and 15, and 18 of the '115 patent, plaintiffs could nonetheless prevail under the doctrine of equivalents. I therefore recommend that the portion of HP's infringement summary judgment motion addressing those claims be denied.[27]

D. Patent Invalidity

In recognition of the fact that the essence of the invention taught under the '115 patent was development of a technique for the detection of concurrencies among computer instructions, and of ascertaining freedom from data dependencies for purposes of allowing the simultaneous

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[27] In a display of confidence, plaintiffs include in their opposition to HP's noninfringement motion a request that the court enter summary judgment in their favor finding infringement by HP of all of the disputed claims under the doctrine of equivalents. While in the abstract the court is empowered to grant such relief, even *sua sponte*, in the face of an adversary's summary judgment motion, *see Bridgeway Corp. v. Citibank*, 201 F.3d 134, 139-40 (2d Cir. 2000)*; Massey v. Del Labs, Inc.*, 118 F.3d 1568, 1572 (Fed. Cir. 1997), I recommend against doing so in this instance, finding the existence of a significant number of genuine issues of material fact which must be resolved before a finding can be made in plaintiffs' favor on the question of infringement as to claims 1, 2, 6, 14, 15 and 18 of the '115 patent.

execution of multiple, out-of-order instructions, the court in its claim construction ruling determined that the patented invention had applicability both in circumstances limited to detection of essential dependencies, and additionally extending to discerning the existence of false dependencies, regardless of their type. In doing so, the court expressly rejected HP's contention, based principally upon the characteristics exhibited by the preferred embodiment described in the patent, that the '115 claims cover only an apparatus and accompanying logic capable of detecting both essential and nonessential dependencies of the WAR kind, and that devices which track essential dependencies alone thus do not read upon the patent claims.

In a variant of an argument advanced during the claim construction phase, HP now moves for partial summary judgment invalidating, as a matter of law, claims 1, 2, 6, 14, 15, and 18 of the '115 patent.[28] Dkt. No. 691. HP's motion is rooted in the written description requirement imposed

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[28] HP's notice of motion announces its intention to seek partial summary judgment declaring claims 1 and 2, 6 through 12, and 14 through 19 of the '115 patent invalid as a matter of law. *See* Notice of Motion (Dkt. No. 691). In its brief, however, and during oral argument, HP has limited its request only to some of those claims. Since, as construed by Chief Judge Mordue, the dispatch stacks specified in claims 7 through 16, 17, and 19 include the very β(D) dependency detection capacity which, HP asserts, must be present in all of the '115 patent claims, plaintiffs have construed defendant's motion to seek summary judgment on this ground of invalidity only as to claims 1, 2, 6, 14, 15 and 18, and I will do likewise.

under 35 U.S.C. § 112. HP's argument in this regard is premised upon the fact that the challenged claims, as construed by the court, do not provide for inclusion of a β(D) field enriched to detect false dependencies within the dispatch stack. Given this fact, HP posits, while Dr. Torng's invention by definition thus combines register renaming, as a technique for eliminating nonessential dependencies, with the lack of β(D) field, the '115 patent does not specifically disclose, either explicitly or inherently, such an invention, and thus the claims at issue do not pass muster under section 112.

Analysis of defendant's invalidity argument is informed, in the first instance, by the independent, statutory presumption of validity which attaches to each claim contained within a regularly issued patent under 35 U.S.C. § 282.[29] *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1266-67 (Fed. Cir. 1991) (citing 35 U.S.C. § 282 and *Altoona Publix*

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[29] The legislation giving rise to this presumption provides that

> [a] patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim. . . . The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.

35 U.S.C. § 282.

Theatres, Inc. v. American Tri-Ergon Corp., 294 U.S. 477, 487, 55 S. Ct. 455, 459 (1935)). A party seeking to overcome this presumption and establish patent invalidity must do so by clear and convincing evidence. *Rosco, Inc. v. Mirror Lite Co.*, 304 F.3d 1373, 1377 (Fed. Cir. 2002); *Pfizer Inc. v. Perrigo Co.*, 933 F. Supp. 377, 379 (S.D.N.Y. 1996) (citing, *inter alia*, *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 1573-74 (Fed. Cir. 1985)). Under section 282, a "party asserting invalidity not only has the procedural burden of proceeding first and establishing a prima-facie case, but the burden of persuasion on the merits remains with that party until final decision." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1534 (Fed. Cir. 1983); *see also Conmed Corp. v. Erbe Electromedizin GMBH*, 241 F. Supp. 2d 187, 192 (N.D.N.Y. 2003) (Hurd, J.), *vacated due to settlement*, No. 00-CV-987, 2004 WL 1576596 (N.D.N.Y. June 29, 2004).

The statutory provision which speaks to the written description patent requirement mandates that

> [t]he specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is mostly nearly connected, to make and use the same, and

> shall set forth the best mode contemplated by the inventor of carrying out his invention.
>
> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

35 U.S.C. § 112. The manifest purpose of this dictate is to insure that those practicing in the relevant field receive notice of what the inventor invented, and to permit those reasonably skilled in the art to perceive the contours of the patentee's invention. *See Festo*, 535 U.S. at 730-31, 122 S. Ct. at 1837; *see also Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1364 (Fed. Cir. 2003) ("[T]he patent specification must describe an invention in sufficient detail that one skilled in the art can clearly conclude that the inventor invented what is claimed."), *cert. denied*, 540 U.S. 1213, 124 S. Ct. 1426 (2004). The written description requirement also serves

> to prevent an applicant from later asserting that he invented that which he did not; the applicant for a patent is therefore required to "recount his invention in such detail that his future claims can be determined to be encompassed within his original creation."

Amgen Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1330 (Fed. Cir. 2003) (quoting*, inter alia*, *Vas-Cath Inc. v. Mahurkar*, 935 F.3d 1555, 1561 (Fed. Cir. 1991)).

The precision of description that is mandated under section 112 gives recognition to the frequently competing considerations of promoting progress by "enabl[ing] efficient investment in innovation" and the temporary monopoly conferred under the Constitution, and by statute, to reward innovation, allowing a patent holder to know the extent of that temporary monopoly, while at the same time delineating for the public what is not claimed under the patent. *Festo Corp.*, 535 U.S. at 730-31, 122 S. Ct. at 1837. As part of the delicate equilibrium to be maintained between inventors, who rely on the promise of the law to bring the invention forth, and the public, "which should be encouraged to pursue innovations, creations, and new ideas beyond the inventor's exclusive rights[,]" the law requires inventors to set forth their claims in "'full, clear, concise, and exact terms[.]'" *Id.* at 730-31, 122 S. Ct. at 1837 (quoting 35 U.S. § 112 and citing *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150, 109 S. Ct. 971, 977 (1989)). To promote these ends, section 112 requires that a patent contain a description sufficient "to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation" and "sufficiently. . . convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the

application, i.e., that the patentee invented what is claimed." *LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1344-45 (Fed Cir. 2005) (citations omitted).

The determination of whether the claims contained within the '115 patent meet the applicable written description requirements presents a question of fact. *Cooper Cameron Corp. v. Kvaerner Oilfield Prods., Inc.*, 291 F.3d 1317, 1323 (Fed. Cir. 2002); *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1158 (Fed. Cir. 1998); *Ralston Purina*, 772 F.2d at 1574. Accordingly, in addressing HP's summary judgment motion on this issue the court is tasked with gauging whether, interpreting the available evidence in a light most favorable to the plaintiffs, it can be said with confidence HP has proven by clear and convincing evidence that the '115 patent claims at issue fail to meet the governing written description requirement of section 112, and no reasonable factfinder could conclude otherwise. *See SRAM Corp. v. AD-II Engineering, Inc.*, 465 F.3d 1351, 1357 (Fed. Cir. 2006) (citing *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 893 (Fed. Cir. 1984)).

The '115 patent abstract describes Dr. Torng's invention as consisting of "[a]n instruction issuing mechanism for boosting throughput of

processors with multiple functional units." '115 Patent at 1, Abstract. The patent goes on to describe the invention as embodying a computer architecture with the capability of detecting concurrences within an instruction stream. *Id.* at 1:10-14. The essence of Dr. Torng's invention is the dependency detection system and methods outlined in the '115 patent. Perceiving a need for such detection in order to permit concurrent execution of non-sequential instructions, Dr. Torng devised a system of enriching the entries in a dispatch stack to detect dependencies. In recognition of the lack of any single, universally accepted format for instructions or set of instruction fields, Dr. Torng's invention was described in terms which would be applicable in the various settings potentially presented, and not restricted based upon the number and types of dependency fields contained within the dispatch stack specified. It was this inherent flexibility which led the court to reject HP's argument that the term dispatch stack should have a single meaning for all nineteen of the '115 patent claims, and instead define it variously throughout the patent.

Having earlier lost on its argument that the dispatch stack specified in each of the nineteen claims must possess a β(D) field, with corresponding logic, capable of detecting false dependencies, HP now contends that if

this is not so, then Dr. Torng's patent necessarily teaches, in the case of those claims lacking such a field, the combination of enrichment, with corresponding logic, capable of detecting essential dependencies, and register renaming as a method of eliminating nonessential dependencies. To understand the distinction being made, it is necessary to briefly revisit the nature of the two type of dependencies at issue and their distinguishing features. Essential dependencies are inherent within computer instructions; an essential dependency can only be eliminated by performance of any instruction upon which it is dependent for a source input. Nonessential dependencies, on the other hand, do not similarly present obstacles which must await resolution through execution of other commands; instead, such dependencies can be eliminated through a variety of means including, notably, register renaming – a technique which was known to those of ordinary skill in the art at the filing of the patent application.

Considered against this backdrop, a reasonable factfinder could conclude that Dr. Torng's invention is adequately described in the '115 patent, and HP has not proven otherwise by clear and convincing evidence. Dr. Torng's invention consists of a method for boosting

computer throughput by detecting concurrencies. The only dependencies which, by definition, must exist and be susceptible of detection through this process are essential dependencies. Thus, while the '115 patent does contain claims construed by the court to include the capacity for detection of both essential and nonessential dependencies (*i.e.*, claims 3, 4, 5, 7-13, 16 and 17, and 19), it is also capable of performing in an environment where nonessential dependencies have been eliminated or are nonexistent.[30] Put another way, just as a system which adds additional enriched columns to identify essential dependencies in additional sources, where more than two are specified, falls within the scope of the patent, so too does a system which eliminates the β(D) field similarly remain within the scope of the invention. As described in his patent, Dr. Torng claims only to have invented a method for detecting and tracking dependencies for the purpose of determining when concurrences exist; he does not claim, as a part of his invention, the technique of register renaming as a means of eliminating false dependencies and leaving only essential

[30] During his deposition defendant's expert, Dr. Flynn, agreed that one environment in which a computer processor could work was one with which register renaming was implemented, and that under such circumstances there would be no need for a β(D) field to track false dependencies. Fujiyama Decl. (Dkt. No. 732) Exh. B (Markman Transcript) at 430-31.

dependencies to be detected.

HP argues that if the '115 claims are described with sufficient precision to encompass a detection system which only identifies essential, or α(S1), dependencies but does not track false, or β(D), dependencies, then the invention could also be deemed to cover a system which eliminates the source, or essential, dependency detection function as well. Such an interpretation, however, would eviscerate Dr. Torng's invention since it depends for its vitality upon the presence in a dispatch stack of enrichment to detect dependencies.

In its motion, HP places heavy reliance upon the Federal Circuit's decisions in *LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336 (Fed. Cir. 2005), and *Tronzo v. Biomet, Inc.*, 156 F.3d 1154 (Fed. Cir. 1998). Those cases, however, both involved generic claims which extended beyond the particular limitations taught in the patent. In *LizardTech*, for example, the claim in dispute was directed toward creation of a seamless array of discrete wavelet transform ("DWT") coefficients in an environment related to compression of digital images. 424 F.3d at 1345. The patent's specification, however, described a single technique for creating such a seamless DWT, and thus taught only one particular

method of creating such a seamless array. *Id.* While noting that this fact alone would not invalidate the claim, the Federal Circuit nonetheless found inadequacy in the disputed patent claim's specification, concluding that it failed to provide sufficient detail "to convince a person of skill in the art that the inventor possessed the invention and to enable such a person to make and use the invention without undue experimentation." *Id.* The court went on to elaborate, observing that

> [a]fter reading the patent, a person of skill in the art would not understand how to make a seamless DWT generically and would not understand LizardTech to have invented a method for making a seamless DWT, except by "maintaining updating sums of DWT co-efficients."

Id.

The court's decision in *Tronzo* is similarly inapplicable, since it too dealt with a generic claim which failed to provide sufficient specification regarding the claim. The patent at issue in that case related to an artificial hip socket which included cup implants adapted for insertion into the hip bone. *Tronzo*, 115 F.3d at 1156. While promoting the advantage of a conical shaped implant, the patent claims spoke of the shape of the cups in only generic terms. *Id.* at 1158-59. Concluding that there was nothing within the patent specification "to suggest that shapes other than conical

are necessarily a part of the disclosure[,]" and that "the specification clearly suggests the contrary by asserting advantages of the conical shape over prior art shapes[,]" the Federal Circuit held that patent disclosure was not sufficiently detailed to enable a person of ordinary skill in the art to recognize that the inventor had in fact invented what he claimed – that is, cup implants with a generic, as opposed to conical, shape. 156 F.3d at 1159-60; *see LizardTech*, 424 F.3d at 1345-46.

Ultimately, interpretation of patent claim terms can only be determined with a full understanding of what the inventors actually invented and intended to envelop within a particular claim. *Renishaw PLC v. Marposs Societa'per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). As the Federal Circuit has noted, "under our precedent, the patentee need only describe the invention as claimed[.]" *Amgen*, 314 F.3d at 1333. In this case there is no suggestion, as HP now intimates, that Dr. Torng invented register renaming as a means of eliminating false dependencies. Rather, Dr. Torng claims to have invented only an innovative technique for detecting dependencies including, in certain instances where nonessential dependencies have been removed or do not exist, only essential dependencies. With this understanding, the patent plainly contains

sufficient detail from which a reasonable factfinder could conclude that it enables a person of skill in the art to make and use the full scope of Dr. Torng's novel invention without undue experimentation, and additionally describes the invention sufficiently to convey to a person of skill in the art that Dr. Torng had possession of the invention claimed at the time of his application.

Under these circumstances I am unable to conclude, as a matter of law, that the '115 patent fails to describe the invention which it claims with sufficient precision, as required under § 112. I therefore recommend denial of HP's invalidity summary judgment motion.

E. Laches

Among the affirmative defenses asserted by HP in its answer to plaintiffs' patent claims is laches. *See* Defendant's Answer (Dkt. No. 47) at 5, Fourth Affirmative Defense. HP now seeks partial summary judgment, asserting that application of the defense in the case presents no genuine issues of material fact, and the court is now firmly positioned to determine that the requisite elements for establishing laches have been met. In its motion, HP therefore invites the court to find, as a matter of law, that plaintiffs unreasonably, and without proper justification, lingered before

commencing suit and pressing their patent claims despite their awareness of HP's allegedly infringing activities, and that HP was prejudiced as a result of that delay. The upshot of defendant's motion, should it prevail, would be to restrict plaintiffs' recovery, based upon their inexcusable delay in bringing suit, to damages incurred since the filing of this action.

1. Laches Generally

For more than one hundred years the law has required that a patentee exercise vigilance in the policing and enforcement of its statutorily conferred exclusive rights. *See*, *e.g.*, *Lane & Bodley Co. v. Locke*, 150 U.S. 193, 201, 14 S. Ct. 78, 81 (1893) ("Courts of equity, it has often been said, will not assist one who has slept upon his rights, and shows no excuse for his laches in asserting them."). A patent holder who does not meet this obligation, but instead unjustifiably delays in taking measures to enforce its rights, may be met with the defense of laches, a doctrine which is neither foreign to the courts nor unique to patent infringement litigation. As one court has observed,

> [l]aches is a seasoned, settled doctrine, firmly rooted in the foundational soils of equity and justice. It is based on the Latin maxim, "*vigilantiabus non dormientibus aequitas subvenit,"* which means "equity aids the vigilant, not those who sleep on their rights." The doctrine of laches may be applied

> to limit the judicial relief available to a plaintiff who waits an unreasonable amount of time before seeking such relief.

Odetics, Inc. v. Storage Tech.Corp., 919 F.Supp. 911, 916-17 (E.D. Va. 1996) (footnotes omitted), *vacated on other grounds*, 116 F.3d 1497 (Fed. Cir. 1997).

Unlike many other defenses, laches does not serve to defeat or undermine the merits of a claim altogether; the decision is, however, intended to achieve repose in cases where potential claims have been left to unduly linger. *See A.C. Aukerman Co. v. R.L. Chaides Const. Co.*, 960 F.2d 1020, 1029 (Fed. Cir. 1992). Examining the underpinnings of the defense, the Fifth Circuit has observed that

> [l]aches is a clement doctrine. It assures that old grievances will some day be laid to rest, that litigation will be decided on the basis of evidence that remains reasonably accessible and that those against whom claims are presented will not be unduly prejudiced by delay in asserting them. Inevitably it means that some potential meritorious demands will not be entertained. But there is justice too in an end to conflict and in the quiet of peace.

Environmental Defense Fund v. Alexander, 614 F.2d 474, 481 (5th Cir.), *cert. denied*, 449 U.S. 919, 101 S. Ct. 316 (1980).

The Federal Circuit's *en banc* decision in *A.C. Aukerman Co. v. R.L.*

Chaides Construction Co. is generally considered to be one of the seminal cases involving the application of laches in a patent infringement setting. 960 F.2d 1020 (Fed. Cir. 1992). In *Aukerman*, the Federal Circuit held that if properly established, the defense can bar a patent holder's entitlement to relief for infringing acts occurring prior to commencement of suit. 960 F.2d at 1039-41 (citations omitted).

In order to qualify for the partial protections which laches affords, an accused infringer must establish two essential elements, including 1) a patentee's unreasonable and inexcusable delay in bringing suit, and 2) the suffering by the accused infringer of material prejudice or injury directly attributable to the procrastination. *Wanlass v. General Electric Co.*, 148 F.3d 1334, 1337 (Fed. Cir. 1998); *Gasser Chair Co., Inc. v. Infanti Chair Mfg. Corp.*, 60 F.3d 770, 773 (Fed. Cir. 1995); *Aukerman*, 960 F.2d at 1032. At the forefront of the first laches inquiry is the extent of and justification offered for the patentee's delay in bringing suit against the defendant. *Aukerman*, 960 F.2d at 1034 ("[L]aches focuses on the reasonableness of the plaintiff's delay in suit."). For purposes of the second laches factor, the prejudice experienced by the accused infringer can be either evidentiary, entailing the loss of material evidence necessary

to defend against the infringement claim, economic, or both. *Wanlass*, 148 F.3d at 1337 (citing, *inter alia*, *Aukerman*, 960 F.2d at 1033).

Born of equity, the defense of laches is entrusted to the sound discretion of the trial court. *Gasser Chair*, 60 F.3d at 773 (citing *Aukerman*, 960 F.2d at 1032); *Giese v. Pierce Chemical Co.*, 29 F.Supp.2d 33, 38 (D. Mass. 1998); *see also Odetics*, 919 F.Supp. at 924. Laches constitutes an affirmative defense, which must be proven by an accused infringer by a preponderance of the evidence. *Aukerman*, 960 F.2d at 1038-39; *Advanced Cardiovascular Sys., Inc. v. Scimed Life Sys., Inc.*, 988 F.2d 1157, 1161 (Fed. Cir. 1993). It has been said that as an equitable measure, laches is not susceptible to application of mechanical rules, but instead rests upon the trial court's careful consideration of the particular circumstances presented by the case under review. *Aukerman*, 960 F.2d at 1032 (citations omitted); *see also Giese*, 29 F.Supp.2d at 38. In deciding whether to invoke laches, even when both of its predicate elements have been established, "the court [must] look to all the facts and circumstances of the case and weigh the equities of the parties." *Gasser Chair*, 60 F.3d at 773 (citing *Aukerman*, 960 F.2d at 1032). As a defense whose purpose is to ensure relative fairness, laches is subject to ordinary

principles of equity including, notably, the clean hands doctrine, under which equity will not come to the aid of a party which itself has been guilty of inequitable conduct. *Aukerman*, 960 F.2d at 1033; *Odetics*, 919 F.Supp. at 924.

While the determination of whether to invoke laches involves analysis of several exceedingly case-specific factors, it is a matter which is in appropriate instances susceptible to resolution upon motion for summary judgment. *See*, *e.g.*, *A.C. Aukerman Co. v. Miller Formless Co., Inc.*, 693 F.2d 697, 702 (7th Cir. 1982) ("*Miller Formless*") (affirming district court's entry of summary judgment); *see also*, *e.g.*, *Wanlass*, 148 F.3d at 1337-41; *Giese*, 29 F.Supp.2d at 42. As in the case of any other claim or defense, however, summary judgment is appropriately awarded on the issue of laches only in the absence of any genuinely disputed issue of material fact and upon a showing that the moving party is entitled to judgment as a matter of law. *Hemstreet v. Computer Entry Sys. Corp.*, 972 F.2d 1290, 1292 (Fed. Cir. 1992). And, not unlike the case with respect to any other issue, when analyzing a motion for summary judgment based upon the affirmative defense of laches, the court must view the evidence in a light most favorable to the non-moving party – in this case, the plaintiffs. *See*

Wanlass, 148 F.3d at 1339; *see also Wright v. Coughlin*, 132 F.3d 133, 137-38 (2d Cir. 1998).

2. Laches Presumption

Despite the otherwise amorphous character of the laches defense, the Federal Circuit has attempted to provide some definitive, concrete guidance on the subject, endorsing recognition of a rebuttable presumption of both undue delay and resulting prejudice when a patent holder has deferred in bringing suit for more than six years after learning of a defendant's allegedly infringing conduct. *Aukerman*, 960 F.2d at 1037; *Wanlass*, 148 F.3d at 1337. Borrowed from the six year damage limitation period set forth in 35 U.S.C. § 286, *see Aukerman*, 960 F.2d at 1034; *Wanlass*, 148 F.3d at 1337; *see also Miller Formless,* 693 F.2d at 699 n.3, this judicially-created, artificial six year presumption, which is now firmly embedded in patent infringement jurisprudence, is evidentiary only in nature; once established, the presumption gives rise to a *prima facie* showing of laches, but does not result in shifting of the ultimate burden of persuasion from the accused infringer who seeks to invoke the benefit of the defense. *Advanced Cardiovascular*, 988 F.2d at 1161; *Hemstreet*, 972 F.2d at 1293; *Aukerman*, 960 F.2d at 1038-39. Instead the presumption,

once recognized, merely casts the burden of going forward upon the patent holder, who must then come forward with proof to rebut the laches factors. *See id.* The presumption can be overcome by the offering of proof reflecting either that the delay in filing suit was reasonable or excusable, or that the defendant suffered no prejudice. *Wanlass*, 148 F.3d at 1337; *Aukerman*, 960 F.2d at 1038. As the Federal Circuit has observed, "[w]henever the presumption arises, including in the summary judgment context, the patentee's evidence must be sufficient to raise a genuine issue of material fact about either the excuse for or reasonableness of the delay, or the existence of the prejudice." *Wanlass*, 148 F.3d at 1337 (citing *Aukerman*, 960 F.2d at 1037-38).

It should be noted that even if the evidentiary six year presumption is overcome, the court may nonetheless find that laches should be invoked, and the patent owner's recovery thereby restricted:

> Elimination of the presumption does not mean the patentee precludes the possibility of a laches defense; it does mean, however, that the presumption of laches plays no role in the ultimate decision. The facts of unreasonable delay and prejudice then must be proved and judged on the totality of the evidence presented.

Aukerman, 960 F.2d at 1038. Conversely, a patent holder who is unable to

overcome the presumption may nonetheless successfully avoid application of the defense of laches, including by establishing that the accused infringer itself is guilty of misdeeds toward the patentee, thereby invoking the maxim, "[h]e who seeks equity must do equity." *Id.*; *see also Odetics, Inc. v. Storage Tech. Corp.*, 14 F.Supp.2d 800, 805-06 (E.D. Va. 1998) ("*Odetics II*") (citing *Aukerman*).

3. Laches Starting Point

When evaluating a patent owner's delay in bringing suit, whether for purposes of invoking the burden-shifting presumption or otherwise, the court must measure the delay from the point in time when the patentee knew or reasonably should have known of the defendant's potentially infringing activity. *Wanlass*, 148 F.3d at 1337-38; *Aukerman*, 960 F.2d at 1032; *Odetics*, 919 F.Supp. at 917. The laches period thus begins to run when a patentee has actual knowledge of infringement, including of any "'pervasive, open, and notorious activities' that a reasonable patentee would suspect were infringing." *Wanlass*, 148 F.3d at 1338 (quoting *Hall v. Aqua Queen Mfg., Inc.*, 93 F.3d 1548, 1553 (Fed. Cir. 1996)). Commencement of the delay period may also be triggered through knowledge imparted to the patentee through other avenues such as "sales,

marketing, publication, or public use of a product similar to or embodying technology similar to the patented invention, or published descriptions of the defendant's potentially infringing activities" containing sufficient facts to give rise to a duty to investigate as to whether infringement has occurred, or is ongoing. *Wanlass*, 148 F.3d at 1338. When such indicia of potential infringement are presented, a patentee "must be diligent and make such inquiry and investigation as the circumstances reasonably suggest[.]" *Potash Co. of Am. v. International Minerals & Chem. Corp.*, 213 F.2d 153, 155 (10th Cir. 1954) (citations omitted). Digesting cases addressing the factors which inform the trigger date analysis, one court has observed that from them,

> a sensible guiding principle emerges: If a patentee knows of the existence of a product or device that (i) embodies technology similar to that for which he holds a patent and (ii) uses that similar technology to accomplish a similar objective, he has a duty to examine the product or device more closely to ascertain whether it infringes his patent. If he shirks this duty, he does so on peril of triggering the laches period and perhaps ultimately losing his rights to recover damages for the infringement.

Odetics, 919 F. Supp. at 918.

Despite maintaining, throughout most of the course of this litigation, that the accused PA-8000 processors did not become commercially

available until August of 1996, and thus within the six year period predating commencement of the action, HP now contends that it is entitled to the benefit of an earlier laches trigger date based upon the prior publication of certain materials intimating that its contemplated, innovative new product might infringe claims contained within the '115 patent. The earliest of those documents consists of an article appearing on November 14, 1994 in the publication *Microprocessor Report*, entitled "PA-8000 Combines Complexity and Speed[.]"[31] *See* Brydges Decl. (Dkt. No. 695) Exh. 2. That article announced the development by HP of a chip with "decoupled architecture with four-instruction dispatch and aggressive out-of-order execution." *Id.*, at 1. The article also stated, however, that "[t]he new processor has not yet taped out; first silicon is expected early [1995,]" and announced that system shipments were not expected "for nearly 18 months." *Id.* HP argues that by then it was openly engaged in the making of an accused product as defined under 35 U.S.C. § 271(a), even though at this point the product was plainly still in the developmental stage, and had not yet been either fabricated or offered for sale.

That published report apparently prompted a letter from Dr. Torng,

[31] That publication proclaims itself to represent "the insiders' guide to microprocessor hardware[.]" Brydges Decl. (Dkt. No. 695) Exh. 2.

the '115 inventor, to H. Walter Haeussler, Esq., CRF's President, on December 1, 1994; in that letter, Dr. Torng stated his belief, based upon a review of the *Microprocessor Report* article, "that there are strong indications that [HP's] instruction dispatch windows infringe upon [the '115 patent]." Brydges Decl. (Dkt. No. 695) Exh. 3. Haeussler has testified, however, that at that stage he did not feel that he could rely upon Dr. Torng's opinion as to infringement, particularly in view of his lack of training as a patent attorney. Fujiyama Decl. (Dkt. No. 713) Exh. B (Haeussler Dep. Transcript of 5/17/06) at 177-78.

Dr. Torng's letter was followed by a letter from Haeussler to HP's managing counsel, Edward Y. Wong, Esq., on December 5, 1994, advising of CRF's belief that the PA-8000 product being developed "uses a central issuing facility that look [sic] reasonably similar to the subject matter of the ['115 patent,]" and inquiring as to whether HP would be interested in obtaining a license from the plaintiffs. Brydges Decl. (Dkt. No. 695) Exh. 4. HP's response, which did not come until July 10, 1995, following a second letter from Haeussler to Wong, was in the form of correspondence from Armstrong Wong, another employee at HP, advising that the company had "no interest in acquiring any rights [in the '115 patent] at the present

time[.]" Brydges Decl. (Dkt. No. 695) Exh. 15.

In November of 1995, HP publicly announced the release of its PA-8000 processors to its Precision Risc Organization ("PRO") partners. Defendant's Reply Local Rule 7.1(a)(3) Statement (Dkt. No. 745) Exh. 29. The identity of those PRO partners is unclear, though it appears that all or some of them were internal divisions or affiliates of HP. *See*, *e.g.*, Corrected Laches Exhibits (Dkt. No. 777) (Wheeler Dep. of 4/12/06) at 229-32. It is uncontested, however, that the first commercial shipment of PA-8000 processors did not occur until August of 1996. *See* Fujiyama Decl. (Dkt. No. 713) Exhs. E (HP Response to Interrogatory No. 1) at 6, F (HP Technical White Paper), G (Don Kipp Technical White Paper).

The triggering of the delay period used for measurement in the laches calculus requires both an act of alleged infringement and proof that the patentee knew or reasonably should have known of the act. *See Aukerman*, 960 F.2d at 1037; *see also Bio-Tech Gen. Corp. v. Genetech, Inc.*, 80 F.3d 1553, 1564-65 (Fed. Cir.) (delay period does not begin prior to existence of legally sufficient infringement), *cert. denied*, 519 U.S. 911, 117 S. Ct. 274 (1996). When the evidence now before the court is construed in a light most favorable to the plaintiffs, one could effectively

argue that it was not until release of the new line of PA-8000 processors in 1996 that the duty of inquiry and plaintiffs' access to sufficient data to allow an informed opinion as to whether the PA-8000 processors infringed one or more claims of the '115 patent coalesced. Because at trial the court could thus conclude that the patentee's duty of inquiry did not attach until less than six years prior to commencement of this action, or after December 27, 1995, I am unable to recommend a finding, as a matter of law, that the six year presumption should apply.

4. Delay/Tolling

The next step in the laches analysis requires examination of the hiatus between discovery of infringement and the filing of suit, and the reasons offered for it, with an eye toward determining whether it was unreasonable and without excuse, and if any portion of the period is subject to tolling. *See Aukerman*, 960 F.2d at 1032-33. While the list is by no means exhaustive, excuses offered and considered as potential justifications for deferral in filing suit have included negotiations with the accused infringer; litigation with other parties; limitations resulting from either financial or other circumstances, such as illness of the patentee; disputes over patent ownership; and the extent of infringement. *Id.* (listing

cases).

Among the reasons offered by plaintiffs in this case for delay in bringing suit, and in support of their request for partial tolling of the delay period, are the licensing negotiations in which CRF was engaged during the relevant times with both HP and Intel, another alleged infringer, regarding the '115 patent. Under appropriate circumstances, such license negotiations can provide a legally cognizable justification for a delay in filing suit, and may additionally serve to toll the six year prefiling presumption period. *See Aukerman*, 960 F.2d at 1032-33; *Accuscan, Inc. v. Xerox Corp.*, No. 96 CIV. 2579, 1998 WL 273074, at *7 (S.D.N.Y. May 27, 1998) (citing *Aukerman*). As the Seventh Circuit has observed, however, "[t]he general rule is that license negotiations do not necessarily push back the running of time in a laches defense. For such tolling the negotiations must ordinarily be continuous and bilaterally progressing, with a fair chance of success, so as to justify significant delays." *Miller Formless*, 693 F.2d at 700 (internal citations omitted).

Plaintiffs' argument that their negotiations with Intel should provide an excuse for their delay in suing HP is readily dispensed with. Generally speaking, negotiations with third parties do not provide exemption from the

requirement of timely filing suit against an accused infringer. *See Giese*, 29 F.Supp.2d at 40; *see also Altech Controls Corp. v. E.I.L. Instrums., Inc.*, 33 F.Supp.2d 546, 554 (S.D. Tex. 1998). It is true that there are cases in which third party negotiations have been found to justify delays in pursuing patent claims against accused infringers who are not parties to those talks. *See Miller Formless*, 693 F.2d at 700 (collecting cases). Those cases, however, have typically involved situations where a patentee's limited resources might not allow for multi-front infringement policing efforts, *see*, *e.g.*, *Hemstreet*, 972 F.2d at 1293, or where a third party is sued, and the accused infringer at issue is placed on notice of the suit and advised of the patent holder's intent, once that matter is resolved, to shift its efforts to pursuit of claims against the accused infringer, *Rockwell Intern. Corp. v. SDL, Inc.*, 103 F.Supp.2d 1192, 1201 (N.D. Cal. 2000) (citing, *inter alia*, *Jamesbury Corp. v. Litton Indus. Prods., Inc.*, 839 F.2d 1544, 1553 (Fed. Cir. 1988)).

None of these circumstances is presented in this action. There is no evidence in the record even hinting that plaintiffs were incapable of pursuing infringement claims against both Intel and HP simultaneously. Moreover, it should be noted that Intel was never sued, nor does the

record presently before the court suggest that a suit against Intel was ever imminent. Additionally, there is no indication that HP was placed upon notice that plaintiffs were focusing their efforts on Intel and, once resolution with Intel was achieved, HP would be the next target. I therefore recommend rejection of this proffered excuse for plaintiffs' delay in filing suit.

Turning to plaintiffs' negotiations directly with HP, I find that while as a whole they do not appear to fully absolve plaintiffs of the consequences of their decision to delay filing suit until more than five years following introduction of the PA-8000 processors into the marketplace, they do serve to justify, and potentially to excuse, at least a portion of the delay. As has already been noted, as early as July 10, 1995 plaintiffs had written notice of HP's manifest disinterest in acquiring a license under the '115 patent. *See* Brydges Decl. (Dkt. No. 695) Exh. 15. Despite the fact that at least by this time it therefore did not appear that licensing negotiations with HP would prove fruitful, defendant's conduct after that date provides some basis for exempting portions of that subsequent, intervening period. It was not until August 30, 1996 that plaintiffs, by then armed with specifics regarding the new processor line, placed HP on written notice of its

definitive belief that the PA-8000 processors did in fact infringe the '115 patent, and provided specifics regarding that claim. *See* Fujiyama Decl. (Dkt. No. 713) Exh. I. The letter setting forth that position was met with a written communication from Jeffrey Fromm, Esq., identified in the document as HP's Managing Counsel, dated September 16, 1996 advising CRF's Walter Haeussler that plaintiffs' allegations were taken "very seriously" and stating "as I'm certain you understand, it will be necessary for us to do our own investigation into the meaning and applicability of the '115 patent claims", going on to give assurance that after such an investigation HP would "be back in touch with [plaintiffs]."[32] Fujiyama Decl. (Dkt. No. 713) Exh. K.

It was not until April 2, 1997 that HP formally responded to the plaintiffs' concrete claim of infringement by letter from Alan H. Haggard, Esq., HP's counsel, to Haeussler advising of the results of the company's investigation. Fujiyama Decl. (Dkt. No. 713) Exh. N. In that letter, HP's counsel recited his conclusion that the '115 patent was not infringed by the PA-8000 product, and that a license would therefore not be necessary. *Id.*

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[32] Significantly, Fromm's letter advised that Haeussler's August 30, 1996 letter was "the first time this patent has come to HP's attention," despite the earlier written correspondence exchanged between the parties in 1995 convincingly suggesting to the contrary. Fujiyama Decl. (Dkt. No. 713) Exh. K.

Accordingly, it was only at this juncture that plaintiffs were squarely placed on notice of HP's position that its new product line did not infringe the '115 patent.

While plaintiffs insist that subsequent periods during which negotiations between CRF and HP were pursued should additionally be excused, it does not appear that they were sufficiently continuous, progressing, and indicative of a fair chance of success, as to provide a cognizable excuse for the ongoing delay. *Miller Formless*, 693 F.2d at 700. Letters exchanged by the parties subsequent to the Haggard letter of April 2, 1997, are almost uniformly indicative of plaintiffs' continuing desire to negotiate, though with little or no signal from HP of a willingness to meaningfully do so. Thus, for example, CRF's Haeussler communicated with Haggard by letter dated February 13, 1998, advising of the issuance of a license agreement under the '115 patent with "an organization we also felt infringed the ['115 patent]" – presumably Intel – and inviting HP to once again meet to negotiate a resolution of CRF's claims. Fujiyama Decl. (Dkt. No. 713) Exh. O. That letter was followed by letters to Haggard from Daniel E. Massing, CRF's Associate Director, Physical Science Licensing, dated March 10, 1999, and by Thomas R. FitzGerald, Esq., an outside

attorney for CRF, dated July 1, 1999, inquiring regarding the status of HP's consideration of the matter and expressing a desire to negotiate a license, as well as a second letter dated April 16, 1999 from Massing to Haggard, reiterating his inquiry regarding HP's position. *Id.* Exhs. M, P, Q. Once again, those efforts were rebuffed by HP, this time by letter dated September 29, 1999 from Haggard to Attorney FitzGerald succinctly concluding as follows: "[w]e appreciate your offer to negotiate a license, but it does not appear that HP needs one." Fujiyama Decl. (Dkt. No. 713) Exh. R. Haggard's letter was met with a response from Attorney FitzGerald, dated December 30, 1999, expressing disagreement with the HP analysis and once again reiterating plaintiffs' "offer to open license negotiations[.]" Fujiyama Decl. (Dkt. No. 713) Exh. T.

It is also true that a meeting was conducted on or about June 6, 2000 between representatives of HP and the plaintiffs to discuss the '115 patent. *See* Fujiyama Decl. (Dkt. No. 713) Exhs. V-X. While during that meeting CRF made a settlement proposal, HP did not. *Id.* Exh. W. A letter subsequently sent on August 17, 2001 by Cornell University's General Counsel and Secretary, James J. Mingle, Esq., to Haggard confirms HP's lack of any intention to negotiate toward a license, noting that

"[d]isappointingly, Hewlett-Packard has rebuffed repeated requests by CRF to participate in the promised follow-up meeting, although we acknowledge having subsequent telephonic discussions with Hewlett-Packard concerning settlement issues." *Id.*

From the foregoing chronology, it is abundantly clear that as of April 2, 1997 HP's position regarding both its denial of any infringement of claims contained within the '115 patent and the need for a license was known to the plaintiffs, and that from that point until the filing of suit negotiations between the parties were invariably unilateral, and certainly anything but continuous, progressing, and with an indication of a fair chance of success. Prior to that date, however, plaintiffs were engaged in preliminary dialogue with HP regarding a license to practice the '115 patent, and were held off from taking steps to enforce their patent rights by HP's request for time to investigate plaintiffs' claims. I therefore recommend that the time from when plaintiffs knew or reasonably should have known of HP's allegedly infringing activities until April 2, 1997 be excluded from the laches equation, in light of HP's conduct up until then in expressing an interest to negotiate with the plaintiffs.

5. Prejudice

In its motion, HP claims to have suffered both economic and evidentiary prejudice as a result of plaintiffs' delay in filing suit.

a) Economic Prejudice

"Economic prejudice may arise when a defendant and possibly others will suffer the loss of monetary investments or incur damages which likely would have been prevented by earlier suit." *Aukerman*, 960 F.2d at 1033 (citations omitted); *see also Wanlass*, 148 F.3d at 1337. Such prejudice may include the devotion of resources to the development and manufacture of an accused product, including the continuous introduction of new variants. *See Gasser Chair*, 60 F.3d at 775.

While plaintiffs vigorously contest both the amounts which HP claims to have expended and the competence of the evidence offered to support the contention, there can be little doubt that the development of the PA-8000 processor line was a momentous undertaking, involving the expenditure of large sums of money and devotion of significant resources.[33] The hallmark of economic prejudice, however, is establishment of a nexus between a delay in filing suit and such

[33] In its papers HP characterizes the development of the PA-8000 family of processors as involving 1,176 "engineer years" at a cost of between $240,000 and $250,000, each per year "fully loaded" with labor costs plus materials, or upwards of $294 million.

expenditures; "[t]he change must be because of and as a result of the delay, not simply a business decision to capitalize on a market opportunity." *Hemstreet*, 972 F.2d at 1294. Critical to the economic prejudice inquiry in this case is therefore establishment of a connection between plaintiffs' delay and HP's efforts – that is, a showing that but for the delay in filing suit HP would have abandoned its development of the accused product, in favor of efforts to produce a non-infringing substitute. *James River Corp. of Va. v. Hallmark Cards, Inc.*, 915 F.Supp. 968, 978-79 (E.D. Wis. 1996).

HP's claim of economic prejudice is severely undermined by the position it has consistently taken since first having been placed on notice of the '115 patent claims and plaintiffs' contention that the PA-8000 processors infringed the patent, as well as its actions which followed commencement of this suit. HP was squarely placed on notice of plaintiffs' claim of infringement as early as August 30, 1996. After investigating CRF's contentions, HP determined – and has since steadfastly maintained – that its PA-8000 processors do not infringe the '115 patent claims.

Perhaps the most persuasive evidence that plaintiffs' delay in filing suit did not prejudice HP is the fact that while it has argued that some

substitute, non-infringing processors were available and others could have been developed, tellingly, HP has continued marketing and selling its PA-8000 products, notwithstanding the filing of this action, "suggesting that it was more concerned about earning a profit than about [plaintiffs'] claim of infringement." *Izume Prods. Co. v. Koninklijke Philips Electronics N.V.*, 315 F. Supp.2d 589, 613 (D. Del. 2004).

This inference which a reasonable factfinder could draw from HP's continued production of PA-8000 processors is buttressed by deposition testimony given by one of HP's witnesses, John Wheeler, who stated that to his knowledge Cornell's delay in filing suit had no impact on the direction in which HP was progressing, which instead was independently driven by a business decision to move forward with its PA-8000 processor program. *See* Fujiyama Decl. (Dkt. No. 713) Exh. HH, at 56, 58.

Based upon the foregoing, a reasonable factfinder could conclude that HP would have continued to develop and sell PA-8000 processors, even had plaintiffs commenced suit earlier than 2001. *See James River*, 915 F.Supp. at 978 (citing *Meyers v. Brooks Shoe, Inc.*, 912 F.2d 1459, 1463 (Fed. Cir. 1990), *overruled on other grounds by Aukerman*, 960 F.2d at 1038-39). Accordingly, a genuine issue of material fact exists as to

whether HP can establish the requisite link between plaintiffs' delay in filing suit and HP's expenditure of money and resources to continue developing potentially infringing products necessary to support a finding of economic prejudice.

b) Evidentiary Prejudice

Examination into the issue of evidentiary prejudice in this case presents a closer question. In the context of a laches analysis, evidentiary prejudice

> may arise by reason of a defendant's inability to present a full and fair defense on the merits due to the loss of records, the death of a witness, or the unreliability of memories of long past events, thereby undermining the court's ability to judge the facts.

Aukerman, 960 F.2d at 1033 (citations omitted).

In support of its claim to have suffered evidentiary prejudice, HP points to faded memories of critical witnesses, among them being the '115 inventor, Dr. Torng, as well as Neil Siegel, Esq., the attorney who prosecuted the patent in issue. Those witnesses, who were deposed in July of 2002 (Torng) and August of 2003 (Siegel), were in many instances unable to recall particulars surrounding the critical events, most of which occurred during the mid-1980's. *See*, *e.g.*, Brydges Decl. (Dkt. No. 695)

Exhs. 7, 8. HP contends that the delay in filing suit and the corresponding lag in conducting the depositions of these and other fact witnesses has greatly impaired its ability to defend against the plaintiffs' patent infringement claims, including to develop its inequitable conduct defense.

HP also argues that plaintiffs' delay in filing suit has hampered its efforts to acquire evidence bearing upon its patent exhaustion defense, based upon its argument that at the relevant times International Business Machines Corporation ("IBM") was licensed to the '115 patent. HP points to the fact that Sophie Sapolongo, a former patent administrator at CRF, testified during her deposition in January of 2006 to having formulated a belief in the 1980s that IBM was entitled to a "worldwide, royalty-free license" to the '115 patent. *See* Brydges Decl. (Dkt. No. 695) Exh. 9, at 9. That view was expressed in a letter written by Ms. Sapolongo to Dr. C. K. Chow, dated October 4, 1982. *Id.* Exh. 10. When pressed during her deposition, however, Ms. Sapolongo was unable to recall specifics regarding those claims. *Id.* Exh. 9, at 10-22. HP has also cited similar memory lapses on the part of Frank Feocco, another Cornell employee, concerning those early 1980s events potentially bearing upon HP's patent exhaustion defense. *Id.* Exh. 12.

Another element of defendant's evidentiary prejudice claim stems from the death of an IBM patent attorney, George E. Clark, Esq., on October 9, 1998 – and thus during the period of plaintiffs' delay. The fact of his death, HP contends, has deprived it of the opportunity to question Attorney Clark regarding the matter, and specifically to inquire about at least one letter forwarded by Ms. Sapolongo to him regarding the Torng patent. *Id.* Exhs. 13, 14.

It is true, as plaintiffs argue, that "[c]onclusory statements that there are missing witnesses, that witnesses' memories have lessened, and that there is missing documentary evidence, are not sufficient" to establish the existence of evidentiary prejudice. *Meyers v. ASICS Corp.*, 974 F.2d 1304, 1308 (Fed Cir. 1992). In this instance, however, HP has gone well beyond merely incanting generalized claims of lost witnesses and faded memories, instead pointing to concrete particulars regarding impairment of its defense to plaintiffs' infringement claims.

When evaluating the element of evidentiary prejudice, the court must consider first that many of the relevant events, particularly those surrounding the development of the invention taught by the '115 patent and the relationship between Cornell and IBM, date back to the early 1980s,

and that it is therefore likely that much of the memory loss attributed to the delay would have occurred in any event, even had suit been filed in or prior to December of 2001. The court must also take into account that the delay in commencing the action is attributable to no single factor, as well as the fact that many of the depositions taken by HP of witnesses whose memories are at issue were delayed and not conducted until very late in the litigation. Had faded memories been an issue of concern to HP, one assumes that it would have acted much earlier in the litigation to preserve memories and required testimony.

In sum, while there is evidence to suggest that HP may have suffered some degree of evidentiary harm as a result of the delay in filing the action, it is unclear that no reasonable factfinder could conclude otherwise.

6. Weighing the Laches Factors

The significant delay in plaintiffs' filing of suit against HP is somewhat bothersome, particularly in view of the fact that they were squarely placed on notice as of April of 1997 of HP's position that it did not infringe, and therefore would not enter into a license to the '115 patent. Nonetheless, one perhaps can understand the reluctance of Cornell University to sue HP, as a potential contributor, technology partner, and employer of its

graduates until all other, less confrontational avenues had been first exhausted.

Before considering whether these factors warrant limiting plaintiffs' potential recovery in this action to infringement occurring after suit was commenced, it is important to recognize the fact that as an equitable doctrine, laches is subject to a balancing of equities. *Gasser Chair*, 60 F.3d at 775-76; *Aukerman*, 960 F.2d at 1036. As a counterweight to invocation of the equitable doctrine of laches, plaintiffs have urged both the claim of willful infringement and HP's alleged litigation misconduct. These are issues which the trial court could find worthy of consideration in deciding whether to invoke laches, and thereby restrict plaintiffs' entitlement to recovery of damages. *See Gasser Chair*, 60 F.3d at 773-76; *Aukerman*, 960 F.2d at 1038; *Odetics*, 919 F.Supp. at 924 (citing *Aukerman*).

When evaluating the defense of laches, the court must also resist the temptation to place too great of a burden upon a patentee particularly where, as in this case, infringement is not so obvious as in other settings. Gaining evidence of infringement in the highly competitive environment in which HP operates is often a matter of acquiring access to guarded,

proprietary trade secret information which is difficult to obtain. A court must therefore strike a fair balance between the duty of the patentee to police and enforce its rights and the fundamental obligation on the part of the public, once on notice of the claims of a patent, to avoid infringement, and in doing so should not "[undervalue] the fundamental principle that the public has a duty to avoid infringement." *Wanlass*, 148 F.3d at 1343 (Rader, J. dissenting).

When deciding whether to apply laches,

> [i]t must be emphasized that the establishment of the factors of undue delay and prejudice, whether by actual proof or by the presumption, does not *mandate* recognition of a laches defense in every case. Laches remains an equitable judgment of the trial court in light of all the circumstances. Laches is not *established* by undue delay and prejudice. Those factors merely lay the foundation for the trial court's exercise of discretion.

Aukerman, 960 F.2d at 1036 (emphasis in original). The equitable doctrine of laches must be applied cautiously, in recognition of the fact that it serves to deny a party, wholly or in part, of the benefits of pressing an otherwise meritorious claim. These principles, when applied to the circumstances presented in this case, suggest that laches is best considered based upon a fully developed record. In light of this and my finding that there are

genuine issues of material fact surrounding when plaintiffs knew or reasonably should have known to undertake the duty to inquire regarding infringement; whether all or some of the delay in filing suit is excusable; whether HP suffered economic and/or evidentiary prejudice as a result of the delay; and whether there are any other considerations that could potentially militate against invoking the equitable doctrine of laches, I recommend that HP's motion for partial summary judgment on the basis of laches be denied. *Izume Prods.*, 315 F.Supp.2d at 612-13.

F. Patent Exhaustion

HP's sixth affirmative defense to plaintiffs' infringement claims alleges patent exhaustion. Answer to Plaintiffs' First Amended Complaint (Dkt. No. 47) at 9-10, Sixth Affirmative Defense. That defense is offered based upon the assertion that at the relevant times, both Intel and International Business Machines Corporation ("IBM") were licensed to the '115 patent and, consequently, the patent rights in connection with all PA-8000 processors fabricated by Intel and IBM were exhausted upon their delivery of finished chips to HP, thereby barring plaintiffs' claims of infringement with regard to those products. *Id.* Premised upon a written agreement entered into in August of 1997, under which CRF granted Intel

a license under the '115 patent, HP now seeks partial summary judgment on its patent exhaustion defense as it relates to all products acquired by it from Intel.

Under the patent exhaustion doctrine, sometimes also referred to as the "first sale rule", an unconditional sale of a patented device, made by a patentee under United States patent laws, exhausts the patent, thereby depriving the patent owner of the right to control the purchaser's subsequent use of the device. *Monsanto Co. v. Scruggs*, 459 F.3d 1328, 1335-36 (Fed. Cir. 2006); *LG Elecs., Inc. v. Bizcom Elecs., Inc.*, 453 F.3d 1364, 1369-70 (Fed. Cir. 2006); *see also Jazz Photo Corp. v. International Trade Comm'n*, 264 F.3d 1094, 1105 (Fed. Cir. 2001) ("*Jazz Photo*") ("The unrestricted sale of a patented article, by or with the authority of the patentee, 'exhausts' the patentee's right to control further sale and use of that article by enforcing the patent under which it was first sold."). "'The theory behind this rule is that in such a transaction, the patentee has bargained for, and received, an amount equal to the full value of the goods.'" *LG Elecs.*, 453 F.3d at 1369 (quoting, *inter alia*, *B. Braun Med. Inc. v. Abbott Labs.*, 124 F.3d 1419, 1426 (Fed. Cir. 1997)). As one court has explained,

> [t]he patent exhaustion doctrine . . . is derived from the statutory grant of exclusivity to the patent. Once a patentee abandons its statutory right to exclusivity through the sale of a patented product or the license of the patent itself, there is no statutory basis for the patentee to impose restrictions or secure royalties on the subsequent use of the invention.

LG Elecs. Inc. v. Asustek Computer, Inc., Nos. C 01-00326, *et al.*, 2002 WL 31996860 at *3 (N.D. Cal. Aug. 20, 2002) *(*citing *Bloomer v. McQuewan*, 55 U.S. 539, 549, 14 How. 539 (1852)), *reversed, remanded, and vacated sub nom.*, *LG Elecs. v. Bizcom Elecs., Inc.*, 453 F.3d 1364 (Fed. Cir. 2006). Patent exhaustion applies not only to a sale made by a patentee, but additionally to an unconditional sale to a third party by an authorized licensee. *Intel Corp. v. ULSI Sys. Techs., Inc.*, 995 F. 2d 1566, 1568 (Fed. Cir. 1993) ("*ULSI*"), *cert. denied*, 510 U.S. 1092, 114 S. Ct. 923 (1994); *see also Minebea Co. Ltd v. Papst*, 444 F. Supp. 2d 68, 137 (D.D.C. 2006).

To find patent exhaustion in this case, based upon the agreement between CRF and Intel, the court must conclude that 1) an authorized sale was made by Intel of the PA-8000 processors; 2) there were no conditions placed on either the sale from Intel to HP or the license under which it was accomplished; 3) the sale occurred under the United States patent laws;

and 4) the processors sold to HP embodied the "essential feature" of the patents "such that they have no reasonable use which does not infringe the [patent]." *Minebea*, 444 F. Supp.2d at 138. As the party invoking the affirmative defense, HP bears the burden of proving each of these elements by a preponderance of the evidence.[34] *Fuji Photo Film Co., Ltd. v. Jazz Photo Corp.*, 394 F.3d 1368, 1373 (Fed. Cir. 2005) ("*Fuji Photo*"); *Jazz Photo*, 264 F.3d at 1102; *see also Intel Corp. v. Broadcom Corp.*, 173 F. Supp.2d 201, 206 (D. Del. 2001) ("*Broadcom*"). The fact that the defendant bears the burden on this issue is an important consideration when analyzing the record in the context of its summary judgment motion. *Anderson*, 477 U.S. at 256, 106 S. Ct. at 2514; *see LG Elecs.*, 2002 WL 31996860, at *1-*2.

HP's patent exhaustion defense is grounded in a written agreement

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[34] Patent exhaustion is separate and distinct from implied license, another defense potentially available in an infringement suit, and on which the accused infringer similarly bears the burden of proof. *See Bandag, Inc. v. Al Bolser's Tire Stores, Inc.*, 750 F.2d 903, 924 (Fed. Cir. 1984); *see also Storage Tech. Corp. v. Custom Hardware Engineering & Consulting, Ltd.*, No. 02-12102, 2006 WL 1766434, at *16 (D. Mass. June 28, 2006). Although the two defenses have been described as confusingly similar, *see LG Elecs.,* 2002 WL 31996860, at *3-*4, the implied license doctrine, born of equity, will apply only under circumstances which plainly indicate from the conduct of the parties involved that a license should be inferred. *Storage Tech.*, 2006 WL 1766434, at *16 (citing *Bandag*); *LG Elecs.,* 2002 WL 31996860, at *3-*4. While the phrase "implied license" has been spoken more than once during the course of in-court presentations in this action, HP has not asserted it as an affirmative defense.

entered into on or about August 18, 1997 between CRF and Intel, addressing the '115 patent. *See* Brydges Decl. (Dkt. No. 698) Exh. 2. Under that agreement, in consideration for the payment of $1.9 million, CRF released Intel from all potential infringement claims existing up until the effective date of the agreement, and further conferred a fully paid up future license under the '115 patent. *Id.* at 1. The agreement further provided that it would "continue in full force until expiration of the ['115 patent]."[35] Brydges Decl. (Dkt. No. 698) Exh. 2, at 2.

HP's patent exhaustion motion implicates the PA-8500 (Cuda) and PA-8600 (Landshark) processors, representing approximately thirty-five percent of all PA-8000 processors sold by HP. Brydges Decl. (Dkt. No. 698) Exh. 4, ¶ 4. HP maintains that fabrication of the PA-8500 and PA-8600 processors was performed by Intel, under contract with HP, and that as a licensee to the '115 patent Intel's actions exhausted CRF's patent

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[35] Although plainly having implications with respect to rights steeped in federal law, a patent license agreement is generally regarded as little more than a contract between licensor and licensee; as such, interpretation of a license agreement, including resolution of any ambiguities, must be accomplished in accordance with controlling state law. *Power Lift, Inc. v. Weatherford Nipple-Up Sys., Inc.*, 871 F. 2d 1082, 1085 (Fed. Cir. 1989); *Broadcom*, 173 F. Supp. 2d at 210. In this instance, the Intel agreement specifies that it is to be governed and construed in accordance with Delaware law. Brydges Decl. (Dkt. No. 698) Exh. 2 (Intel License) at 2, § 7.1. Such a choice of law understanding between the parties to a patent license agreement is generally honored by the courts. *Texas Instrum., Inc. v. Hyundai Elec. Indus. Co., Ltd.*, 42 F.Supp.2d 660, 671-72 (E.D. Tex. 1999).

rights with respect to those products.[36]

The relationship between Intel and HP, insofar as Intel's role in the manufacture of PA-8500 and PA-8600 processors is concerned, is potentially governed by three documents. The first of those is an Alliance Agreement entered into between the two companies on February 14, 1995, in contemplation of the joint development by the two companies of a new Itanium® processor. Brydges Decl. (Dkt. No. 698) Exh. 12. Section 5 of that Alliance Agreement governs the manufacture of processors, affording HP the right to exercise a "guaranteed allocation" of manufacturing capacity. *Id.* at 68-91. Section 5.2.5 of the contract requires HP to "pay for wafers manufactured by Intel under this Section 5.2 and delivered in fulfillment of HP's orders[.]" *Id.* at 69. Addressing the guaranteed allocation of manufacturing capabilities, section 5.5.1 of the agreement provides that "HP may purchase packaged parts assuming such parts use packaging supported by Intel, tested wafers or tested bare die at its discretion within the limits of Intel's production methodologies." *Id.* at 76. Significantly, the next section of the Alliance Agreement allows HP to

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[36] According to HP, it paid Intel approximately $54.2 million for the fabrication of the PA-8500 and PA-8600 processors over the period between 1998 and 2002. *See* Brydges Decl. (Dkt. No. 698) Exh. 17, at 13.

utilize its guaranteed allocation, at its discretion, for various products including PA-RISC processors. *Id.* While the Alliance Agreement was initially entered into in contemplation of development of the Itanium ® processor, it was ultimately applied by the parties to the manufacture by Intel of the PA-8500 and PA-8600 processors as a result of the delay in the development of that new, joint product.[37] Brydges Decl. (Dkt. No. 698) Exh. 10 (Frederick L. Mann Dep.) at 9-12, 16-17.

The second relevant document, entitled Intel's Planning Operating Guidelines ("Guidelines"), was later adopted to govern application of section 5 of the Alliance Agreement, addressing "Guaranteed Allocation", to the manufacture of the PA-8500 and PA-8600 processors.[38] Brydges Decl. (Dkt. No. 698) Exh. 11. The version of those Guidelines contained in the record, apparently a sixth revision of the document, is dated July 31,

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[37] The relevant documents, including the Alliance Agreement, refer to the parties' contemplated joint project as "Tahoe", a new microprocessor architecture which later came to be known as the Itanium ® family of processors. Fujiyama Decl. (Dkt. No. 719) Exh. E, at 61.

[38] There is considerable disagreement between the parties as to the extent to which those Guidelines were disseminated to, or even known by, key HP personnel. *Compare* HP's Memorandum (Dkt. No. 696) at 11 *with* Plaintiffs' Response (Dkt. No. 717) at 13-14. Plaintiffs vigorously dispute that the Guidelines constituted a binding agreement between Intel and HP, a position which draws some support from the signature page of the document which states, in pertinent part, "I understand that this is not a legally binding document, but it outlines the detailed framework that HP/Intel should operate under to execute the Cuda program." Brydges Decl. (Dkt. No. 698) Exh. 11, at HP026431.

1998, and spells out a protocol under which HP was to specify a number of PA-8500 and PA-8600 processor wafers to be fabricated by Intel, utilizing purchase orders, and was later to be issued invoices by Intel for fabrication of processors pursuant to those orders. *See* Brydges Decl. (Dkt. No. 698) Exh. 11, at 2-3, 5. The resulting expense to HP associated with those transactions was derived under the Guidelines, which required Intel to send HP updated pricing information on a quarterly basis for use by HP in making its purchase orders. *Id.* at 2, 5. The Guidelines also specified that HP was to place monthly purchase orders for the requested unit shipments at least five months before shipment was contemplated, and provided further that HP "will receive invoices at the time the product ships out of Intel to HP[.]" *Id.* at 5. Utilizing the practice specified under the Guidelines, Intel issued invoices to HP for PA-8500 and PA-8600 processors manufactured by Intel, and payments were made by HP to Intel pursuant to those invoices. *See* Brydges Decl. (Dkt. No. 698) Exh. 15.

The third document potentially governing the HP-Intel relationship, as it relates to manufacture of the PA-8500 and PA-8600 processors, is dated August 7, 1997, and entitled "Intel-HP Agreement for the H/G-G/H Program." Brydges Decl. (Dkt. No. 698) Exh. 13. That agreement, which

was signed by representatives of Intel and HP, addressed the merger of two programs – an Intel project, principally identified as Halekala, and a Gunnison II project being developed by HP – and additionally clarified that under the Alliance Agreement, Intel would provide services relative to HP's Cuda (PA-8500) as well as "one additional design of a PA RISC microprocessor." *Id.* at 2.

In order to appreciate the legal significance of Intel's actions with respect to PA-8500 and PA-8600 processors, it is helpful to understand the steps associated with the manufacture of those products and Intel's role in that process. The production process associated with the accused chips is described as consisting of six basic functions, including 1) production fab; 2) polyimide/bumping; 3) testing and sorting; 4) dicing and picking; 5) package assembly; and 6) package testing. Brydges Decl. (Dkt. No. 698) Exh. 4, ¶ 5. At the production fab stage, a wafer with inlaid circuits is created by growing silicon into a cylindrical crystal, and then cutting it into thin circular slices. *Id.* ¶ 6. After the wafers resulting from this first step are polished and cleaned, doping occurs, during which elements are deposited in the spaces between the silicon atoms on the wafer. *Id.* The wafers are next subjected to masking, involving a process whereby light is

shined through an individual mask onto the silicon dioxide surface of the wafer. *Id.* At the conclusion of this process the wafer contains small sections, called "dies", each with its own set of circuits and the potential to become a functioning chip. *Id.* ¶ 6.

Polyimide/bumping next occurs, entailing placement of solder bumps onto each die for use in attaching the die to a ceramic substrate. Brydges Decl. (Dkt. No. 698) Exh. 4, ¶ 7. The product is then subjected to an initial test, utilizing low level electrical current, to determine the viability of each die section, and any rejected sections are sorted out by marking them with an "X". *Id.* ¶ 8. The wafer is subsequently cut into individual sections, or dies, and the rejected dies are discarded; this process is referred to as "dice and pick". *Id.* ¶ 9.

Package assembly is the next stage of the manufacturing process, comprised of assembling a package into which the processor die is inserted. Brydges Decl. (Dkt. No. 698) Exh. 4, ¶ 10. This larger product can then be integrated into a circuit board, which allows it to interact with the "motherboard". *Id.* These packaged parts are then placed in an oven, where an accelerated voltage and current are applied to screen out early life failures, a process referred to as "burn-in". *Id.* The last step in the

process, package testing, is the stage at which low level electrical current is passed through the packaged processors to determine their viability. *Id.* ¶ 11.

The record reveals that the production fab and polyimide/bumping steps for HP's PA-8500 and PA-8600 processors were performed at the relevant times by Intel. Brydges Decl. (Dkt. No. 698) Exh. 4, ¶¶ 12, 20; *id.* Exh. 10 (Frederick L. Mann Dep.) at 19-20. The chips were then shipped, in wafer form, to DTS, a third party, for testing and sorting under subcontract with Intel. *Id.* Exh. 4, ¶ 12; *id.* Exh. 10, at 21; *id.* Exh. 13, at 4; Fujiyama Decl. (Dkt. No. 719) Exh. E (Smith Dep.) at 31. The product was later returned to Intel for completion of the dice and pick step, after which the processor chips were shipped to IBM, also acting as a subcontractor to Intel, for package assembly and package testing. Brydges Decl. (Dkt. No. 698) Exh. 4, ¶¶ 12, 23; *id.* Exh. 10, at 21; *id.* Exh. 13, at 4; Fujiyama Decl. (Dkt. No. 719) Exh. E, at 31-34. Following completion of these last steps, the finished product was then sent to HP.

Before turning to the troublesome issue of whether Intel's role in fabricating and delivering to HP the disputed processors can fairly be characterized as a first sale, I will address the other prongs of the

governing test. In order to establish its patent exhaustion defense, HP must also prove that the first sale covered by the '115 patent and alleged to have occurred within the United States was unconditional. As plaintiffs correctly note, the exhaustion doctrine does not apply to a sale or license which is expressly conditional. *LG Elecs.*, 453 F.3d at 1369-70. This limitation gives recognition to the reality that when entering into such a conditional transaction "it is more reasonable to infer that the parties negotiated a price that reflects only the value of the use rights conferred by the patentee." *Id.* at 1369-70 (citations and internal quotation marks omitted).

In determining whether, for purposes of patent exhaustion, a conveyance of the nature involved in the instant case is conditional, there appears to be uncertainty as to where the inquiry is appropriately directed, and specifically whether its focus is properly centered upon the license conferred by the patentee, the sale by the licensee to a third party, or both when evaluating the defense in a setting such as that now presented. *See LG Electronics*, 453 F.3d at 1370. This is so because there are essentially two potentially relevant sales at issue in this case, the first in the form of the license granted by CRF to Intel, and the second being Intel's services

on behalf of HP, which HP characterizes as either a sale or a foundry agreement. *See id.* (citing *United States v. Masonite Corp.*, 316 U.S. 265, 278, 62 S. Ct. 1070, 1077-78 (1942)).

One element of HP's patent exhaustion defense thus seemingly requires it to establish that when performing steps in the PA-8500 and PA-8600 production process, Intel engaged in conduct which was unconditionally authorized by its license to the '115 patent. The controlling license agreement permits Intel, without limitation, "to make, have made, use, import, offer to sell and sell, or otherwise distribute, directly or indirectly, any products covered by [the '115 patent]." Brydges Decl. (Dkt. No. 698) Exh. 2, at 1. Accordingly, whether Intel's role in the production of PA-8500 and PA-8600 processors is regarded as a sale to HP, or instead limited to the manufacture of those chips, its actions were clearly authorized under the provisions of the Intel '115 license, without limitation. The Intel license therefore does not qualify as the type of conditional transaction which would preclude application of the exhaustion doctrine. *See*, *e.g.*, *LG Elecs.*, 453 F.3d at 1370; *Minebea*, 444 F.Supp.2d at 157-60 (discussing *LG Elecs.*).

Turning to the relationship between Intel and HP, there is nothing

associated with the PA-8500 and PA-8600 transactions which in any way imposes upon HP a limitation or a condition upon its right to convey the patented technology to third-parties. While plaintiffs attempt to parlay provisions of the relevant agreements, including the Alliance Agreement, into such limitations, they simply do not impose the kind of conditions sufficient to restrict application of the patent exhaustion defense.

Illustrative of the type of conditional sale which renders the first sale doctrine inapplicable is the transaction involved in *LG Electronics*. 453 F.3d 1364. The license agreement at issue in that case, which authorized Intel to sell products that were subject to various LGE patents relating to personal computers, expressly provided that it did not permit purchasers to combine parts acquired from Intel, subject to LGE patents, with other, non-Intel components. *Id.* at 1368. The relevant agreement also required Intel, the licensee, to notify its customers of the limited scope of the rights conferred. *Id.* at 1370. Under those circumstances, the court concluded that the relevant sale was conditional, and the exhaustion doctrine therefore did not shield the defendant, an end-user, from claims that by combining Intel's licensed components with non-Intel parts it had infringed plaintiffs' combination patents. *Id.* In this instance, I find no basis to

conclude that Intel's license from CRF was similarly conditioned, or that there were any limitations imposed in connection with the Intel-HP transaction which would preclude applicability of the patent exhaustion doctrine.

Another contested issue surrounding applicability of the patent exhaustion defense to the facts of this case concerns whether the sale, if indeed there was one, by Intel to HP of the products containing the accused circuitry occurred under the United States patent laws. In order for a sale to be made subject to a United States patent, it must occur within the United States; the Federal Circuit has reinforced "that foreign sales cannot exhaust United States patent rights and that only an authorized and unrestricted sale occurring in the United States may exhaust a U.S. patent." *Minebea*, 444 F. Supp.2d at 139 (citing *Fuji Photo*, 394 F.3d at 1376 and *Jazz Photo*, 264 F.3d at 1105).

The determination of whether the conveyance of accused products to HP occurred under the laws of the United States, thereby exhausting any rights under the '115 patent, requires the court to analyze the particulars of the transaction in issue, an inherently fact-laden exercise. *See SEB, S.A. v. Montgomery Ward & Co., Inc.*, 412 F.Supp.2d 336, 340-43 (S.D.N.Y.

2006). That determination is potentially informed by various relevant factors, many of which have been urged by HP as indicative in this case of domestic sale, including where the relevant negotiations took place, the location where payment was made and, notably, the geographical point at which delivery was taken. *Id.*; *Minebea*, 444 F.Supp.2d at 137-52. In support of its position on this issue, HP points to the fact that purchase orders for the products in question were issued by HP out of Roseville, California, to Intel, addressed to Santa Clara, California. See Brydges Decl. (Dkt. No. 698) Exh. 14. Those purchase orders specified that shipment of finished product was to be made to HP at Roseville. *Id.* The invoices submitted by Intel to HP were directed to its Colorado Springs, Colorado offices, and stated that payment should be made to Intel at Pasadena, California, or through wire transfer to Citibank, in New York, on its behalf. *See id.* Exh. 15. These facts all appear to support the conclusion that transfer of the disputed chips from Intel to HP was subject to United States patent laws.

Plaintiffs argue that despite these facts, there is evidence in the record suggesting to the contrary. Speaking to an interrogatory posed by the plaintiffs and designed to probe its foreign sales contentions, HP

responded that the production fab and polyimide/bumping steps for the PA-8500 and PA-8600 processors were performed by Intel in either Ireland or the United States, and that the production fab associated with manufacture of the PA-8600 processors occurred exclusively in Ireland. *See* Court Exhibit 1 (Defendant Hewlett-Packard Company's Responses to Plaintiff's Cornell University and Cornell Research Foundation, Inc's. Interrogatories) at 7 (unnumbered); *see also* Fujiyama Decl. (Dkt. No. 719) Exh. E (Smith Dep.) at 31 ("It is my understanding that most of the Cuda wafers were fabricated in Ireland."). In the case of both the PA-8500 and PA-8600 processors, the chips were then forwarded to DTS for testing and sorting, a process occurring in the United States, and were then returned to Intel for dicing and picking. *See* Fujiyama Decl. (Dkt. No. 719) Exh. E, at 31-34. The manufacturing process was subsequently completed by IBM, which conducted both package assembly and package testing. *Id.* Those steps occurred exclusively in the United States, with regard to the PA-8500 processors, and in either the United States or Canada for purposes of the PA-8600 chips. *Id.* Accordingly, the evidence is equivocal as to whether the first two steps in the production process for the PA-8500 and PA-8600 processors were performed by Intel domestically, or instead offshore, as

plaintiffs now argue. And, while it is fairly apparent that the chips were returned to the United States for further processing prior to being conveyed to HP, the last step in the process for at least some of the finished product was performed in Canada.

It should be noted that according to the purchase order form typically issued by HP when ordering product, the processors fabricated by Intel were accepted by HP free-on-board ("FOB") Intel's place of shipment.[39] *See*, *e.g*, Brydges Decl. (Dkt. No. 698) Exh. 14, at 4 ¶¶ 3.5 & 10.3. Plaintiffs contend that this provision should be applied to shipments by Intel, following completion of the polyimide/bumping process, of certain of the chips from Ireland notwithstanding the fact that additional steps followed, including dice and pick, performed by Intel in the United States. Plaintiffs also again point out that the final step in the PA-8600 manufacturing process was performed by IBM in Canada, at least with respect to some of the chips, thus confounding the issue of where delivery of the accused products occurred.

To be sure, the fact that all or some of the completed wafers were to

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[39] The term "free-on-board" generally designates where legal title, and thus risk of loss, passes from seller to buyer. *See North American Philips Corp. v. American Vending Sales, Inc.*, 35 F.3d 1576, 1578 n. 2 (Fed. Cir. 1994) (citing Black's Law Dictionary 642 (6th ed. 1990) & Uniform Commercial Code § 2-319(1)).

be shipped to HP FOB a location outside of the United States would not necessarily be outcome determinative, since the term "FOB" addresses only the risk of loss in commercial transactions, and the fact that a product is sold FOB a particular location does not, in and of itself, determine that the sale occurred there, for purposes of the patent laws. *See SEB, S.A.*, 412 F. Supp.2d at 340-41 (collecting cases); *see also Semitool, Inc. v. Dynamic Micro Sys. Semiconductor Equip. GMBH*, No. C 01-01391, 2002 U.S. Dist. LEXIS 23050, at *15-*16 (N.D. Cal. Sept. 5, 2002). The locus of the transfer of title and risk of loss is, however, potentially germane to the issue of where the sale occurred. *See Minebea*, 444 F.Supp.2d at 139-42. Consequently, if plaintiffs were able to establish delivery by Intel of processors to HP FOB an offshore location, such circumstances could appropriately be considered by a reasonable factfinder as suggestive of a foreign sale.

This case is in some ways similar to the circumstances presented in *Minebea*. There, confronted with somewhat analogous facts, the court rejected a contention that because arrangements for the relevant transaction occurred in the United States, where the relevant orders were placed and accepted, and payment for the sales occurred, a domestic sale

had occurred. 444 F. Supp.2d at 139-40. Relying upon the fact that delivery of the allegedly infringing product was made FOB a location outside of the United States and, of critical significance, the product was in fact physically delivered abroad, the court concluded that a foreign sale had occurred, despite the conflicting indicia of a sale within the United States, and patent exhaustion therefore did not apply. *Id.* at 141-42.

The location of a sale offered in support of a patent exhaustion defense presents an issue of fact. *See Minebea*, 444 F. Supp.2d at 137-51; *see also SEB, S.A.*, 412 F. Supp.2d at 342. In this instance there is the evidence in the record suggesting that the delivery by Intel of all or some of the PA-8500 and PA-8600 processors in issue to HP could well have occurred outside of the United States. Bearing in mind that the burden of establishing patent exhaustion, as well as the lack of a genuinely disputed issue of material fact, rests with HP, *Broadcom*, 173 F.Supp.2d at 206 (citing, *inter alia*, *McCoy v. Mitsuboshi Cutlery, Inc.*, 67 F.3d 917, 920 (Fed. Cir. 1995) and *Anderson*, 477 U.S. at 256, 106 S. Ct. at 2514), I am unable to conclude that evidence to the contrary is so wholly lacking that, based upon the record now before the court, no reasonable factfinder could find, as did the court in *Minebea*, that the processors in issue were

delivered to HP outside of the United States, notwithstanding the many indicators that the transaction was in fact a domestic one. I therefore recommend a finding that an issue of fact exists as to whether, for purposes of HP's patent exhaustion defense, the sale in question – if there was one – occurred under the patent laws of the United States.

In defense of HP's motion, plaintiffs argue that while the device or apparatus claims contained within the '115 patent may properly be deemed to have been exhausted as a result of Intel's sale to HP, its method claims cannot. It is true that, as a general proposition, the unconditional sale of a device does not necessarily exhaust a patentee's rights in distinct though related method claims. *LG Elecs.*, 453 F.3d at 1370 (citing *Glass Equip. Dev., Inc. v. Besten, Inc.*, 174 F. 3d 1337, 1341 n.1 (Fed. Cir. 1999) and *Bandag*, 750 F. 2d at 924). The cases most generally cited for this proposition, and relied upon heavily by the plaintiffs, including principally *Bandag*, however, have uniformly involved the sale of unpatented articles with potentially non-infringing uses aside from practicing the method patent claims in issue.

Thus, for example, while *Bandag* is widely cited for the bold, uncategorical proposition that method patent claims cannot be the subject

of patent exhaustion, a careful reading of that case reveals that its applicability is limited to the particular circumstances presented, and that it is readily distinguishable from the instant case. *Bandag* involved a patent teaching a "[t]ire [r]ecapping [p]rocess," and consisting entirely of method claims. *Bandag*, 750 F.2d at 921-22. The issue presented was whether the authorized sale of equipment used to effectuate the process taught in the subject patent resulted in patent exhaustion. *Id.* at 922-24. Addressing the issue, the Federal Circuit concluded that the doctrine was inapplicable "because the claims of the . . . patent [in suit] are directed to a 'method of retreading' and cannot read on the equipment [the accused infringer] used in its cold process recapping." 750 F.2d at 924.

Glass Equipment, another case typically cited to support the proposition that method claims cannot be exhausted by the first sale of a device, is similarly distinguishable. 174 F.3d 1337. *Glass Equipment* involved a plaintiff which owned separate patents governing a device – "a spacer frame assembl[y]" for use in the manufacture of thermally insulated windows – and a separate patent teaching a method for manufacturing spacer frame assemblies utilizing a linear extruding machine. *Id.* at 1339. The issue presented in that case was whether the authorized sale by a

licensee of the patent holder of hinged corner keys, an element of the apparatus patent combination claims but not independently claimed, exhausted the method patent claims. *Id.* at 1339-42 & n.1. The court concluded that patent exhaustion was inapplicable since the corner keys alleged to have formed the basis of the first sale defense were not themselves patented, but instead "merely embodiments of an unpatented element of the [apparatus] patent claims", and thus did not affect the separate method patent claims. *Id.* at 1342 n. 1. That case, then, is readily distinguishable from the facts now presented, involving closely aligned method claims and apparatus claims, contained within a single patent, where the patented device has been the subject of an authorized first sale.

This distinction is aptly illustrated by consideration of the court's decision in *Storage Technology Corp.* 2006 WL1766434. The plaintiff in that action was engaged in the manufacture of automated libraries, or "silos", designed to store large quantities of data on tape cartridges. *Id.*, at *1. In connection with that business, the plaintiff held a patent teaching a method for calibrating a robot arm, one of the components of its typical library storage unit. *Id.*, at *16. In its complaint, plaintiff alleged that

defendant Custom Hardware, engaged in the business of repairing automated libraries, including those manufactured by the plaintiff, infringed its method claim. *Id.* Addressing the defense of patent exhaustion, the court concluded that it was inapplicable since the articles involved in the first authorized sale were libraries, and thus "merely embodiments" of the method patent at issue, making the defense unavailable under the reasoning articulated in *Bandag* and *Glass Equipment*. *Id.*

The teaching of *Bandag* and *Glass Equipment*, as well as similar cases addressing exhaustion of method patent claims when applied to the circumstances of this case, is limited to the principle that had CRF's apparatus and method claims been contained within two separate patents, an authorized sale of a device under the apparatus patent would not necessarily exhaust CRF's rights under the separate method patent. *LG Electronics*, 2002 WL 31996860, at *10 ("the court, in [*Bandag* and *Glass Equipment*], held that the sale of a device, whether patented or unpatented, could not exhaust the patentee's rights under a separate patent teaching a method of accomplishing a specific function.") To the extent that this statement can be extended, as plaintiffs now suggest, and interpreted to apply to a single patent consisting of wholly related

apparatus and method claims, there is no support for that proposition under Federal Circuit law, and, as HP argues, adoption of such a position could lead to absurd and potentially harsh results, as this case well-illustrates.

The method claims and apparatus claims set forth in the '115 patent are inextricably intertwined. This fact is evidenced, for example, in plaintiffs' response to interrogatories wherein they stated their contention "that the infringement resides not only in the components of the processors themselves, but in the method carried out by the processors in issuing instructions." Brydges Decl. (Dkt. No. 698) Exh. 3, at 3 (Supp. Response to Interrogatory No. 1). Plaintiffs have additionally noted their contention that the accused processors always by definition infringe the method claims when "used or operated for their intended purpose." Fujiyama Decl. (Dkt. No. 720) Exh. T (Expert Report of James Smith) at 88.

Under the circumstances presented it would be unseemly to permit CRF, as the patentee, to license Intel to manufacture processors and then sue purchasers of those processors for infringement of the method claims contained within the '115 patent. So too would it be manifestly unfair to conclude that first sale in the United States by Intel, as an unconditional

licensee, of a processor does not exhaust the method claims set forth in the '115 patent. As the Federal Circuit has noted – albeit in the context of implied license though equally applicable to patent exhaustion – when a patent holder has authorized sale of an article which is subject to apparatus patent claims and capable of use only in practicing method claims in the patent, that party has relinquished its patent monopoly with respect to the sale of that article. *Hewlett Packard Co. v. Repeat-O-Type Stencil Mfg. Corp., Inc.*, 123 F.3d 1445, 1451-52 (Fed. Cir. 1997) (citing, *inter alia*, *United States v. Univis Lens Co.*, 316 U.S. 241, 249, 62 S. Ct. 1088, 1093 (1942)). I therefore recommend rejection of plaintiffs' argument that patent exhaustion is unavailable as a defense in this case in light of the inclusion of method claims in the '115 patent.

The lynchpin issue presented, in connection with HP's patent exhaustion defense, is whether the transaction under which HP acquired PA-8500 and PA-8600 processors from Intel can fairly be characterized as a sale. In its motion, HP contends that the relationship between the two companies has all of the trappings of a seller and buyer configuration. Alternatively, HP asserts that the association between the two companies is best described as a foundry arrangement, typical of affiliations prevalent

within the semiconductor industry. Viewed in that context, HP maintains, Intel's actions in acting as a licensed foundry providing manufacturing capacity and related services to HP, an unlicensed party, were both permitted under the Intel agreement and gave rise to a first sale for patent exhaustion purposes.

Plaintiffs respond principally by citing excerpts of the relevant documents governing the HP-Intel relationship, suggesting that the two entered into a foundry agreement under which HP acquired only manufacturing capacity from Intel, acting as the manufacturer and retaining title to the PA-8500 and PA-8600 processors at all relevant times. Under Cornell's theory, no sale of potentially infringing processors occurred under Intel's license to the '115 patent, therefore precluding application of the first sale doctrine.

Although under its most conventional model the patent exhaustion defense has applicability in a case which involves an authorized "first sale" by a licensee to an unlicensed third-party, its reach is more expansive, covering any authorized transaction, regardless of how it is structured, where "it may fairly be said that the patentee has received his reward for the use of the article." *Masonite Corp.*, 316 U.S. at 277-78, 62 S. Ct. at

1077 (citations omitted). The rule has been extended, for example, to apply in certain situations that have been denominated as "foundry cases", involving one of two circumstances common within the industry, whereby either 1) an unlicensed third-party provides designs to a licensee and requests that the authorized party utilize its rights to make and to sell the product to the unlicensed third-party, who then resells the product to its customers; or, alternatively, 2) a licensee provides designs to an unlicensed third-party and, utilizing its right to "have [products] made", requests that the unlicensed third-party make and sell the products for it. *See generally Cyrix v. Intel Corp.*, 77 F. 3d 1381, 1387-88 (Fed. Cir. 1996) ("*Cyrix II*"); *ULSI*, 995 F.2d at 1567; *Broadcom*, 173 F. Supp. 2d at 229-32. In either of these instances, absent a contrary restriction imposed by the patentee under its agreement with the licensed party – a situation not presented in the instant case – it is well established that because the products were made and sold by a licensed party, the licensor/patent owner cannot sue the third party for infringement. *Broadcom*, 173 F. Supp.2d at 229 (citing *Cyrix II*, 77 F.3d at 1387 & *ULSI*, 995 F.2d at 1570).

A critical factor in the controlling foundry patent exhaustion cases, including those offered by HP, is a finding that the product in suit was

"made and sold" by the foundry, in most instances the licensed entity, to the alleged infringer. *See*, *e.g.*, *Cyrix II*, 77 F.3d at 1385 ("We agree with the district court that IBM acted within the scope of the IBM-Intel agreement when it *made and sold* to Cyrix products designed by Cyrix.") (emphasis added); *Cyrix Corp. v. Intel Corp.*, 803 F. Supp. 1200, 1204 (E.D. Tex. 1992) ("*Cyrix I*") ("Custom product manufacturing, which today is known as "foundry" work, refers to arrangements in which a semiconductor company *makes and sells* to its customers integrated circuit products, the designs for which were developed or owned by the customers.") (emphasis added); *see also Broadcom*, 173 F. Supp.2d at 232 ("in each of [the foundry] cases, the unlicensed reseller was shielded from liability because they [sic] *purchased* the allegedly infringing product from the licensee under the doctrine of patent exhaustion.") (emphasis added).

The principles governing application of the sale requirement to cases implicating patent exhaustion were illuminated by Federal Circuit Judge Plager in his dissent in *ULSI.* 995 F.2d at 1571 (Plager, J., dissenting). As Judge Plager noted, if the foundry arrangement results in retention by the unlicensed party of title to the potentially infringing product, and the authorized licensee's role is limited to providing manufacturing capacity,

then the transfer of product from the licensee to the alleged infringer is not a sale, and thus cannot result in patent exhaustion.[40] 995 F.2d at 1571.

In this instance, careful review of the relevant documents shaping the relationship between HP and licensed party Intel are at best equivocal on the issue of whether Intel's role was that of seller, or instead merely that of a supplier of manufacturing services. HP's characterization of the relevant transactions as sales draws some support from the record. Generally speaking, the agreements governing the parties' venture contemplate the manufacture by Intel of wafers, based upon forecasts provided by HP. Brydges Decl. (Dkt. No. 698) Exh. 9 (Smith Dep.) at 5-6; *id.* Exh. 10 (Mann Dep.) at 5-12, 16-17; *see also* Brydges Decl. (Dkt. No. 698) Exhs. 11-13. Intel's manufacture of the processors was triggered by HP's issuance of purchase orders. Brydges Decl. (Dkt. No. 698) Exh. 9 (Smith Dep.) at 3-4; *see also* Brydges Decl. (Dkt. No. 698) Exh. 14 (Sample Purchase Orders). Under the Guidelines, Intel was mandated to keep HP apprised as to

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[40] Addressing circumstances strikingly similar to those at bar, Judge Plager went on to analyze the relationship in that case between HP and ULSI, rejecting the majority's interpretation of the controlling documents as delineating a sale and concluding that "HP basically sold its fabrication services and not the [disputed] chip with the allegedly infringing invention" and, consequently, the sale by the unlicensed ULSI was not protected under the first sale doctrine. *ULSI*, 995 F.2d at 1575 (Plager, J. dissenting).

delivery status, and to render five invoices monthly, one to reflect wafer starts and the other four to account for weekly die shipments. *Id.* Exh. 11, at 3 § 3.4; *see also* Brydges Decl. (Dkt. No. 698) Exh. 15 (Sample Intel Invoices) & Exhs. 16 and 17 (Summary of Payments to Intel).

On the other hand, there exists evidence in the record from which a reasonable factfinder could conclude that HP was purchasing mere manufacturing capacity, and at all times retained title to the chips being fabricated by Intel, notwithstanding the issuance of purchase orders and invoices. The PA-8500 and PA-8600 processors were manufactured by Intel under the guaranteed allocation provisions of the parties' Alliance Agreement. Fujiyama Decl. (Dkt. No. 719) Exh. E, at 71-72, 101, 109. Section 1.37 of the Alliance Agreement, which affixes a definition of the term "Guaranteed Allocation", reflects that as utilized in the agreement, including in Article 5, it "shall mean the process wherein Intel provides wafer manufacturing capacity to HP[.]" Brydges Decl. (Dkt. No. 698) Exh. 12, at 11 § 1.37. The term "Manufactured by HP" is defined under the Alliance Agreement to "mean [a chip] manufactured in an HP fab, manufactured under Guaranteed Allocation for HP in an Intel fab or manufactured by a third party for HP under Blind Have Made Rights." *Id.*

at 14 § 1.54. Speaking to the purchase of guaranteed allocation, section 5.2 of the Alliance Agreement provides that "[f]or each process technology generation where HP chooses the Guaranteed Allocation arrangement, Intel will provide wafer manufacturing capacity for HP and HP will pay its share of costs[.]" *Id.* at 68 § 5.2. That agreement also affords HP the right to use its guaranteed allocation provision for PA-RISC ISA products, *id.* at 76 § 5.5.2, and prescribes HP's use of purchase orders to exercise its right to guaranteed manufacturing allocation, *id.* at 70 § 5.2.6.2.

Similar terms are also included in an Alliance Agreement Extension entered into between HP and Intel in November of 2000. *See* Fujiyama Decl. (Dkt. No. 719) Exh. D. Significantly, that extension agreement limits the number of wafers that may be manufactured by HP, utilizing Intel's facilities under the guaranteed allocation provisions of the parties' agreements.[41] Fujiyama Decl. (Dkt. No. 719) Exh. D § 1.139.

During his deposition Perry McCoy Smith, an Intel employee who was personally involved in the Intel/HP business relationship, testified that "[t]he alliance agreement provided HP with an ability to manufacture products in Intel manufacturing facilities, and [to his belief] that the

[41] It is unclear whether any of the PA-8500 or PA-8600 processors were manufactured by Intel under that extension agreement. *See id.* Exh. E, at 121.

manufacture of Cuda and Land Shark [PA-8500 and PA-8600] were [sic] pursuant to those rights." Fujiyama Decl. (Dkt. No. 719) Exh. E, at 60; *see also id.* at 8, 11, 19. That Intel witness went on to state that "[g]uaranteed allocation as described in article five gave HP the right to manufacture products in Intel manufacturing facilities", *id.* at 70, and that the purchase provisions of Article 6 of the Alliance Agreement were not applied to the manufacture of the PA-8500 and PA-8600 processors, Fujiyama Decl. (Dkt. No. 719) Exh. E, at 85-86.[42]

In sum, while the relationship between HP and Intel appears to mirror a foundry agreement typical of those within the industry, and has many of the attributes of a seller-purchaser arrangement, there is evidence in the record from which a reasonable factfinder could conclude that all that was provided by Intel to HP was manufacturing capacity, and that there was no sale of processors by Intel to HP, as distinct from the use by HP of Intel's facilities, sufficient to give rise to a finding of patent exhaustion. *Compare ULSI*, 995 F.2d at 1568-69.

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[42] This latter fact was confirmed by the testimony of an HP witness offered pursuant to Rule 30(b)(6) of the Federal Rules of Civil Procedure, to the effect that section 6 of the 1995 Alliance Agreement, which governed "Purchasing", does not itself reflect the intent that it be applied to Intel's manufacture of PA-8000 processors. Fujiyama Decl. (Dkt. No. 719) Exh. C (Frederick Mann Dep.) at 89.

Before leaving the issue of patent exhaustion, I feel compelled to address one final argument raised by the plaintiffs. In exchange for a royalty which, while not wholly insignificant, plaintiffs undoubtedly will find unsatisfactory if the agreement is ultimately construed to authorize the sale by HP of all of its potentially infringing PA-8500 and PA-8600 processors, plaintiff CRF entered into a license with Intel under the '115 patent. That license broadly conferred upon Intel the unconditional right to utilize plaintiffs' patented technology, including by manufacturing and selling products containing the patented invention. In an effort to resist application of the patent exhaustion defense, plaintiffs now argue that the consideration which it accepted under the agreement is inadequate in view of Intel's sale of otherwise infringing processors to HP, contending that this is an element which the court must consider in deciding whether to apply the doctrine to the particulars of this case.

While the adequacy of consideration may be a factor to be considered when determining whether to find the existence of an implied license, *see Wang Labs., Inc. v. Mitsubishi Electronics America, Inc.*, Nos. CV 92-4698, CV 2-3891, 1995 WL 491434, at *2-*3 (C.D. Cal. 1995), since an implied license is a creature of equity and not the result of meaningful

negotiations, it is not an element of the patent exhaustion defense. *See ULSI*, 995 F.2d at 1569. In hindsight, CRF may well be disappointed at having entered into the 1997 agreement in light of Intel's role in the manufacture of large numbers of accused HP processors. Despite those regrets, "it nevertheless granted [the licensee] that right . . . presumably for consideration it believed to be of value at that time. It cannot now renege on that grant to avoid its consequences." *Id.* I therefore recommend rejection of this final argument, centering upon the alleged inadequacy of CRF's negotiated license royalty, as a basis for plaintiffs' avoidance of the patent exhaustion defense.

In sum, I close this portion of my report by noting that while acting well within the terms of its license from CRF, Intel manufactured for HP products containing circuitry which, plaintiffs maintain, infringed the '115 patent. The question of whether Intel's actions exhausted all rights to the '115 patent turns upon whether that transaction is properly regarded as a sale, and if so, whether it occurred under the patent laws of the United States. These are questions which in this case cannot be resolved on motion for summary judgment, since they entail resolution of genuinely disputed issues of material fact. Consequently, I recommend against the

entry of partial summary judgment in HP's favor on the question of whether the PA-8500 and PA-8600 processors manufactured by Intel for HP, together with any peripheral equipment sold by HP in which those processors were included, should be excluded from consideration in the event of a finding of infringement.

G. Royalty Base

One of defendant's pending partial summary judgment motions is addressed to plaintiffs' claim for damages. HP contends that in the event of a finding of infringement, Cornell's damages should be limited to those associated with the instruction issuing system contained within its PA-8000 processors, and the court should find, as a matter of law, that plaintiffs are not entitled to expand their claim for damages based upon HP's sales of processors within which the accused technology can be found, and further to encompass revenues associated with its marketing of servers and workstations containing those processors.

The statute governing awards of damages in patent cases provides, in pertinent part, that

> [u]pon 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

interests and costs as fixed by the court.

35 U.S.C. § 284. As its text itself discloses, in a case of proven infringement section 284 entitles a patentee to recover the greater of either its lost profits resulting from the infringement or a reasonable royalty associated with the infringer's use of the patented invention, thereby establishing a reasonable royalty as the "floor below which damage awards may not fall." *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538, 1544 (Fed. Cir. 1995); *see also Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1361 (Fed. Cir. 2001); *Izumi Prods. Co. v Koninklijke Philips Elecs. N.V.*, 315 F.Supp.2d 589, 613 (D. Del. 2004). With its dual focus and guaranteed minimum recovery, section 284 was designed to "ensure that the patent owner would in fact receive full compensation for 'any damages' [suffered by the patentee] as a result of the infringement." *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 654-55, 103 S. Ct. 2058, 2062 (1983).

Speaking to the methodology to be employed when calculating damages under section 284, the Federal Circuit has observed that there is no rigid, preferred damage analysis embodiment; instead, determination of the manner in which an award should be made to a patent holder as fair compensation for proven infringement is a matter relegated to the sound

discretion of the trial court, provided that the chosen measure "is just and reasonable." *Kori Corp. v Wilco Marsh Buggies & Draglines, Inc.*, 761 F.2d 649, 653-54 (Fed. Cir.), *cert. denied*, 474 U.S. 902, 106 S.Ct. 230 (1985); *TWM Mfg. Co., Inc. v. Dura Corp.*, 789 F.2d 895, 898 (Fed. Cir. 1986). While the burden of proving damages rests with the patent holder, that burden is "not absolute, but rather one of reasonable probability." *Kori*, 761 F.2d at 653 (citing *Lam, Inc. v. Johns-Manville Corp.*, 718 F.2d 1056, 1065 (Fed. Cir. 1983)); *Telemac Corp. v. US/Intelicom, Inc.*, 185 F.Supp.2d 1084, 1099 (N.D. Cal. 2001).

Plaintiffs, who by all accounts are not engaged in the manufacture of computer hardware, and thus do not directly compete with HP, seek to recover damages in this action based upon a reasonable royalty theory, and do not request an award of lost profits above that statutorily specified minimum. A reasonable royalty represents the amount that a person desiring to manufacture, use or sell a patented article would be willing to pay to do so in the market at a reasonable profit. *Trans-World Mfg. Corp. v. Al Nyman & Sons, Inc.*, 750 F.2d 1552, 1568 (Fed. Cir. 1984). The term thus denotes little more than an informed prediction as to the results of an imaginary, arms length negotiation between a willing patentee and the

infringer at the time of commencement of the infringing activity, undertaken on the assumption that the patent in issue is valid and would be infringed, absent a license. *Interactive Pictures Corp. v. Infinite Pictures, Inc.*, 274 F.3d 1371, 1384-85 (Fed. Cir. 2001); *see also Radio Steel & Mfg. Co. v. MTD Prods., Inc.*, 788 F.2d 1554, 1557 (Fed. Cir. 1986) ("the determination of a reasonably [sic] royalty . . . is based . . . on the royalty to which a willing licensor and a willing licensee would have agreed at the time the infringement began.") (citation omitted).

Undeniably, the reasonable royalty damage theory is significantly subjective, and admits to no small measure of uncertainty. *Fromson v. Western Litho Plate & Supply Co.*, 853 F.2d 1568, 1575 (Fed. Cir. 1988). As the Federal Circuit has noted,

> [t]he [reasonable royalty] 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.

Id. (footnote omitted).

Because by definition a reasonable royalty calculation is not

grounded in reality, but is instead a fiction which must draw upon assumptions and educated guesswork, and a precise reasonable royalty is rarely apparent, its determination of necessity must be informed by a variety of factors, all or some of which may prove useful in any particular case helping to pinpoint inferentially the terms upon which the parties to the supposed license talks would have settled. Over the years, many courts have looked to the district court's decision in *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970), *modified and aff'd sub nom.*, *Georgia-Pacific Corp. v. United States Plywood-Champion Papers, Inc.*, 446 F.2d 295 (2d Cir.), *cert. denied*, 404 U.S. 870, 92 S. Ct. 105 (1971), for guidance regarding the factors to be considered in calculating a reasonable royalty. *See*, *e.g.*, *Parental Guide of Texas, Inc. v. Thomson, Inc.*, 446 F.3d 1265, 1270 (Fed. Cir. 2006); *Unisplay, S.A. v. American Electronic Sign Co., Inc.*, 69 F.3d 512, 517 n.7 (Fed. Cir. 1995); *see also H.B. Fuller Co. v. National Starch & Chem. Corp.*, 689 F. Supp. 923, 946 (D.Minn. 1988). Although this list is by no means exhaustive, among the factors generally cited as relevant under *Georgia-Pacific* are royalties received under license agreements related to the patent in suit; royalty rates for comparable technology; the relationship

between the patent holder and infringer, including whether they directly compete; the value of the invention as a generator of derivative or convoyed sales; the duration of the patent; the profitability of the product made under the patent, including its commercial success and popularity; advantages of the patented invention over existing products; and the extent the infringer has made use of the invention. *Georgia-Pacific*, 318 F.Supp. at 1120. When considering these and any other relevant factors in order to affix a reasonable royalty, triers of fact are often properly aided by opinion testimony of experts in the appropriate field. 35 U.S.C. § 284; *see*, *e.g.*, *Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1079-80 (Fed. Cir. 1983); *see also Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1109 (Fed. Cir. 1996) ("[To arrive at fair compensation] the fact finder may consider additional factors [which] . . . include royalties received by the patentee for the licensing of the patent in suit, opinion testimony of qualified experts, the patentee's relationship with the infringer, and other factors that might warrant higher damages.").

When awarding damages based upon a reasonable royalty construct, the court must ensure that the amount conferred provides adequate compensation to the patentee for the infringement proven. *Maxwell*, 86

F.3d at 1109; *H.M. Stickle v. Heublein, Inc.*, 716 F.2d 1550, 1562 (Fed. Cir. 1983) (citing *Georgia-Pacific*, 318 F. Supp. at 1127); *see also TWM Mfg.*, 789 F.2d at 899 ("Section 284 does not mandate how the district court must compute [a reasonable royalty], only that the figure compensate for the infringement.") (citation omitted). The determination of damages based upon a reasonable royalty model presents an issue for the factfinder, to be decided based upon the entirety of the evidence presented. *Unisplay,* 69 F.3d at 517; *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 926 F.2d 1161, 1168 (Fed. Cir. 1991).

Central to the reasonable royalty calculation are two factors – the royalty base, consisting of the product sales which would be subject to the reasonable royalty, and the royalty rate to be applied to that base. Once these have been quantified, the amount of a reasonable royalty is then computed by multiplying the two factors together. *Fototec Intern. Corp. v. Polaroid Corp.*, No. CIV A. 1:94-CV-821, 1996 WL 263651, at *5 (N.D. Ga. Feb. 21, 1996). The focus of HP's motion is upon the first of those elements, and its contention that plaintiffs have improperly expanded the royalty base to be applied well beyond its permissible boundaries.

"When determining damages based on reasonable royalties, the

royalty base normally includes only the alleged infringing product. Non-patented products can be included in the royalty base only in limited circumstances." *Fototec*, 1996 WL 263651, at *5 (citing *TWM Mfg.*, 789 F.2d at 901 and *Trans-World Mfg.*, 750 F.2d at 1568). Accordingly, "[w]here the infringing device is one of many components of a machine manufactured and sold by an infringer, in order to assess damages, the value of the machine must be apportioned between the infringing and non-infringing components." John G. Mills, III, *et al.*, Patent Law Basics § 18:3 at 18-4 (West 2003) (citing *Hughes Tool Co. v. G.W. Murphy Indus., Inc.*, 491 F.2d 923, 928-29 (5th Cir. 1974)).

A review of their damage expert reports discloses that the plaintiffs propose inclusion into the royalty base to be applied of not only all revenues associated with the sales of HP's PA-8000 processors, without apportionment to cover only the accused circuitry, but additionally any profits realized from the vending of servers and workstations in which allegedly infringing technology is found. In its motion, HP argues that plaintiffs are not entitled to extend the royalty base in this case beyond the infringing circuitry, and in no event past the PA-8000 processors in which the circuitry is located.

Plaintiffs' royalty base calculation implicates a theory which has been labeled as the "entire market value rule", and finds its roots in several Federal Circuit cases, including *Rite-Hite* as well as several earlier decisions from that court. *See*, *e.g.*, *State Indus., Inc. v. Mor-Flo Indus., Inc.*, 883 F.2d 1573, 1579-81 (Fed. Cir. 1989), *cert. denied*, 485 U.S. 1022, 110 S. Ct. 725 (1990). That rule permits a patentee, under certain circumstances, to recover reasonable royalties based upon inclusion into the royalty base of products which do not themselves infringe. The rationale for the rule is tied to the underpinnings of the reasonable royalty theory of damages, teaching that "[w]here a hypothetical licensee would have anticipated an increase in sales of collateral unpatented items because of the patented device, the patentee should be compensated accordingly." *TWM Mfg.*, 789 F.2d at 901 (citation omitted).

In the most typical setting, the entire market value rule permits "the recovery of damages based on the value of an entire apparatus containing several features, even though only one feature is patented." *Paper Converting Mach. Co. v. Magna-Graphics Corp.*, 745 F. 2d 11, 22 (Fed. Cir. 1984); *see also Fonar Corp. v. General Electric Co.*, 107 F. 3d 1543. 1552 (Fed. Cir. 1997) (citing *Paper Converting*); *Rite-Hite*, 56 F.3d at 1549-

50 (Entire market value rule allows for inclusion in the royalty base of "unpatented components of a device when the unpatented and patented components are physically part of the same machine.") (citations omitted). The rule has been extended, however, to apply in various other situations. *See Rite-Hite*, 56 F.3d at 1550 (citing examples).

A review of the many Federal Circuit cases decided under the entire market value rubric discloses the emergence of two separate though inter-related iterations of the rule, one of which focuses upon the relationship between the patented feature and the unpatented components together with which it is sold, with the second concentrating on the importance of the patented feature in creating customer demand for the larger product. *See Bose*, 274 F.3d at 1361; *Heidelberger Druckmaschinen AG v Hantscho Commercial Prods., Inc.*, No. 87 Civ. 4522, 1995 WL 693170, at *2 (S.D.N.Y. Nov. 22, 1995). Under the first prong, which is referred to on occasion as the "single functioning unit test", invocation of the entire market value rule is appropriate "in situations in which the patented and unpatented components [are] analogous to a single functioning unit." *Juicy Whip, Inc. v. Orange Bang, Inc.*, 382 F.3d 1367, 1371 (Fed. Cir. 2004); *Bose*, 274 F.3d at 1361; *Rite-Hite*, 56 F.3d at 1550. The Federal Circuit

has characterized the outer boundaries of this rule as requiring a showing, for purposes determining its applicability, "that the unpatented components must function together with the patented component in some manner so as to produce a desired end product or result." *Rite-Hite*, 56 F.3d at 1550. As that court has since clarified,

> [t]he entire market value rule is appropriate where both the patented and unpatented components together are "analogous to components of a single assembly," "parts of a complete machine," or "constitute a functional unit," but not where the unpatented components "have essentially no functional relationship to the patented invention and . . . may have been sold with an infringing device only as a matter of convenience or business advantage."

Tec Air, Inc. v. Denso Mfg. Michigan Inc., 192 F.3d 1353, 1362 (Fed. Cir. 1999) (quoting *Rite-Hite*, 56 F.3d at 1550).

Cases which have addressed the second prong of the test reflect that application of the entire market value rule is also appropriate when a patented component has provided impetus for customer demand for a larger product in which it is included. *Fonar Corp.*, 107 F.3d at 1552 (The entire market rule is properly applied "when the patented feature is the basis for customer demand for the entire machine."); *Heidelberger Druckmaschinen AG*, 1995 WL 693170, at *2 (The rule applies "when the

patented component is the basis for the demand of an apparatus containing several features[.]") (citations omitted); *see also Imonex Servs., Inc. v. W.H. Munzprufer Dietmar Trenner GMBH*, 408 F.3d 1374, 1380-81 (Fed. Cir. 2005); *Bose*, 274 F.3d at 1360; *Rite-Hite*, 56 F.3d at 1549.

Establishing the requisite linkage between customer demand for an infringer's accused product and the sale of other, non-infringing components can be accomplished in a variety of ways, one of which focuses on the infringer's conduct. Thus, for example, "[i]f the infringer's materials emphasize the value of the patented feature, then such emphasis serves as evidence that the feature is responsible for the customer demand." *Izumi Prods.*, 315 F.Supp.2d at 614 (citing *Fonar*, 107 F.3d at 1552-53); *see also Kori*, 761 F.2d at 656 (citing *Leesona Corp. v. United States*, 599 F.2d 958, 974 (Ct. Cl. 1979)).

Like any other issue, the applicability *vel non* of the entire market value rule to a case is a matter which, in appropriate circumstances, can be disposed of on motion for summary judgment. *See*, *e.g.*, *Volovik v. Bayer Corp.*, No. Civ. 01-1426, 2004 WL 51317, at *10-*11 (D. Minn. Jan. 7, 2004); *Fototec Intern. Corp. v. Polaroid Corp.*, 1996 WL 263651, at *5-*6. In *Izumi Products*, for example, the court entered summary judgment

rejecting the patentee's arguments in favor of application of the entire market value rule, finding the record to be completely devoid of any evidence suggesting that the patent holder, which in that case directly competed with the alleged infringer, had marketed or in any way promoted the patented component to its consumers within the United States and finding, to the contrary, that the patentee had "successfully marketed a variety of other features[.]" 315 F.Supp.2d at 614-15; *cf. Imonex Servs.*, 408 F.3d at 1380 (In the absence of any evidence that the patented coin selectors served as a basis of customer demand for laundry washing machines in which they were installed, "the trial court properly foreclosed further evidence on this unsupported [entire market value rule] theory.").

HP asserts several arguments in support of its contention that the entire market value rule would be inappropriately applied in the current setting. HP first argues that to avail themselves of this precept plaintiffs must establish that they sell servers and workstations or, at a minimum, that they have licensed such products in the past. HP also contends no reasonable factfinder could conclude that its servers and workstations perform together with the accused processor circuitry as a single functional unit, or that the accused technology is the basis for customer demand for

HP's servers and workstations.

The first of HP's arguments is readily disposed of. It is well established that to recover damages for patent infringements a patentee need not practice the patent. *King Instrums. Corp. v. Perego*, 65 F.3d 941, 947-52 (Fed. Cir. 1995); *Rite-Hite,* 56 F.3d at 1546, 35 U.S.P.Q.2d 1065; *see also Fromson*, 853 F.3d at 1574-76.[43] There does not appear to be any sound reason why this general rule should not apply with equal force to a patentee seeking to recover reasonable royalties under an entire market value theory, nor have I been able to find any cases which impose such a limitation.

The only support offered by HP for the proposition which it now advances consists of cases which are readily distinguishable. *Rite-Hite*, the case principally relied upon by HP in making this argument, for example, examined applicability of the entire market value rule in the context of a claim for lost profits; in such circumstances, there is case

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[43] As HP correctly notes in its reply memorandum, Dkt. No. 756, at 5, *Fromson* has been overruled by the Federal Circuit. *See Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.,* 383 F.3d 1337 (Fed. Cir. 2004). HP overstates the significance of this fact, however, since the principle for which *Fromson* was overruled relates to findings of willfulness and the inference to be drawn from a party's failure to disclose attorney opinions regarding claims of infringement. *See id.* Nothing in the Federal Circuit's decision in *Knorr-Bremse* in any way casts doubt upon the other portions of *Fromson*, including notably those speaking to calculation of a reasonable royalty.

support suggesting that the patentee must be positioned to have made the sales for which lost profits are sought.[44] 56 F.3d at 1550 (discussing, *inter alia*, *Paper Converting*, 745 F.2d at 23). Simply stated, while HP urges recognition of a condition that the patentee must practice the patent in suit as a predicate for recovering damages under the entire market value rule in a reasonable royalty setting, this contention finds no support in Federal Circuit jurisprudence.

Just as there are no cases holding that to recover reasonable royalties utilizing an entire market value rule theory a patentee must practice the patent, there similarly are no cases requiring a threshold showing that the patentee has licensed the patent in such a way as to include the relevant products in order to benefit from the rule. In this regard, however, I reject plaintiffs' assertion that the question of whether it has ever licensed, or attempted to license, servers or workstations in the past under the '115 patent is irrelevant to the reasonable royalty inquiry. When judging the probative value of such evidence, the court must be mindful of the fact that the focus of the reasonable royalty analysis is upon the likely result of hypothetical negotiations between CRF, as a willing

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[44] The entire market value rule applies to both lost profits and damages calculated under a reasonable royalty theory. *See Rite-Hite*, 56 F.3d at 1549.

patent holder, and HP, as a licensee. *See Hanson*, 718 F.2d at 1078. The issue, then, is whether plaintiffs could reasonably have anticipated entering into a license with HP at the outset of HP's PA-8000 marketing activities under which it would realize the revenues it now seeks to recover in damages. *See TWM Mfg.*, 789 F.2d at 900-01. One of the ways in which a patentee can establish that it would have realized the revenue which it seeks under the entire market value rubric is by demonstrating that in the past, it has licensed the patent based upon inclusion of the value of unpatented components. *See*, *e.g.*, *Additive Controls & Measurement Sys. Inc. v. Flowdata Inc.*, 29 U.S.P.Q.2d 1890, 1896 (S.D. Tex. 1993); *H.B. Fuller*, 689 F. Supp. at 948. Accordingly, the question of whether CRF has licensed, or offered to license, other entities to the '115 patent based upon the sales of servers and workstations is plainly probative of whether it would have insisted on doing so in hypothetical negotiations with HP. *H.B. Fuller*, 689 F.Supp. at 949-50.

Despite what one might anticipate in the case of a patent such as the '115, particularly by a patentee which does not itself practice the patent, there is a relative dearth of information in the record addressing CRF's efforts to license others to the patent. The only license explicitly entered

into by CRF under the '115 patent, and offered by HP as an appropriate benchmark, was with Intel. *See* Brydges Decl. (Dkt. No. 707) Exh. 15. At one point during the negotiations leading to that agreement, plaintiffs' representatives proposed basing the royalty to be paid on Intel's sale of chips. *See*, *e.g.*, *id.* Exh. 18 (Haeussler Dep.) at 2-3 (10/22/03), 10 (5/17/06). The license which resulted from those discussions, however, does not specifically reference servers or workstations or otherwise address complete computer systems, but is instead a fully paid up license that did not apply a royalty to a particular royalty base. *Id.* Exh. 15. That Intel agreement is at best equivocal on the issue, since it simply confers upon Intel a license "to make, have made, use, import, offer to sell and sell, or otherwise distribute, directly or indirectly, any products covered by [the '115]".[45] Brydges Decl. (Dkt. No. 707) Exh. 15, at 1. The license does not go on to define or otherwise elaborate as to the products which may be deemed to be covered by the '115 patent. The Intel license agreement thus does not support HP's contention that the appropriate royalty base

[45] It should be noted that "[a] single licensing agreement, without more, is insufficient proof of an established royalty." *Trell v. Marlee Electronics Corp.*, 912 F.2d 1443, 1446 (Fed. Cir. 1990). Even when such a single license agreement is augmented by additional offers to license, a royalty is not necessarily established based upon such evidence. *Hanson*, 718 F.2d at 1078-79.

should be limited to processors, since it is not so limited but instead extends to "any products covered by Licensed Patents." Brydges Decl. (Dkt. No. 707) Exh. 15, at 1.

There is other evidence in the record from which a reasonable factfinder could conclude that in the context of a hypothetical negotiation, CRF and HP would have included servers and workstations within the scope of a resulting license agreement. The record tends to establish, for example, that servers and workstations were discussed during license negotiations between HP and Cornell as a basis for calculating royalties.[46] *See*, *e.g.*, Fujiyama Decl. (Dkt. No. 736) Exh. I (Deposition of CRF President James A. Severson) at 105-06. Additionally, the record discloses that HP has in the past agreed to pay royalties for access to processor patents, based upon the sale of complete systems. *See id.* Exh. C (MMP License Agreement). From these, a reasonable factfinder could conclude that servers and workstations would have been included in a royalty base resulting from hypothetical negotiations between plaintiffs and a willing licensee standing in the shoes of HP.

In sum, the fact that plaintiffs do not practice the patent in suit, nor

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[46] This evidence is among that which Cornell seeks to exclude under Rule 408 of the Federal Rules of Evidence. *See* pp. 41-51, *ante*.

has CRF licensed the '115 patent based upon the sale of servers and workstations, is not dispositive of plaintiffs' claim to recovery of reasonable royalties utilizing an entire market value model, although these are clearly facts which a jury may deem relevant to the issue of damages to be awarded, in the event infringement is found.

Turning to the heart of HP's argument in support of limiting plaintiffs' damages, the court must determine whether proof which would support a finding in plaintiffs' favor under the single functioning unit test, or establish the requisite customer demand for servers and workstations based upon the accused circuitry within the PA-8000 family processors, is so wholly lacking as to warrant the entry of summary judgment in HP's favor on the issue.

Regardless of whether the single functioning unit and customer demand tests are regarded as two separate bases either of which could support application of the entire market value rule – a position which appears to have been taken by the court in *Heidelberger Druckmaschinen AG*, 1995 WL 693170, at *2 – or instead the two coalesce into a single analysis, as the court believes better represents Federal Circuit authority, the royalty base calculation hinges upon the importance of the accused

circuitry to the products which, plaintiffs contend, are properly includable within the applicable royalty base. One potentially reliable indicator of that importance is the degree to which HP's marketing efforts have centered upon the out-of-order feature of the PA-8000 processors. *See Fonar*, 107 F.3d at 1552-53 (holding that the accused infringer's marketing materials emphasizing the patented feature supplied evidence from which a reasonable factfinder could apply the entire market value rule); *contrast Izumi Prods.*, 315 F.Supp.2d at 614-15 (rejecting entire market value rule where marketing materials from the patentee, which competed with the accused infringer, stressed a variety of other features but did not reference the patented component). As the Federal Circuit has noted, "[i]t is the financial and marketing dependence on the patented item under standard marketing procedures which determines whether the non-patented features of a machine should be included in calculating compensation for infringement." *Kori*, 761 F.2d at 656 (internal quotations and citations omitted).

It is true that the accused technology, which is included within the IRB of a typical PA-8000 processor, represents but a small segment of the processor, and an even lesser proportion of the servers and workstations

in which those processors are included. According to HP, the allegedly infringing technology occupies only approximately twenty percent of all circuitry contained within a typical IRB. Brydges Decl. (Dkt. No. 707) Exh. 4 (Swartzlander Rebuttal Expert Report) ¶ 118. The IRB, in turn, accounts for between approximately four and sixteen percent of the total die area of a typical PA-8000 processor. *Id.* ¶¶ 119-22. When all layers of the silicon contained within a processor are considered, according to HP's expert, the accused circuitry occupies only about one percent of the total die area contained within most PA-8000 model processors.[47] Brydges Decl. (Dkt. No. 707) Exh. 4 (Swartzlander Rebuttal Expert Report) ¶¶ 119-22.

To provide further context to plaintiffs' argument that servers and workstations should be included in the royalty base calculation, HP has identified the many components other than the accused processors included within those systems. A typical HP server, for example, is said to include, as components, a chassis, various cell boards containing CPU modules (which, in turn, include processors), memory boards, internal disk drives, input/output ("I/O") cards, network interfaces, power supplies,

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[47] HP maintains that the IRB component of the typical PA-8000 itself contains many patented inventions, citing five separate, representative HP patents implicated in its IRB architecture. *See* Hewlett Packard Memorandum (Dkt. No. 705) at 5.

software and operating environments. HP Local Rule 7.1(a)(3) Statement (Dkt. No. 706) ¶ 18. Workstations similarly include many integral components aside from processors, including a chassis, system board, memory, a graphics card, I/O cards, internal disk drives and optical drives, monitor, keyboard, mouse, network interfaces and software. *Id.* ¶ 19.

While facially persuasive, these comparisons vastly understate the importance of the accused circuitry to the PA-8000 processors, and in turn HP's servers and workstations. HP's own expert, Dr. Earl Swartzlander, Ph.D., to whom the IRB measurements are attributed, has himself discounted the notion that his calculations as to the approximate portion of the PA-8000 die accused of infringing are indicative of the importance of the infringing technology to the processor as a whole. Fujiyama Decl. (Dkt. No. 736) Exh. VV (Swartzlander Deposition) at 334-35. Moreover, HP has on may occasions emphasized to its customers and the court the importance of a processor, and in particular the PA-8000 processor with its out-of-order instruction execution system, to the equipment or hardware in which it is housed. In April of 2002, for example, HP's counsel wrote to the court stating "[i]ndeed, when Hewlett-Packard released the PA-8000 CPU in 1996, it was the world's fastest processor, based largely on its ability to

issue multiple, out-of-order instructions per CPU clock cycle." Fujiyama Decl. (Dkt. No. 736) Exh. G, at 2. In a document describing the PA-8000, it was reported that

> [t]he PA-8000 RISC CPU is the first of a new generation of Hewlett-Packard microprocessors. Designed for highend systems, it is among the world's most powerful and fastest microprocessors. It features an aggressive, four-way, superscalar implementation, combining speculative execution with on-the-fly instruction reordering. The heart of the machine, the instruction reorder buffer, provides out-of-order capability.

Id. Exh. II (Kumar Paper) at HP 000904. In discussions with potential customers, HP representatives have emphasized these attributes, specifically addressing the out-of-order capability of the PA-8000 processors when attempting to market servers and workstations. *See*, *e.g.*, Fujiyama Decl. (Dkt. No. 736) Exh. XX (Noller Deposition); *id.* Exh. YY (Noller Deposition) at 145; *id.* Exh. Z (Noller Deposition) Exh. 242, at 6.

There is also evidence in the record from which a reasonable factfinder could conclude that together with the accused PA-8000 processors, HP servers and workstations were intended by the defendant to be sold, and to perform, as a single functioning unit. As HP itself has repeatedly stated during the course of this litigation, it is in the business of

selling systems which include its processors; generally speaking, HP does not sell processors or processor subassemblies.[48] *See*, *e.g.*, Fujiyama Decl. (Dkt. No. 736) Exh. W (Hewlett Packard's Opposition to Plaintiffs' Motion to Compel and Request for Monetary Sanctions, repeated at Dkt. No. 293) at 7 (noting that plaintiffs' discovery requests seeking profit and loss figures associated with the sale of processors were "drafted to meet a set of circumstances that both parties acknowledge is overwhelmingly not present here – that in which a defendant is accused of selling allegedly infringing microprocessors (as opposed to server and workstations systems containing such microprocessors"); *see also id.* Exh. AA, at 255-56 (Deposition of HP Rule 30(b)(6) Witness John K. Wheeler, who admitted on behalf of HP that "[w]e don't sell those [PA-8000] processors."). It should also be noted that HP has acknowledged on many occasions that the processor is "the brains of the computer." *See* Fujiyama

[48] As this case progressed, HP's position regarding this issue changed markedly. Early in the litigation, at a point when it suited its purposes to make this argument in order to avoid providing specific financial information related only to the PA-8000 processors, HP argued that it did not commercially sell such processors, but instead was "overwhelmingly" in the business of selling servers and workstations which included PA-8000 processors, and thus was unable to easily cull out revenue and expense figures related only to processors. Now, however, in the face of plaintiffs' claim that the entire market value rule should be applied, HP has reversed its field, arguing that a large portion of its revenue attributable to the PA-8000 processors is derived from the stand-alone sale of those units themselves, as distinct from their inclusion in HP servers and workstations.

Decl. (Dkt. No. 736) Exh. A (Defendant's Markman Brief), repeated at Dkt. No. 49, at 1; Exh. B (John Wheeler Power Point Presentation) at HP 056690 ("[n]ow, at the heart of each of HP's computer products is a microprocessor".)

Addressing the issue of customer demand, HP asserts in its royalty base motion that "Cornell has no evidence that a single HP customer has ever purchased an HP server or workstation based on the operation of the accused circuitry in the IRB." HP Royalty Base Memorandum (Dkt. No. 705) at 8. HP goes on to state that "Cornell has not made such a claim in its pleadings, nor is there any evidence of any customer having purchased HP's servers and workstations based on any increased performance that Cornell's experts speculate is attributable to the operation of the accused circuitry in the IRB." *Id.*; *see also* HP Royalty Base 7.1(a)(3) Statement (Dkt. No. 706) ¶¶ 35-40. HP offers a variety of reasons which, it hypothesizes, may prompt its customers to purchase servers and workstations. *See* Brydges Decl. (Dkt. No. 707) Exh. 10 (Declaration of Greg Huff) ¶ 7. Moreover, customer survey evidence in the record suggest a variety of reasons for customer choices as between computing vendors. *See* Fujiyama Decl. (Dkt. No. 736) Exh. LL, at HP 056615.

It is true, as HP argues, that the cases which address the customer demand prong of the entire market value rule, including those from the Federal Circuit, speak in terms of requiring that the patented feature be *the* basis for purchase of non-infringing items. *See*, *e.g.*, *Volovik v. Bayer Corp.*, No. Civ. 01-1426, 2004 WL 51317, at *10-*11 (D. Minn. Jan. 7, 2004) (citing *Fonar Corp.*, 107 F.3d at 1552). The reality is, however, that there is rarely one single, "sole" basis for customer demand of a particular product.[49] *Bose*, 274 F.3d at 1361. As the foregoing reflects, there is evidence in the record from which a reasonable factfinder could conclude that the accused out of order circuitry within the PA-8000 processors "contributed substantially to the increased demand" for HP's servers and workstations, thereby making the entry of summary judgment inappropriate. *Bose*, 274 F.3d at 1361.

In any event, HP is not well-positioned to argue that no reasonable factfinder could discern the requisite customer demand for HP servers and workstations, based upon the inclusion of the patented out-of-order

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[49] A finding that the accused circuitry was not the basis of customer demand for HP's peripherals would not necessarily be fatal to plaintiffs' efforts to secure the benefits of the entire market value rule; indeed, a case heavily relied upon by HP in fact supports this conclusion. *See Heidelberger Druckmaschinen AG*, 1995 WL 693170, at *2.

instruction technology contained within the PA-8000 processors as a component of those larger systems. HP's assertion in this regard runs squarely counter to the court's September 26, 2005 preclusion order denying defendant the right to assert lack of evidence of customer demand in a motion or at trial. September 26, 2005 Order (Dkt. No. 446) at 10. In that order, which was entered based upon HP's contentious discovery tactics and its flat refusal to comply with court directives regarding the identity of its best server and workstation customers, I directed as follows:

> 1) Defendant shall be precluded from maintaining, either on motion or at trial, that any evidence introduced by plaintiffs concerning customer demand/customer preference is deficient or defective because of lack of testimony or other information from customers.
>
> 2) It is established that, at least as of 1996, HP's customers for servers and workstations had received HP's press releases of March 6, 1995 (HP 049580-049583), November 2, 1995 (HP 049588-049591) and April 3, 1996 (HP 041234-041235). Those press releases were intended to convey to HP's customers that the "Intelligent Execution" feature discussed in them was at least one of the reasons why they should buy HP servers and workstations containing PA-8000 family processors.

Id. While these preclusion orders do not ultimately relieve the plaintiffs of their burden of proving, at trial, that the patented technology contributed substantially to increased customer demand for HP servers and

workstations in order to qualify for the benefits of the entire market value rule, when considered against the backdrop of the governing summary judgment standard, under which all inferences must be drawn most favorably to the plaintiffs, it does compel a finding at this juncture that a reasonable factfinder could reach this conclusion.[50]

Defendant also argues that the entire market value rule is not appropriately applied in this instance, given the availability of other, substitute processors aside from those within the PA-8000 family, with their accused infringing technology, for inclusion into HP's servers and workstations. It notes, for example, that non-infringing PA-7000 family processors, as well as non-accused Motorola processors and the newly developed Intel Itanium® processors, were not only available as alternatives, but were in fact sold with some of its servers, including the HP-3000, 3000e and 9000 series, as well as in HP workstations.[51] HP's

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[50] The court's ruling does not necessary preclude HP from advancing other plausible reasons for customers to purchase its servers and workstations, including those potential causes which have been identified in its motion papers. *See* HP Royalty Base Memorandum (Dkt. No. 705) at 8-9; *see also* HP's Local Rule 7.1(a)(3) Statement (Dkt. No. 706) ¶¶ 35, 38-39.

[51] In its motion, HP also identifies the Intel Xeon ® as a potential substitute for the PA-8000 product line. *See*, *e.g.*, HP's Local Rule 7.1(a)(3) Statement (Dkt. No. 706) ¶ 21; HP Memorandum (Dkt. No. 705) at 9-10. Since that processor was not identified by HP in response to discovery demands from the plaintiffs requesting the identity of all available substitutes, I recommend that the court not consider any

Local Rule 7.1(a)(3) Statement (Dkt. No. 706) ¶¶ 20-22. As plaintiffs have noted, however, there is good indication that these alternatives were neither freely available nor suitable substitutes for the PA-8000 processors. *See* Brydges Decl. (Dkt. No. 707) Exh. 10 (Huff Decl.) ¶¶ 3, 12; *id.* Exh. 9 (Richards Decl.) ¶ 11; *id.* Exh. 11 (Mulchand Decl.) ¶ 6; *id.* Exh. 28, at 6; *id.* Exh. 29, at 11. And while, as has already been noted, evidence in the record is strongly suggestive of HP's own marketing efforts, touting the PA-8000 processor as a reason for purchasing HP servers and workstations, the record is devoid of any similar promotion by HP of those potential substitute products. As the Federal Circuit has noted, moreover, "a functional relationship between a patented device and an unpatented material used with it is not precluded by the fact that the device can be used with other materials or that the unpatented material can be used with other devices." *Juicy Whip*, 382 F.3d at 1372. Indeed, one could argue that the availability of these replacements, coupled with evidence in the record tending to establish that customers overwhelmingly selected PA-8000 processors for inclusion in HP servers and workstations, is strongly suggestive of the link which plaintiffs now seek to establish

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proffered evidence associated with that product.

between customer demand for the '115 patented technology within the PA-8000 processors and the servers and workstations whose sales they now seek to have included in the reasonable royalty base. At a minimum, while the question of the availability of substitutes is certainly a factor which the jury may consider probative on the issue of whether the PA-8000 processors formed the basis for customer demand of HP's servers and workstations, given these alternatives, it is clear there exists an issue of fact regarding this question, particularly in view of HP's manifest need in the early 1990s to develop out-of-order processing capability in order to maintain its competitive position in the industry, thereby emphasizing the importance of the accused circuitry of the PA-8000 processor to its entire line of products.

In sum, I return to where I began when analyzing this particular HP motion. Undeniably, plaintiffs are entitled to full and fair compensation for HP's use of the patented '115 invention in the event of a finding of infringement. Given the circumstances presented, the jury in this case will be asked to determine the extent of a reasonable royalty – that is, the framework which the parties entering into hypothetical negotiations would have utilized to calculate payment under a negotiated license agreement.

In the event of a jury finding of infringement, there are several plausible configurations under which reasonable royalties could be awarded. A jury might well accept HP's arguments regarding the relative lack of importance of the accused technology to customer demand for its servers and workstations, and award a reasonable royalty based solely upon the sale of processors, applying a royalty rate which is consonant with industry standards.[52] If this approach were taken, the jury could nonetheless enhance the royalty rate to be applied above that prevalent in the industry by considering, as one of the applicable *Georgia-Pacific* factors, the impact of the accused circuitry upon HP's ability to compete in the industry and realize increased sales of its servers and workstations. *Rite-Hite*, 56 F.3d at n. 9 ("[The] issue of royalty base is not to be confused with the relevance of anticipated collateral sales to the determination of a reasonable royalty rate.") (citations omitted); *see also Trans-World Mfg. Corp.*, 750 F.2d at 1568 (fact that infringing use of patented eyewear

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[52] There is another scenario under which reasonable royalties could conceptually be awarded. A jury could attempt to subdivide the value associated with the PA-8000 processor and determine how much to allocate to the IRB, utilizing that as an appropriate royalty base. The court views this as a less likely outcome, however, in light of the lack of evidence in the record to provide a basis both for such apportionment and a finding that licensing on such a basis was consistent with practice within the industry.

display racks may have increased infringer's sale of unpatented eyeglasses could affect the amount of reasonable royalty); *see also Interactive Pictures*, 274 F.3d at 1385-86 (permitting expansion of royalty base on a theory of "bundling and convoyed sales", cited as one of the *Georgia-Pacific* factors relevant to a reasonable royalty determination).

A jury could, on the other hand, accept plaintiffs' argument and, applying the entire market value rule, award a reasonable royalty on a base which includes HP's sale of servers and workstations in which the PA-8000 processors are components. In the event the entire market value is invoked, one assumes, the jury would substantially discount the license rate to be applied to reflect the importance and value of the many other components, including various patented technology, contained within those servers and workstations.

When the record is considered in a light most favorable to the plaintiffs, it contains evidence which would support any of these approaches. Accordingly, I recommend denial of HP's motion for summary judgment seeking to limit the royalty base to be applied to any award of reasonable royalties.

IV. SUMMARY AND RECOMMENDATION

As a threshold matter, both Cornell and HP have objected to the submission of certain materials in connection with the pending motions. For their part, plaintiffs have lodged objections and sought an order striking various submissions by HP on the basis, *inter alia*, of lack of personal knowledge and the impropriety of offering expert opinions by persons neither qualified nor identified as experts, and under Federal Rule of Evidence 408. HP, in turn, has objected to various submissions by the plaintiffs as improper. As the foregoing reflects, while I am recommending that those objections be sustained in part, for the most part they are either lacking in merit, or do not involve matters which affect the outcome of the pending motions, and thus need not be decided.

Turning to the merits, I find that defendant's five partial summary judgment motions raise complex legal issues which, in many instances, require fact-laden analysis of extensive record materials. In its motions, HP calls upon the court to determine that based upon the record now presented there are no genuine issues of material fact which must be decided and that it is entitled to a favorable determination on each of the issues presented, as a matter of law. Having carefully reviewed the record developed by the parties in connection with pending motions, I find that

only HP's non-infringement motion, addressing infringement on certain of the '115 patent claims which require a β(D) field and the capability of detecting WAR false dependencies, both literal and under the doctrine of equivalents, is susceptible of resolution on motion for summary judgment. With this exception, as the foregoing reflects, I have discerned the existence of critical issues of fact which cannot be resolved on motion for summary judgment in connection with each of the five motions. Accordingly, it is hereby

RECOMMENDED that:

1) Plaintiffs' motions to strike various submissions of HP (Dkt. Nos. 714, 722, 739) submitted in connection with the pending motions, be GRANTED, in part. As the foregoing reflects, I recommend that portions of the declaration of Tom Schrader, Brydges Decl. (Dkt. No. 698) Exh. 4, including ¶¶ 13-16, 20, 22, 24 of that declaration, be stricken. Similarly, I recommend that excerpts of the declaration of Gregg Huff, Brydges Decl. (Dkt. No. 707) Exh. 10, including ¶¶ 6, 7, 11, and 12 thereof, be stricken.

2) With the exception of the foregoing, both plaintiffs' motions to strike portions of HP's submissions, and HP's objections to submissions by plaintiffs of evidentiary materials, be OVERRULED and DENIED, based

principally upon the fact that they do not impact upon ruling on the five pending dispositive motions.

3) Defendant's motion for partial summary judgment on the ground of laches (Dkt. No. 688) be DENIED.

4) Defendant's motion for partial summary judgment on the basis of patent exhaustion (Dkt. No. 689) be DENIED.

5) Defendant's motion for partial summary judgment on the basis of invalidity (Dkt. No. 691) be DENIED.

6) Defendant's motion for partial summary judgment on the basis of non-infringement (Dkt. No. 690) be GRANTED, in part, and that all claims of infringement, both literal and under the doctrine of equivalents, with respect to claims 7 through 12, 16, 17 and 19 of the '115 patent be DISMISSED, but that the motion otherwise be DENIED.

7) Defendant's motion for partial summary judgment on the basis of royalty base (Dkt. No. 692) be DENIED.

NOTICE: Pursuant to 28 U.S.C. § 636(b)(1), the parties may lodge written objections to the foregoing report. Such objections shall be filed with the Clerk of the Court within Ten (10) days. FAILURE TO SO OBJECT TO THIS REPORT WILL PRECLUDE APPELLATE REVIEW. 28

U.S.C. § 636(b)(1); Fed. R. Civ. P. 6(a), 6(e) and 72; *Roland v. Racette,* 984 F.2d 85 (2d Cir. 1993);

IT IS FURTHER ORDERED, that the Clerk of the Court serve a copy of this Report and Recommendation upon the parties by electronic means.

Dated: January 31, 2007
Syracuse, NY

David E. Peebles
U.S. Magistrate Judge

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