

*In the Matter of*  
**Certain Condensers, Parts Thereof  
and Products Containing Same, Including  
Air Conditioners for Automobiles**

Investigation No. 337-TA-334 (Remand)

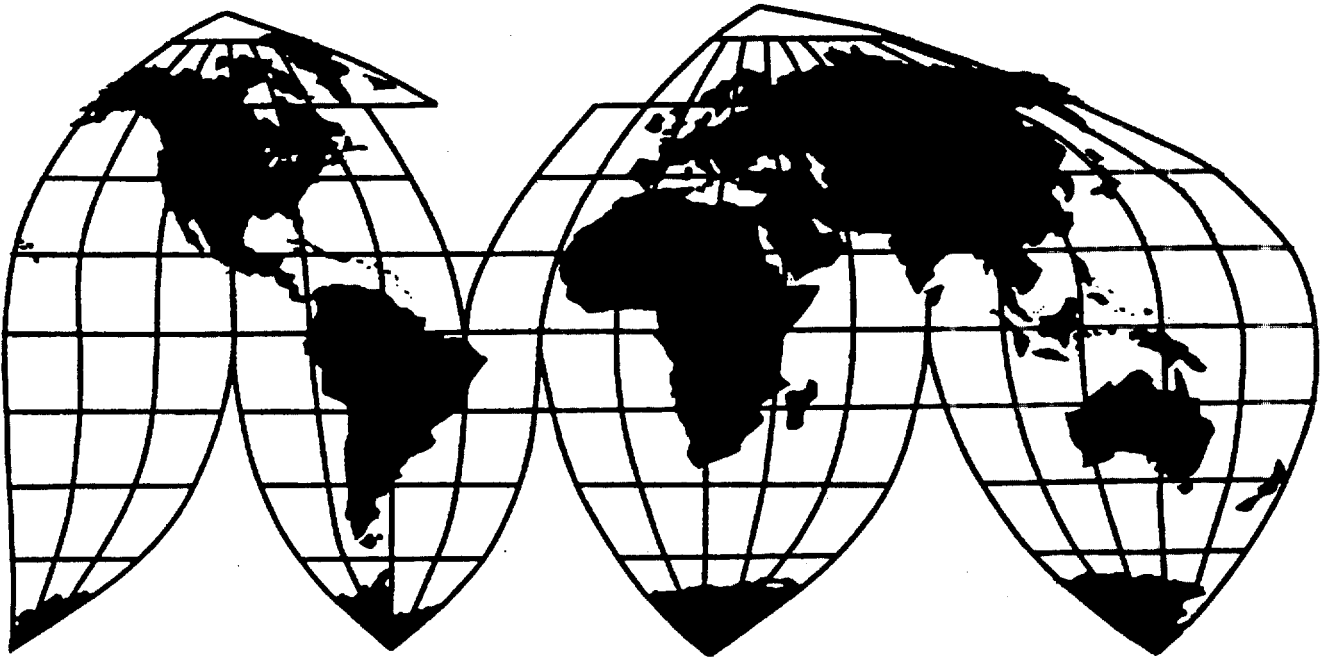
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Publication 3063

September 1997

**U.S. International Trade Commission**



Washington, DC 20436

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**Certain Condensers, Parts Thereof  
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# **U.S. International Trade Commission**

## **COMMISSIONERS**

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**Lynn M. Bragg, Vice Chairman**

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United States International Trade Commission  
Washington, DC 20436**

UNITED STATES INTERNATIONAL TRADE COMMISSION  
WASHINGTON, D.C. 20436

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In the Matter of )

CERTAIN CONDENSERS, )  
PARTS THEREOF AND PRODUCTS )  
CONTAINING SAME, INCLUDING AIR )  
CONDITIONERS FOR AUTOMOBILES )

Inv. No. 337-TA-334  
(Remand)

**DOCKET**

**NOTICE OF ISSUANCE OF LIMITED EXCLUSION ORDER  
AND TERMINATION OF INVESTIGATION;  
DENIAL OF PETITION FOR RECONSIDERATION**

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AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has issued a limited exclusion order in the above-captioned investigation and terminated the investigation. The Commission has also determined to deny respondents' petition for reconsideration of the Commission's January 16, 1997, determination that a violation of section 337 of the Tariff Act of 1930 has occurred. (62 Fed. Reg. 3525-6)(January 23, 1997).

FOR FURTHER INFORMATION CONTACT: Jean Jackson, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone 202-205-3104.

SUPPLEMENTARY INFORMATION: On December 12, 1991, Modine Manufacturing Co. filed a complaint with the Commission alleging a violation of section 337 by respondents Showa Aluminum Corporation (Japan), Showa Aluminum Corporation of America, Mitsubishi Motors Corporation, Mitsubishi Motors Sales of America, Mitsubishi Heavy Industries, Ltd., and Mitsubishi Heavy Industries America, Inc. (collectively referred to herein as respondents). Modine alleged that respondents had infringed claims of Modine's patent, U.S. Letters Patent 4,998,580 (the '580 patent). The Commission concluded the investigation with a finding of no infringement, and hence a determination of no violation of section 337.

Modine appealed the Commission's determination to the U.S. Court of Appeals for the Federal Circuit (Federal Circuit). On February 5, 1996, the Federal Circuit reversed the

Commission's claim interpretation and remanded the investigation to the Commission for redetermination of the issues of literal infringement and infringement under the doctrine of equivalents. *Modine Manufacturing Co. v. U.S.I.T.C.*, 75 F.3d 1545, 1549 (Fed. Cir. 1996). The court affirmed the Commission's determination in all other respects. *Id.*

On May 31, 1996, the Commission issued an order remanding the *Condensers* investigation to the Office of Administrative Law Judges. The Commission's order also directed the ALJ to issue a recommended determination (RD) on the issues of remedy and bonding two weeks after the issuance of the ID. On December 2, 1996, Judge Luckern issued an ID finding a violation of section 337 by respondents. On December 12, 1996, respondents and the Commission investigative attorney (IA) filed separate petitions for review. Complainant Modine filed a petition for review contingent on the Commission's decision either to grant another party's petition for review or to review the ID on its own motion. All parties filed responses to each petition on December 19, 1996. The ALJ issued his RD on remedy and bonding on December 16, 1996.

On January 16, 1997, the Commission determined to review only the reasoning supporting the ALJ's determination that the range of equivalents was limited by the 0.4822 inch hydraulic diameter given for the prior art Cat condenser. 62 *Fed. Reg.* 3525-6 (Jan. 23, 1997). Since the Commission did not review the ID's determination of the range of equivalents, the ALJ's determination that there had been a violation with respect to two models of the accused condensers, the Mazda 929 and the Audi 90, became the Commission's determination by operation of law. 19 C.F.R. § 210.42(h). The Commission's notice of review requested written submissions on the issue under review, and on remedy, the public interest, and bonding. Submissions were received from Modine, the Showa respondents, the Mitsubishi respondents, and the IA on January 30, 1997. Complainant, the Showa respondents, and the IA filed reply submissions on February 6, 1997.

On March 10, 1997, respondents filed a petition for reconsideration of the Commission's determination not to review the ALJ's determination that section 337 had been violated. Respondents' petition was based on the recent Supreme Court decision in *Warner-Jenkinson, Inc. v. Hilton-Davis Chemical Company*, 117 S.Ct. 1040 (U.S. Mar. 3, 1997), involving the doctrine of equivalents. Respondents argued that the case is controlling authority which is contrary to the law applied by the Federal Circuit in the *Modine* decision. Complainant Modine and the IA filed oppositions to the petition on March 17, 1997. The Commission has determined to deny respondents' petition.

After having reviewed the record in this investigation, including the written submissions of the parties, the Commission made its determinations on the issues of remedy, the public interest, and bonding. The Commission determined that the appropriate form of relief is a limited exclusion order prohibiting the unlicensed importation for consumption of infringing condensers, parts thereof, and products containing same manufactured and/or imported by or on behalf of the Showa respondents. The order applies to any of the

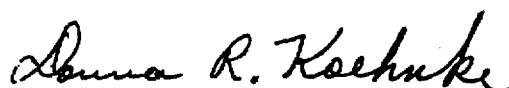
affiliated companies, parents, subsidiaries, licensees, contractors, or other related business entities, or their successors or assigns of Showa.

The Commission also determined that the public interest factors enumerated in 19 U.S.C. § 1337(d) do not preclude the issuance of the limited exclusion order, and that the bond during the Presidential review period shall be in the amount of five percent of the entered value of the condensers in question. Condenser parts and products containing condensers are entitled to entry into the United States without bond during the Presidential review period.

This action is taken under the authority of section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and section 210.58 of the Commission's Interim Rules of Practice and Procedure (19 C.F.R. § 210.58)(1994).

Copies of the Commission order, the Commission opinion in support thereof, and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone 202-205-2000. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810.

By order of the Commission.



Donna R. Koehnke  
Secretary

Issued: August 20, 1997

UNITED STATES INTERNATIONAL TRADE COMMISSION  
WASHINGTON, D.C. 20436

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In the Matter of )  
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CERTAIN CONDENSERS, )  
PARTS THEREOF AND PRODUCTS )  
CONTAINING SAME, INCLUDING AIR )  
CONDITIONERS FOR AUTOMOBILES )  
\_\_\_\_\_ )

Inv. No. 337-TA-334  
(Remand)

**ORDER**

On March 10, 1997, respondents Showa Aluminum Corporation, Showa Aluminum Corporation of America, Mitsubishi Motors Corporation, Mitsubishi Motors Sales of America, Mitsubishi Heavy Industries, Ltd., and Mitsubishi Heavy Industries of America, Inc. filed a petition for reconsideration of the Commission's January 16, 1997, decision finding a violation of section 337 of the Tariff Act of 1930. That petition was based on the Supreme Court's decision in *Warner-Jenkinson, Inc. v. Warner-Jenkinson Chemical Company*, 117 S. Ct. 1040 (U.S. Mar. 3, 1997), which respondents argue is contrary controlling legal authority. In view of the fact that respondents' petition could not have been filed within the 14-day time period provided for in Commission rule 210.47, 19 C.F.R. § 210.47, the Commission has determined, pursuant to rule 201.4, 19 C.F.R. § 201.4, to waive the time requirement and accept the petition. However, for reasons set forth in the accompanying opinion, the Commission has determined to deny respondents' petition for reconsideration.

Having determined that there is a violation of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the unlawful importation and sale of certain condensers, parts thereof, and products containing the same, including air conditioners for automobiles, that infringe claims 9 and 10 of U.S. Letters Patent 4,998,580, and having considered the issues of remedy, the public interest, and bonding, hereby **ORDERS** that:

1. Condensers, parts thereof, and products containing the same, except motor vehicles, that are covered by claims 9 or 10 of U.S. Letters Patent 4,998,580, and manufactured and/or imported by or on behalf of Showa Aluminum Corporation of Japan; or Showa Aluminum Corporation of America, of Mt. Sterling, Ohio; or any of their affiliated companies, parents, subsidiaries, licensees, contractors, or other related entities, or their successors or assigns (hereafter referred to collectively as "Showa"), are excluded from entry for consumption into the United States for the remaining term of the patent, except under license of the patent owner or as provided by law.
2. The aforesaid condensers are entitled to entry for consumption into the United States under bond in the amount of five (5) percent of the entered value of such items pursuant to subsection (j) of section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337(j)), from the day after this Order is received by the President until such time as the President notifies the Commission that he approves or disapproves this action but, in any event, not later than sixty (60) days after the date of receipt of this action. The aforesaid condenser parts and products containing the same are entitled to entry for consumption into the United States without bond during the aforesaid time period.
3. Pursuant to procedures to be specified by the U.S. Customs Service, as the Customs Service deems necessary, Showa condensers, parts thereof, and products containing the same (other than motor vehicles) may be imported if Showa provides a certification that it has made appropriate inquiry and that, to the best of its knowledge and belief, the condensers, parts thereof, and products containing the same being imported are not excluded from entry under paragraph 1 of this Order.



4. (a) Showa shall submit to the Secretary of the U.S. International Trade Commission annual reports, in English and under oath, for the period commencing on the date of issuance of this Order and extending through the remaining term of U.S. Letters Patent 4,998,580. The first report shall be submitted on November 28, 1997, and shall cover the period from the date of issuance of this order through October 31, 1997. Subsequent annual reports shall be submitted on November 30 of each year and shall cover the period November 1 through October 31. The final report shall be submitted on April 11, 2008, thirty days after the expiration of the patent, and shall cover the period November 1, 2007, through March 12, 2008.

(b) Each annual report filed by Showa shall state the following: (i) the volume (in units and U.S. dollars) of imports into the United States of Showa condensers covered by claims 9 or 10 of the '580 patent, parts thereof (including tubes and partially completed condensers), and products containing same (including air conditioning systems and motor vehicles); (ii) the volume (in units and U.S. dollars) of sales in the United States of such articles; and (iii) identification of all of Showa's contracts, whether written or oral, entered into during the reporting period for the purpose of selling such articles in the United States.

(c) Each annual report shall contain a statement of the methodology by which the Showa determined that the imported Showa condensers, parts thereof, and products containing same (including air-conditioning systems and motor vehicles) were or were not covered by claims 9 or 10 of U.S. Letters Patent 4,998,580, and a summary of the resulting data.

(d) Copies of all such reports and underlying data shall be maintained by Showa for a period of three (3) years after the date of filing of the report. For the purpose of determining or securing compliance with this Order and for no other purpose, and subject to any privilege recognized by the Federal courts of the United States, during the period from filing the first report required herein up to and including three (3) years following the date of filing of the last report required herein, duly authorized representatives of the Commission shall, upon reasonable written notice by the Commission or its staff to Showa, be permitted access to and the right to inspect and copy in Showa's principal office in the United

States during the office hours of Showa, and in the presence of counsel or other representatives if Showa chooses, all records, both in detail and in summary form, in the possession of or under the control of Showa relating to this reporting requirement. Showa shall make available for consultation with the duly authorized representative of the Commission, in the presence of counsel, the individual or individuals who were responsible for the preparation of the reports and/or who have knowledge of the substance of the matters contained therein.

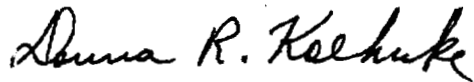
(e) No information obtained by the means provided in subparagraph (d) above shall be divulged by any representative of the Commission to any person other than a duly authorized representative of the Commission, except as required in the course of legal proceedings to which the Commission is a party for the purpose of securing compliance with this Order or as otherwise required or permitted by law, upon reasonable written notice to Showa or Showa's United States counsel.

(f) With respect to the annual reports required in this paragraph, any request for confidential treatment should be in accordance with Commission Rule 201.6, 19 C.F.R. § 201.6. For all reports for which confidential treatment is sought, Showa must provide a public version of such report with confidential information redacted at the same time that it provides the confidential version of such report.

5. In accordance with 19 U.S.C. § 1337(1), the provisions of this Order shall not apply to condensers, parts thereof, or products containing the same that are imported by and for the use of the United States, or imported for, and to be used for, the United States with the authorization or consent of the Government.
6. The Secretary shall serve copies of this Order upon each party of record in this investigation and upon the Department of Health and Human Services, the Department of Justice, the Federal Trade Commission, and the U.S. Customs Service.
7. The Commission may modify this Order in accordance with the procedure described in Rule 210.76 of the Commission's Rules of Practice and Procedure, 19 C.F.R. § 210.76 (1996).
8. Notice of this Order shall be published in the *Federal Register*.

9. Respondent's petition for reconsideration of the Commission's January 16, 1997, finding of violation is denied.

By Order of the Commission.



Donna R. Koehnke  
Secretary

Issued: August 20, 1997

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION  
WASHINGTON, D.C. 20436

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CERTAIN CONDENSERS, )  
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CONDITIONERS FOR AUTOMOBILES )  
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Inv. No. 337-TA-334  
(Remand)

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OFFICE OF THE SECRETARY  
US INTERNATIONAL TRADE COMMISSION

'97 SEP 10 P2:31

COMMISSION OPINION <sup>1</sup>

**I. Introduction**

This investigation was remanded to the Commission by the U.S. Court of Appeals for the Federal Circuit (Federal Circuit) for redetermination of the issues of claim interpretation, literal infringement, and infringement under the doctrine of equivalents. The Commission, in turn, remanded the investigation to a presiding administrative law judge (ALJ) who issued an initial determination (ID) in which he reinterpreted the patent claims at issue and found no literal infringement. He found infringement, however, under the doctrine of equivalents by two models of imported condensers and, thus, a violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337. The Commission determined to review the ALJ's reasoning in support of his finding concerning the range of equivalents due the asserted patent claims, but did not review any other part of the ID. 62 Fed. Reg. 3525-6 (Jan. 23, 1997). Accordingly, the ALJ's determination that a violation of section 337 had occurred became the

<sup>1</sup> Chairman Miller is recused from this investigation.

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Commission's determination by operation of law. 19 C.F.R. § 210.54(h)(1991).

The investigation is now ready for resolution of one review issue and determinations on (1) the type of remedy to be issued, (2) whether issuance of that remedy is precluded by the statutory public interest factors, and (3) the amount of the bond during the 60-day Presidential review period. The Commission also must consider a petition filed by respondents for reconsideration of the Commission's decision not to review the ALJ's finding of violation.

### **II. Discussion**

#### **A. Background**

On December 12, 1991, Modine Manufacturing Co. filed a complaint with the Commission alleging a violation of section 337 by respondents Showa Aluminum Corporation, Showa Aluminum Corporation of America, Mitsubishi Motors Corporation, Mitsubishi Motors Sales of America, Mitsubishi Heavy Industries, Ltd., and Mitsubishi Heavy Industries of America, Inc.<sup>2</sup> (collectively referred to herein as respondents). Modine alleged that respondents' imported "SC" condenser models infringed claims 9 and 10 of its patent, U.S. Letters Patent 4,998,580 (the '580 patent). The Commission concluded its investigation in 1993 with a finding of no infringement, and hence a determination of no violation of section 337. Modine appealed the Commission's determination to the Federal Circuit. On February 5, 1996, the Federal Circuit reversed the Commission's claim

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<sup>2</sup> Mitsubishi Heavy Industries Climate Control, Inc. has become the successor interest to Mitsubishi Heavy Industries of America, Inc.

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interpretation and remanded the investigation to the Commission for redetermination of the issues of claim interpretation, literal infringement, and infringement under the doctrine of equivalents. *Modine Manufacturing Co. v. U.S.I.T.C.*, 75 F.3d 1545, 1549 (Fed. Cir. 1996).

On May 31, 1996, the Commission issued an order remanding the investigation to the Office of Administrative Law Judges. The Commission's order directed the presiding ALJ to issue an ID on the infringement and violation issues and a recommended determination (RD) on the issues of remedy and bonding. On December 2, 1996, Judge Paul Luckern issued his ID finding that two models of respondents' condensers -- the Mazda 929 and the Audi 90 -- infringed Modine's patent and, therefore, that there had been a violation of section 337. Respondents and the Commission investigative attorney (IA) filed separate petitions for review. Complainant Modine filed a petition for review contingent on the Commission's decision either to grant another party's petition for review or to review the ID on its own motion. The ALJ issued his RD on remedy and bonding on December 16, 1996.

On January 16, 1997, the Commission determined to review only the reasoning supporting the ALJ's determination that the range of equivalents of the claims in controversy was limited by the 0.4822 inch hydraulic diameter measurement of a prior art condenser. 62 *Fed. Reg.* 3525-6 (Jan. 23, 1997). Since the Commission did not review the ID's range of equivalents, the ALJ's determination that there had been a violation of section 337 became the Commission's determination by operation of law. 19 C.F.R. § 210.54(h)(1991). The

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Commission's notice of review requested written submissions on remedy, the public interest, and bonding, and directed the parties to comment on the ALJ's RD on remedy and bonding. Submissions were received from complainant Modine, the Showa respondents, the Mitsubishi respondents,<sup>3</sup> and the IA.

On March 10, 1997,<sup>4</sup> respondents filed a petition for reconsideration of the Commission's determination not to review the ALJ's finding that section 337 had been violated. Respondents' petition was based on the Supreme Court's decision in *Warner-Jenkinson, Inc. v. Hilton Davis Chemical Company*, 117 S.Ct. 1040 (1997) (*Warner-Jenkinson*), which respondents contended is contrary to the law on the doctrine of equivalents that was applied by the Federal Circuit in *Modine*. Complainant Modine and the IA opposed respondents' petition. On May 9, 1997, the Commission requested that the presiding ALJ make a recommendation on the petition for reconsideration. On June 12, 1997, the ALJ recommended that the petition be denied.

### **B. The Petition for Reconsideration**

Respondents argue that reconsideration of the Commission's finding of violation is appropriate here because they believe that the Supreme Court's *Warner-Jenkinson* decision

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<sup>3</sup> The Mitsubishi respondents generally supported the arguments of the Showa respondents, but also submitted additional arguments supporting their view that any remedy should be limited to the Showa respondents. In this opinion, a reference to "respondents" denotes an argument attributable to both sets of respondents.

<sup>4</sup> The Commission waived the deadline for filing the petition for reconsideration under rule 210.47. *See* Commission Order of May 9, 1997.

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squarably reversed the rule of law that the Federal Circuit applied in *Modine*.

### 1. The Modine Decision

The claim term “relatively small hydraulic diameter,” was at issue in *Modine*. The Federal Circuit agreed with the Commission’s 1993 finding that, in light of the ‘580 patent’s specification and prosecution history, the term was not entitled to the range of up to 0.070 inches as Modine had sought. *Modine* at 1552. The court explained that Modine’s original or “grandfather” patent application disclosed hydraulic diameters of about 0.015 to 0.070 inches. *Id.* However, when Modine refiled its patent application (the parent application), it removed all references to the “about 0.015 to 0.070” inch range and replaced them with the range of about 0.015 to 0.040 inches. *Id.* Modine later again refiled its application (the “child” application) without making further changes in the description of the disclosed hydraulic diameter. The *Modine* court found that Modine’s replacement of “0.070” with “0.040” in the text of the specification required the conclusion that the applicants had limited their invention to hydraulic diameters of up to about 0.040 inch. *Id.* The court observed that, while it may not have been necessary for Modine to reduce the 0.070 figure to 0.040 in order to get its claims allowed, this change was conspicuous and unambiguous and was made in the context of the cited references. *Id.* The court held that the interested public was entitled to rely on this change in interpreting the claim term “relatively small” in the ‘580 patent. *Id.*

The court found that the patent’s prosecution history did not estop Modine from



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asserting equivalency against any condenser with a hydraulic diameter larger than exactly 0.040 inch, as literally claimed. *Modine*, at 1555. However, the court did find that the prosecution history placed some limits on the range of equivalents to be accorded the claim term “relatively small.” *Id.* The court explained that during the prosecution of the ‘580 patent *Modine* relinquished the range of hydraulic diameters that extended to 0.070 inch in view of the hydraulic diameter of the prior art “Cat-Folded Front” condenser. Although the court noted that the claimed condenser differed in several respects from the Cat condenser, it ruled that the prosecution history showed that the hydraulic diameter of the Cat condenser, either 0.0496 or 0.04822 inch (the record showed both figures), was a factor in the applicants limiting their claims to 0.040 inch. *Modine* at 1552. The court concluded, therefore, that the upper range of equivalency was limited, by estoppel, to the hydraulic diameter of the Cat condenser, but that equivalents smaller than the Cat condenser were not ruled out by the prior art and the prosecution history. *Id.*

### 2. The Warner-Jenkinson Decision

In *Warner-Jenkinson*, the patent at issue disclosed an improved ultrafiltration process that involved filtering an impure dye through a porous membrane under certain pressures and pH conditions.<sup>5</sup> In the original patent application, the patentee included no limitation on the pH used in its process. During prosecution of the patent before the U.S. Patent and

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<sup>5</sup> The pH scale refers to the concentration of hydrogen ions (H<sup>+</sup>) in a solution, and runs from 0 to 14. The more acidic the solution, the lower the pH value. The more alkaline the solution, the higher the pH value.

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Trademark Office (PTO), the patent examiner rejected the claims in view of a prior art reference (the Booth patent) that disclosed a filtration process operating at a pH level of above 9.0. In response, the inventors amended their claims to add an upper limit of pH 9.0. They also added a lower limit of pH 6.0. Although the record clearly indicated that the inventors included the upper limit to overcome the examiner's rejection, their reason for including the lower limit of 6.0 was unclear. At trial, the jury agreed with the patentee that Warner-Jenkinson's process, which operated at pH 5.0, infringed the patent at issue under the doctrine of equivalents, and the Federal Circuit affirmed that finding.

In the Supreme Court, petitioner Warner-Jenkinson attacked the Federal Circuit's holding on a variety of grounds, including its refusal to invoke the doctrine of prosecution history estoppel to bar a finding of equivalents with respect to pH conditions below 6.0. Petitioner asked the Court to establish a bright line standard that would preclude the recapture of any subject matter surrendered during patent prosecution, regardless of the reason for the surrender. The Supreme Court found that applicants' reason for adding the lower limit of 6.0 was unclear since the lower pH limit did not serve to distinguish the Booth patent, which said nothing about pH levels below 6.0. The Court held, however, that application of the doctrine of equivalents as to the lower pH limit was not necessarily precluded, and rejected petitioners' demand that the patentee be denied any range of equivalents simply because it had amended its claims. *Warner-Jenkinson*, 117 S.Ct. at 1050. The Court found petitioners' approach to be inflexible, recognizing that the PTO may request

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a change in claim language during patent prosecution for a variety of reasons and without any intent to limit equivalents. *Id.* The Court, however, refined the doctrine of prosecution history in one important respect by creating a rebuttable presumption that estoppel would apply to bar the application of the doctrine of equivalents under certain circumstances. *Id.* at 1051. This newly articulated presumption forms the basis for respondents' petition.

### 3. Respondents' Petition

Respondents contend that the *Warner-Jenkinson* decision requires that prosecution history estoppel prevent any application of the doctrine of equivalents to claim elements that were added or narrowed during prosecution unless the patentee can prove that the claims were amended for reasons unrelated to patentability. Since the Federal Circuit found that Modine's claims were amended from an original upper limit of "about 0.070 inch" to a limit of "about 0.040 inch" in view of the prior art Cat condenser, respondents argue that the Federal Circuit's decision to allow the '580 patent claims some range of equivalents is "fundamentally irreconcilable" with the *Warner-Jenkinson* decision. In making their argument, respondents focus on the following language from *Warner-Jenkinson*:

Where no explanation is established, however, the court should presume that the PTO had a substantial reason related to patentability for including the limiting element added by amendment. In those circumstances, prosecution history estoppel would *bar the application of [the] doctrine equivalents as to that element.*

*Warner-Jenkinson*, 117 S. Ct. at 1051 (emphasis by respondents).

Respondents argue that this presumption should apply in situations, such as this one, where it

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has been established that the patentee amended its claims to avoid the prior art. Barring application of the doctrine of equivalents to the hydraulic diameter limitation of the '580 patent claims would result in a finding of no violation of section 337 in this investigation because no accused condenser had tubes with hydraulic diameters of "about 0.015 to 0.040 inch," the range that was literally claimed in the '580 patent.

#### 4. The ALJ's Recommendation

After analyzing the *Warner-Jenkinson* decision in depth, the ALJ rejected respondents' contention that the Supreme Court's decision barred the application of the doctrine of equivalents as to any claim element that was added or narrowed for reasons related to patentability during prosecution of a patent. RD at 9. The ALJ found that the Supreme Court's remand of the case to the Federal Circuit, so that the latter could take into account the reasons for the addition of a lower pH limit to the claimed subject matter, indicated a contrary result. *Id.* Only if no reason could be established, the ALJ explained, were courts directed to "presume that the PTO had a substantial reason related to patentability for including the limiting element added by amendment. In those circumstances, prosecution history estoppel would bar the application of the doctrine [of] equivalents as to that element." *Id.* at 9, citing *Warner-Jenkinson*, 117 S.Ct. at 1051. The ALJ further found that, under *Warner-Jenkinson*, the presumption of estoppel clearly applied to "those circumstances" in which an amendment is "required" by the PTO "in order to overcome an objection based on the prior art," RD at 9 citing *Warner-Jenkinson*, 117 S.Ct. at 1051 and n.7.

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The ALJ noted that, in discussing the application of prosecution history estoppel, the *Warner-Jenkinson* Court spoke of situations “where the allegedly infringing equivalent element was outside of the revised claims and within the prior art that formed the basis for the rejection of the earlier claims.” RD at 9, citing *Warner-Jenkinson*, 117 S.Ct at 1049-50 and n.5 (in turn quoting *Keystone Driller Co. v. Northwest Engineering Corp.*, 294 U.S. 42, 48 (1935)). Based on this discussion, the ALJ interpreted the *Warner-Jenkinson* Court’s reference to “in those circumstances,” also to include the situation where the equivalent was within the prior art. RD at 9, citing *Warner-Jenkinson*, 117 S. Ct. at 1051 and n.5.

The ALJ noted the Supreme Court’s statement that “[w]hat is permissible for a court to explore is the reason (right or wrong) for the objection and the manner in which the amendment addressed and avoided the objection.” RD at 10, citing *Warner-Jenkinson*, 117 S. Ct. at 1051, n.7. From this statement, the ALJ concluded that an analysis of the reasons for an amendment was permissible under *Warner-Jenkinson*. Moreover, he found that the Federal Circuit in *Modine* had undertaken precisely such an analysis. RD at 10. The ALJ supported his finding with references to the *Modine* opinion, noting that the court discussed the prosecution history of the ‘580 patent in detail, and “concluded that . . . *Modine* relinquished the range of hydraulic diameters that extended to 0.070 inch, based in substantial part on the hydraulic diameter of the prior art Cat-Folded Front condenser.” RD at 10, citing *Modine* at 1555-6. The court also stated “[w]e conclude that the available range of equivalency is limited, by estoppel, to the hydraulic diameter of the Cat condenser.

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Within this boundary, however, the prosecution history and the prior art do not eliminate equivalents if substantial identity is shown,” *Id.* citing *Modine* at 1556. The court concluded that “the ALJ incorrectly held that *Modine* was estopped to assert equivalency against any condenser with a hydraulic diameter larger than exactly 0.040 inch . . . .” *Id.*

Based on his analysis, the ALJ concluded that the *Warner-Jenkinson* decision did not change the doctrine of equivalents in any way that affects the issues already decided in this investigation, and accordingly, that the Federal Circuit and the Commission had applied prosecution history estoppel in a manner that was consistent with the *Warner-Jenkinson* decision. Therefore, the ALJ recommended that respondents’ petition for reconsideration be denied.

### 5. Analysis

We agree with the ALJ’s recommendation to deny respondents’ petition for reconsideration and his rejection of respondents’ contention that the *Warner-Jenkinson* decision bars application of the doctrine of equivalents in this investigation. The passage of the *Warner-Jenkinson* opinion upon which respondents based their petition appears, underlined, in the following context:

We are left with the problem, however, of what to do in a case like the one at bar, where the record seems not to reveal the reason for including the lower pH limit of 6.0. In our view, holding that certain reasons for a claim amendment may avoid the application of prosecution history estoppel is not tantamount to holding that the *absence* of a reason for an amendment may similarly avoid such an estoppel. Mindful that claims do indeed serve both a definitional and a notice function, we think the better rule is to place the burden

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on the patent-holder to establish the reason for an amendment required during patent prosecution. The court then would decide whether that reason is sufficient to overcome prosecution history estoppel as a bar to application of the doctrine of equivalents to the element added by that amendment. Where no explanation is established, however, the court should presume that the PTO had a substantial reason related to patentability for including the limiting element added by amendment. In those circumstances, prosecution history estoppel would bar the application of the doctrine [of] equivalents as to that element. The presumption we have described, one subject to rebuttal if an appropriate reason for a required amendment is established, gives proper deference to the role of claims in defining an invention and providing public notice, and to the primacy of the PTO in ensuring that the claims allowed cover only subject matter that is properly patentable in a proffered patent application. Applied in this fashion, prosecution history estoppel places reasonable limits on the doctrine of equivalents, and further insulates the doctrine from any feared conflict with the Patent Act.

*Warner-Jenkinson*, 117 S.Ct. at 1051.

The issue of whether the presumption, and consequently, the bar to application of the doctrine of equivalents, applies to this Commission investigation depends, in large measure, on the interpretation of the phrase “[i]n those circumstances.” When considered in context, we agree with the ALJ that the language underlying respondents’ petition refers to the situation before the *Warner-Jenkinson* Court, *viz.*, where the PTO made a rejection over the prior art, applicants submitted an amendment in response to the rejection that limited the claims more than the PTO rejection required, and there is no indication in the prosecution history why the claims were so limited. In those circumstances, which are not present here, the Court placed the burden on the patentee to establish the reasons underlying the claim

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amendment. We also agree with the ALJ's finding that, only if no reason can be established, are courts directed to apply the newly articulated presumption to bar the application of the doctrine of equivalents as to the amended element. RD at 9.

In cases where an applicant does establish a reason for amending its claim, as Modine did here (to avoid the prior art Cat condenser), the ALJ found that the Supreme Court affirmed its prior practice in stating that once those reasons are established, the tribunal must determine whether "that reason is sufficient to overcome prosecution history estoppel as a bar to application of the doctrine [of] equivalents to the element added by that amendment." *Warner-Jenkinson*, 117 S.Ct. at 1051. His finding is clearly supported by the *Warner-Jenkinson* Court's discussion of the Supreme Court cases that established the contours of prosecution history estoppel. *Id.* at 1049-50. In those cases, the Court examined the reasons underlying claim amendments before making a determination that estoppel applied, and did not apply estoppel unless the equivalent was found within the prior art. *See Warner-Jenkinson* at 1049-50. We are very reluctant to conclude that the Court intended to overrule its own authority, as well as the long-standing practice of the Federal Circuit, with two ambiguous sentences. No other part of the Court's opinion supports respondents' view that the Court intended to overrule years of past decisions by both the Supreme Court and the Federal Circuit in the area of prosecution history estoppel.

Furthermore, contrary to respondents' argument, we find that the RD is consistent with the facts in *Warner-Jenkinson*, where the PTO rejected the originally filed claims over a



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prior art reference that taught a process which operated at a pH above 9.0. In response, the applicants amended their claims to recite a pH range of 5.0 to 9.0 range. Rather than simply barring application of the doctrine of equivalents as to the lower pH limitation because the claims had been amended in view of the prior art, the *Warner-Jenkinson* Court remanded the case to the Federal Circuit to “consider whether reasons for that portion of the amendment were offered or not and whether further opportunity to establish such reasons would be proper.” *Id.* at 1051. We agree with the ALJ that the *Modine* court fully considered the applicants’ reasons for amending their claims and found that those reasons did not foreclose all recourse to the doctrine of equivalents.

We also find that the range of equivalence allowed by the *Modine* court is consistent with the policies underlying the Supreme Court’s decision in *Warner-Jenkinson*, *i.e.*, “proper deference to the role of claims in defining an invention and providing public notice, and to the primacy of the PTO in ensuring that the claims allowed cover only subject matter that is properly patentable in a proffered application.” *Warner-Jenkinson*, 117 S.Ct. at 1051. In regard to the first policy, respondents do not deny that the prosecution history of the ‘580 patent gave them notice of the range of equivalents that the Federal Circuit found in this case. Regarding the second policy, the range of equivalents found by the *Modine* court does not encroach upon the PTO’s primacy in determining patentable subject matter because the examiner predicated the patentability of claims 9 and 10 on features unrelated to their hydraulic diameter range. Moreover, the range of equivalents accorded the hydraulic

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diameter limitation by the *Modine* court does not overlap the hydraulic diameter of the Cat condenser.

We find that the RD is also supported by the Federal Circuit's remand order to the district court in the *Warner-Jenkinson* litigation. *Hilton Davis v. Warner-Jenkinson*, 93-1088, Order dated June 12, 1997 (*Hilton Davis* Order).<sup>6</sup> In that order, the Federal Circuit directed the district court to give the patentee the opportunity to establish the reason, if any, for the claim amendment adding the pH limitation of 6.0, *Hilton-Davis* Order at 3, and indicated that the patentee could introduce extrinsic evidence to "augment the record to show the reason for the claim amendment based on other facts that may be available." *Id.* at 6.<sup>7</sup> If the district court were to determine that a reason not related to patentability prompted the amendment, the Federal Circuit directed the court to decide if that reason is sufficient to overcome estoppel. *Id.* at 3. In directing the district court to decide whether a reason was sufficient to overcome estoppel, the Federal Circuit clearly indicated that it expected the district court to examine the reasons for the amendment rather than to apply estoppel automatically if it found that the amendment was made for a reason related to a prior art rejection. The Federal Circuit also emphasized that the Supreme Court cautioned courts to

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<sup>6</sup> This order issued the same day as the RD on the petition for reconsideration, thus the ALJ did not take it into account in making his recommendation.

<sup>7</sup> Respondents are correct in stating that the Federal Circuit's remand order did not mention the need to determine whether the PTO required the applicants to amend their claims. However, since the record clearly showed that the PTO did in fact reject the original claims, we do not find it significant that the Federal Circuit did not mention this requirement in its remand order.

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consider the need for fairness to the patentee. *Id.*

The Federal Circuit's remand order is inconsistent with respondents' view that *Warner-Jenkinson* permits only an examination of whether amendments were made to avoid the prior art (in which case the bar automatically applies) or for some other reason when it states "[w]hat reason is sufficient depends on the particular facts of the case. *See Pall Corp. v. Micron Separations, Inc.* 66 F.3d 1211, 1219 (Fed. Cir. 1995)."<sup>8</sup> The cited portion of the *Pall* decision held:

Prosecution history estoppel normally arises when a change of claim scope is made in order to overcome an examiner's rejection based on prior art. Estoppel may arise whether the change is made by amendment of the claims during prosecution, or by refiling the patent application with changed claims. Thus a patentee is estopped from recovering through equivalency that which was deemed unpatentable in view of the prior art. However, when a rejection based on prior art did not dictate the claim change that was made, it is necessary to look at the specific change and the reason, in ascertaining whether an estoppel has arisen by virtue of the change. [citations omitted]. We take note that in the course of patent examination claims are often amended and rewritten and added and subtracted. A non-substantive change or a change that did not in fact determine patentability does not create an estoppel [citation omitted.]

The Federal Circuit also clarified, by its citation to *Pall*, that a "reason related to patentability" does not go to a particular category of reasons, *i.e.*, a prior art reason versus a non-prior art reason. *Pall* stated:

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<sup>8</sup> The Supreme Court denied certiorari in *Pall* two weeks after it issued its decision in *Warner-Jenkinson*, having held the petition for writ of certiorari for over one year while it considered the *Warner-Jenkinson* case. 117 S. Ct. 1240 (March 17, 1997).

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Whether an amendment or argument made in response to a rejection under § 112 produces an estoppel, as does an amendment made to obtain allowance in view of cited references, is dependent on the particular facts. There is no all-encompassing rule that estoppel results from all claim changes, or all arguments whatever their cause or purpose. [citation omitted.]

*Pall*, 66 F.2d at 1219-1220.

Finally, we have examined the Federal Circuit cases cited by respondents that were recently vacated and remanded by the Supreme Court in view of *Warner-Jenkinson*,<sup>9</sup> and we agree with Modine and the IA that those cases do not involve the same legal issue that is present in this investigation. In our view, the fact that the Supreme Court denied the writ of certiorari in *Pall* is a strong indication that the Supreme Court would view the *Modine* decision to be consistent with *Warner-Jenkinson*.<sup>10</sup>

### C. Violation Issues

#### 1. The Proper Range of Equivalents for the Invention of the '580 Patent

The Federal Circuit found that the Commission erred in holding that prosecution

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<sup>9</sup> *Hughes Aircraft Co. v. United States*, 86 F.3d 1566, 1576-77 (Fed. Cir. 1996), vacated and remanded, 117 S. Ct. 1466 (April 14, 1997); *Litton Says, Inc. v. Honeywell Inc.*, 87 F. 3d 1559 (Fed. Cir. 1996), vacated and remanded, 117 S.Ct. 1240 (March 17, 1997); and *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 72 F.3d 857 (Fed.Cir. 1996), vacated and remanded, 117 S.Ct. 1240 (March 17, 1997),

<sup>10</sup> We have also examined *Wang Labs. Inc. v. Mitsubishi Electronics America, Inc.* 103 F.3d 1571, 1578 (Fed. Cir. 1997), cited by respondents, in which the Federal Circuit refused to permit equivalents for a capacitor element because the patentee "had claimed its invention with precision to distinguish a plurality of prior art references." *Wang*, however, held "[w]e examine the statements and actions of the patentee before the PTO during prosecution . . . and ask what a competitor reasonably may conclude the patentee surrendered." *Id.* Thus, the standard applied by the Federal Circuit in *Wang* is the same as that applied in the RD. The fact that *Wang* reached a different result is dependent on the particular prosecution history present in that case.

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history estopped Modine from asserting equivalency against any condenser with a hydraulic diameter larger than exactly 0.040 inch. *Modine* at 1555. However, the court agreed that the prosecution history placed some limits on the range of equivalents to be accorded the '580 patent, finding that during the prosecution of the '580 patent Modine relinquished the range of hydraulic diameters that extended to 0.070 inch in view of the hydraulic diameter of the prior art "Cat-Folded Front" condenser. Although the claimed condenser differed in several respects from the Cat condenser, the court ruled that the prosecution history showed that the hydraulic diameter of the Cat condenser, "either 0.0496 or 0.04822 inch (the record showed both figures)," was a factor in the applicants' decision to limit their claims to 0.040 inch. *Modine* at 1552. The court concluded, therefore, that the upper range of equivalency for the '580 patent was limited by estoppel to the hydraulic diameter of the Cat condenser.

While the Federal Circuit was aware that two conflicting measurements for the hydraulic diameter of the Cat condenser appeared in the prosecution history, it left it to the Commission to determine which measurement was the proper one for determining the range of equivalents. Respondents contend that the claims at issue are entitled to a range of equivalent hydraulic diameters only up to that of the lower figure given in the prosecution history for the Cat condenser, 0.04822 inch; Modine and the IA believe the claims are entitled to a range up to the larger figure reported in the prosecution history, 0.0496 inch. The ALJ determined that 0.04822 inch was the proper limit on the range of equivalents, and we affirm that determination. However, because we believe that the ALJ's analysis on this

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issue conflicts in some respects with Federal Circuit precedent, we shall supply our own reasoning to support that determination.

In support of their positions, Modine and the IA each cite a response to the patent examiner's rejection of the '580 patent claims, dated October 6, 1988, in which the applicants argued:

With regard to certain comments made by the examiner, the fact that a Cat Folded Front condenser may have one or more passages with hydraulic diameters of less than 0.040 is not dispositive since the overall hydraulic diameter was 0.049 inches. . . . It is, of course, conceivable that some insert location might be found wherein none of the flow paths have hydraulic diameters less than 0.040 inches and since the overall hydraulic diameter is 25% above the top end of the range claimed, that should be the one that is accorded anticipatory effect if any particularly since improved results with [the claimed condenser] are demonstrated at hydraulic diameters of 0.035 inches and 0.039 inches (the latter being almost right at the top end of the claimed range) over the Cat Folded Front having an overall hydraulic diameter of 0.049 inches.

Showa Exh. 5 (emphasis added by Modine and the IA).

Modine and the IA contend that this statement contained Modine's only surrender of claimed material, and thus supports their view that 0.0496 inch was the proper upper limit to use for estoppel purposes.

However, in a letter dated July 17, 1989, the applicants stated to the patent examiner:

[a]t least the number for the Cat folded front [given in the October 6, 1988 response] is in error and should be about 0.041 inches. We are reviewing the entire table and expect to provide correct values within the next two to three weeks.

Showa Exh. 5.

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On August 31, 1989, applicants submitted a table that corrected errors in the information given on October 6, 1988. The table showed the revised hydraulic diameter for the Cat condenser to be 0.04822 inches, rather than 0.0496 inches. Inventor Guntly filed a declaration on September 18, 1989, stating that the “new” data furnished on August 31, 1989, was accurate. The ALJ found, and we agree, that the corrections to the data were conspicuous, unambiguous, and were made in the context of the cited prior art and the claimed condenser. We further agree with the ALJ’s finding that the public was entitled to rely on the corrected data in interpreting the claim term “relatively small hydraulic diameter.” We also find it significant that the examiner wrote in a November 7, 1989, communication that “[a]pplicant’s declarations directed to errors in Table 1 previously submitted have been noted and fully considered.” Showa Exh. 5.

The cases cited by the IA and Modine do not lead to a contrary result. Both *Insituform Technologies v. Cat Contracting, Inc.*, 99 F.3d 1098, 1109 (Fed. Cir. 1996), and *Athletic Alternatives, Inc. v. Prince Manufacturing*, 73 F.3d 1573, 1582 (Fed. Cir. 1996), held that estoppel cannot be based on equivocal or obscure references. In our view, the correction of the Cat condenser hydraulic diameter measurement was neither equivocal nor obscure. The examiner’s attention was specifically drawn to the correction, the correction was accompanied by a declaration by the inventor, and the examiner specifically noted that the corrected measurement had been taken into account. The Federal Circuit has long recognized that in determining the proper scope of estoppel, “[t]he legal standard for

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determining what subject matter was relinquished is an objective one, measured from the vantage point of what a competitor was reasonably entitled to conclude, from the prosecution history, that the applicant gave up to procure issuance of the patent.” *Haynes Int’l, Inc. v. Jessop Steel Co*, 8 F.3d 1573, 1578 (Fed. Cir. 1993). Because the correction was conspicuous and made in the context of the prior art condenser, we find that competitors are entitled to rely on the corrected measurement given for the Cat condenser.

Furthermore, the *Modine* court found that “the available range of equivalency is limited, by estoppel, to the hydraulic diameter of the Cat condenser.” *Modine* at 1556. We interpret this to mean that the Cat condenser itself, not some disembodied measurement, is the proper limit on the range of equivalents. Since the correct measurement for the Cat condenser is 0.04822 inches, we find that figure to be the proper one to use in determining the range of equivalents for the ‘580 patent claims.

Finally, we note that the Commission’s brief to the Federal Circuit in the *Modine* appeal highlighted *Modine*’s October 6, 1988, prosecution arguments as support for the Commission’s 1993 finding that the prosecution history, which stated “since the overall hydraulic diameter [of the prior art Cat condenser] is 25% above the top end of the range claimed, that should be the one that is accorded anticipatory effect if any,” limited the ‘580 patent claims to a range of equivalents of no greater than 0.040 inch. The court was thus aware of this prosecution history when it handed down its remand. If the Federal Circuit had viewed those remarks to be dispositive on the issue of the range of equivalents, as



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Modine and the IA argue, it would not have found it necessary to remand this issue to the Commission.<sup>11</sup>

### 2. De Minimis Arguments

The ALJ did not address respondents' arguments that any infringement by them was *de minimis*, and thus not actionable. Respondents contend that any infringement on Showa's part was inadvertent, undesired, minimal, and quickly corrected. Respondents explain that the hydraulic diameters of the condensers that were found to infringe were attributable to the wearing of the tooling die used to fabricate the tubes for their condensers. They point out that the uncontradicted testimony of respondents' witness was that Showa disfavored deteriorating dies because of the high cost of their frequent replacement and the fact that more aluminum was needed to fabricate the tubes as the die deteriorated.

We find, however, that the record does not support Showa's claims that its infringement was either inadvertent, undesired, minimal, or quickly corrected. The record establishes that Showa had been experimenting with wear-resistant carbide dies since September 1990, but waited until June 1991 to begin replacing the dies it used to extrude the condenser tubes it made for Mazda, Mitsubishi, and Honda. Showa did not complete the replacement of the dies used to extrude Audi condensers until May 1992. Although Showa

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<sup>11</sup> We have considered whether the 0.4822 measurement could be considered law of the case given that the Commission's previous finding that the Cat condenser's hydraulic diameter was 0.04822 inch was affirmed by the Federal Circuit when it affirmed the Commission's findings on the scope and content of the prior art. *Modine* 75 F.3d at 1549. However, since that measurement was not specifically relied upon either by the Commission in the original investigation or by the Federal Circuit on appeal in upholding the validity of the '580 patent, we have concluded that the measurement is not law of the case.

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has had to replace these wear-resistant dies an average of 18-20 times a month in order to avoid the effects of wear, it did not implement a comprehensive manufacturing standard and quality assurance program until February 1993.

Showa has produced thousands of condensers since the '580 patent issued in 1991, and it is reasonable to infer that a significant percentage of them contained tubes extruded on worn dies inasmuch as a quality control program was not implemented until 1993. Imports of 1992 Mazda 929 autos with factory-installed Showa condensers exceeded 21,389 units and imports of similarly equipped 1993 Audi 90 vehicles exceeded 8,500 units. Thus, we find ample evidence to conclude that respondents' infringement was well beyond the *de minimis* level. Modine's purchase of a Mazda 929 condenser in October 1991 and an Audi 90 condenser in January 1993 indicate that Showa's infringement was not quickly corrected.

The district court cases cited by respondents concerning *de minimis* infringement do not support a finding of no violation here because those cases concerned prototypes or minimal uses of single products. Since Showa's condenser was neither a prototype nor a custom-made product, those cases have little bearing on this investigation. We note that the importation of even a single infringing article is sufficient to support an action under section 337, *Certain Trolley Wheel Assemblies*, 337-TA-161, USITC Pub. at 1605 at 8 (Nov. 1984), and discontinuance of unfair importation is not a defense under section 337, *Certain Rotary Printing Apparatus Using Heated Ink Composition, and Components Thereof*, Inv. No. 337-TA-320, Order No. 1 (January 14, 1991).

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### **B. Remedy, the Public Interest, and Bonding**

#### **1. Remedy**

Under subsections 337(d) and (f), when it has found a violation of section 337, the Commission may issue an exclusion order, a cease and desist order, or both, depending on the circumstances. The Commission has broad discretion in selecting the form, scope, and extent of the remedy in a section 337 proceeding. *Viscofan, S.A. v. U.S. Int'l Trade Comm'n*, 787 F.2d 544, 548 (Fed. Cir. 1986); *Hyundai Electronics Industries Co. v. U.S. Int'l Trade Comm'n*, 899 F.2d 1204 (Fed. Cir. 1990).

There are two types of exclusion orders: general exclusion orders and limited exclusion orders. A general exclusion order instructs the U.S. Customs Service (Customs) to exclude from entry all articles which infringe the involved property right, without regard to source. Thus, a general exclusion order applies to persons who were not parties to the Commission's investigation and, indeed, to persons who could not have been parties, such as persons who decide to import after the Commission's investigation is concluded. A limited exclusion order instructs Customs to exclude from entry all articles which infringe the involved property right and that originate from a firm that was a party to the Commission investigation. Modine has requested a general exclusion order.

Cease and desist orders direct a person to cease its unfair acts and are generally directed to respondents that maintain inventories of the accused product in the United States. Unlike an exclusion order, a cease and desist order is enforced by the Commission through

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the courts. Respondents have asked that, if any remedy is imposed, it consist solely of cease and desist orders directed to the Showa respondents only. Modine does not request any cease and desist orders.

### a. The ALJ's Recommendation

The ALJ recommended that the Commission issue a limited exclusion order directed to the Showa respondents prohibiting the importation of condensers that infringe claims 9 or 10 of the '580 patent, parts thereof, and products containing same, except motor vehicles. The ALJ also recommended inclusion of a Customs certification provision and a reporting requirement requiring the Showa respondents to provide information with respect to importation and sales of such condensers, parts thereof, and downstream products, including motor vehicles.<sup>12</sup> The ALJ found this remedy necessary to insure that potential future violations could be detected and prevented. The ALJ recommended against issuing any cease and desist orders in this investigation because the record contains no evidence that the Showa respondents have accumulated "commercially significant" inventories of infringing products in the United States, a factor militating against the issuance of cease and desist orders in *Certain Crystalline Cefadroxil Monohydrate*, Inv. No. 337-TA-293, Commission Opinion, 15 USPQ2d 1263, 1277-78 (1990).

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<sup>12</sup> The ALJ also found that the Commission's broad discretion in selecting the form, scope, and extent of the remedy in section 337 proceedings, included the discretion to issue no remedy at all. Because we agree with the ALJ's determination that a limited exclusion order should issue in this investigation, we find it unnecessary to reach that issue.

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The ALJ based his recommendation on remedy on his findings that: (1) the Showa respondents admitted that, in the period from January 1993 through August 1996, Showa Japan directly exported 622,372 condensers to Showa America, a quantity which Showa itself characterized as "substantial," (2) two condensers manufactured by Showa were found to infringe the '580 patent, (3) Modine's purchase of a Mazda 929 condenser in October 1991 shortly before the complaint was filed on December 12, 1991, and its purchase of an Audi 90 condenser in January 1993 shortly before the evidentiary hearing began, indicated that Showa's infringement was not unintended and was not quickly corrected. We agree that a remedy should issue in this investigation, despite Showa's apparent cessation of infringement. We find that Showa's past record, as well as the ease with which Showa could resume infringement (if only inadvertently), supports the issuance of a remedy here.

### **b. Respondent's Contention that a Cease and Desist Order is an Adequate Remedy**

Respondents argue that an exclusion order would affect only legitimate commerce, since all Showa condensers are now non-infringing, and that Modine would receive no real benefit from an exclusion orders. In addition, respondents argue that exclusion orders would place unwarranted burdens on the U.S. Customs Service, since Showa's condensers no longer infringe the '580 patent. Respondents contend that cease and desist orders against Showa Japan and Showa America would be a sufficient remedy since they are a significant enforcement mechanism carrying the possibility of fines and/or the imposition of an exclusion order. They argue that since Showa has a wholly-owned U.S. subsidiary, which is

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also a respondent in this investigation, there are assets in the United States that could be reached in satisfaction of any penalty. Showa contends that its circumstances are similar to those of the respondent in *Certain Electric Power Tools, Battery Cartridges, and Battery Chargers*, Inv. No. 337-TA-284, (March 2, 1990) (*Power Tools*), where the Commission rejected the complainant's request for an exclusion order because the only identified violation had taken place more than four years before the start of the investigation and there was no evidence that the respondent was likely to engage in infringing conduct thereafter. *Power Tools*, Comm'n Op. at 14-15. The Commission did issue a cease and desist order against the domestic respondent as the sole remedy in *Power Tools*. However, in that investigation, the Commission found evidence of only a single violation of section 337, and that had occurred more than four years before the investigation began. Here, the extent of Showa's infringement was much greater and it did not cease until after the section 337 investigation was underway.

The well-established purpose of cease and desist orders is to ensure complete relief to complainants when infringing goods are held in inventory in the United States and, therefore, beyond the reach of an exclusion order. See e.g., *Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm. Opinion at 22 (Jan. 16, 1995) (*Microsphere Adhesives*). Moreover, the Commission's longstanding practice is to issue cease and desist orders only against domestic respondents. *Id.* at 22-23. In *Microsphere Adhesives* the Commission

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explained:

a cease and desist order is an in personam order directed to a party in the United States and enforced by the Commission in U.S. District courts. Thus, unless a party in the United States can be compelled to so some act or to refrain from doing some act by U.S. courts, a cease and desist order is inappropriate.

*Id.*

We find that a cease and desist order directed to the Showa respondents would not give adequate relief to Modine because such an order would not stop other importers from importing Showa's products. Although Showa suggested that a cease and desist order could be imposed and enforced against Showa for any violation by Showa or "by a different entity," we believe it would be problematic for the Commission to seek penalties against Showa for the actions of an unrelated third party. Moreover, we find no persuasive reason for altering the Commission's longstanding practice of issuing cease and desist orders only against domestic respondents for the purpose of reaching inventories of infringing goods already in the U.S. that are not subject to exclusion. Since the record contains no evidence concerning infringing inventories in the United States, we accept the ALJ's recommendation and decline to issue cease and desist orders in this investigation.

### **c. Type of Exclusion Order -- General or Limited**

The Commission exercises caution in issuing general exclusion orders because of their potentially disruptive effects on trade and requires that certain conditions be met before one is issued. These conditions were set forth by the Commission in *Certain Airless Paint Spray*

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*Pumps*, Inv. No. 337-TA-90, USITC Pub. 1199, Commission Opinion at 17-18 (Nov. 1981), where the Commission stated that it would “require that a complainant seeking a general exclusion order prove both a widespread pattern of unauthorized use of its patented invention and certain business conditions from which one might reasonably infer that foreign manufacturers other than the respondents to the investigation may attempt to enter the U.S. market with infringing articles.” Factors relevant to demonstrating whether there is a “widespread pattern of unauthorized use” include:

- (a) a Commission determination of unauthorized importation into the United States of infringing articles by numerous foreign manufacturers;
- (b) the pendency of foreign infringement suits based upon foreign patents which correspond to the domestic patent at issue; and
- (c) other evidence which demonstrates a history of unauthorized foreign use of the patented invention.

*Id.*

Factors relevant to showing whether “certain business conditions” exist include:

- (a) an established market for the patented product in the U.S. market and conditions of the world market;
- (b) the availability of marketing and distribution networks in the United States for potential foreign manufacturers;
- (c) the cost to foreign entrepreneurs of building a facility capable of producing the patented article;
- (d) the number of foreign manufacturers whose facilities could be retooled to produce the patented article; or
- (e) the cost to foreign manufacturers of retooling their facility to



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product the patented article.

*Id.*

The ALJ found that the *Spray Pumps* criterion of a widespread pattern of unauthorized use was not met in this case and so recommended against issuing a general exclusion order. RD at 12. Modine maintains that it is entitled to the entry of a general exclusion order because it presented evidence of widespread patent violations by numerous non-respondent manufacturers and satisfied the business conditions criteria set forth in *Spray Pumps*.

In late 1995 and early 1996, Modine employees purchased a variety of parallel flow condenser from auto dealerships in the Racine, Wisconsin area and determined the country of origin markings on the shipping container. Relying on its knowledge of supplier/auto manufacturer relationships in the industry and using authoritative industry publications, Modine tentatively identified the foreign manufacturers of seven condensers made for 1995 and 1996 vehicle models which allegedly have hydraulic diameters under 0.04822 inch. Modine asserts that these models were manufactured by foreign manufacturers Zexel Corporation, Calsonic Corporation, Valeo Corporation, and Behr GmbH Company. Modine calculated the volume of motor vehicles imported during the 1995 and 1996 model years that probably contained factory-installed parallel flow condensers made by those manufacturers to be 1.5 million.

We find Modine's method of calculating the number of allegedly infringing condensers manufactured by non-respondents that have been imported to be flawed.

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Modine's analysis assumes that: (1) if one condenser for any model year vehicle was found to have a hydraulic diameter within the scope of the '580 patent, then every other parallel flow condenser made for that model should be counted as infringing, (2) all condensers for that model in any subsequent year also should be counted as infringing, and (3) other parallel flow condensers made by the same manufacturer for use in other vehicles should be counted as infringing as well. This investigation established, however, that the hydraulic diameter measurements for all condensers found in any particular model cannot be assumed to be the same, and that a manufacturer cannot be assumed to have used only one size of tube.

Moreover, the ALJ the examined tables submitted by Modine that listed imported and domestic condensers which were made by non-respondent manufacturers and allegedly infringed the '580 patent. After inspecting the underlying data for the tables, however, the ALJ found that Modine had positively identified only one of those condensers as having been manufactured by an identified foreign firm. He also found that Modine's tables indicated that at least two of the non-respondents manufacturers (Zexel and Valeo) manufactured the allegedly infringing condensers domestically as well as outside the United States.

The ALJ noted that, while he found some unauthorized importation into the United States of infringing articles, only two of the twelve originally accused condensers manufactured by Showa Japan were shown to have infringed the '580 patent, viz., the Mazda 929 and the Audi 90 condensers. He also found that since the date of the hearing in February 1993, Modine has not purchased any infringing Showa condensers. Furthermore,

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he found that the market share represented by the alleged non-respondent infringers was relatively small. RD at 13; FF 24-29. The ALJ also found that the record in this investigation showed no foreign infringement suits based upon foreign patents corresponding to the '580 patent or any other evidence which demonstrated unauthorized foreign use of the patented invention. We adopt the RD's findings and conclusions supporting its determination that there is no pattern of widespread unauthorized use of the '580 patent.

Having found no widespread pattern of unauthorized use, the ALJ did not consider the business conditions prong of the *Spray Pumps* criteria. Modine contends that this was error. Modine argues that under the precedent of *Certain Chemiluminescent Compositions*, Inv. No. 337-TA-285, strong evidence on the business conditions prong of *Spray Pumps*, can support a general exclusion order despite a lack of widespread unauthorized use. Modine asserts that there is a substantial and growing worldwide demand for parallel flow condensers practicing Modine's invention because condensers of this design are lighter, more compact, more energy-efficient, and can substantially outperform conventional condensers. As a result, Modine and its licensees have enjoyed considerable commercial success. Modine asserts that there is a worldwide trend among auto manufacturers toward the parallel flow condenser design, and virtually every manufacturer of automotive condensers in the world now produces some form of parallel flow condenser. Modine believes that the parallel flow condenser design will likely account for more than two-thirds of worldwide condenser sales by the year 2000.

## PUBLIC VERSION

Modine also asserts that foreign manufacturers can quickly and inexpensively convert their facilities to produce infringing parallel flow condensers, since virtually every major manufacturer of automotive heat exchangers in the world already produces some form of parallel flow condenser. Modine contends that all manufacturers that use extruded tubes in their parallel flow condensers, including those that do not currently infringe Modine's '580 patent, can quickly and inexpensively modify the extrusion operation to produce infringing condenser tubes by simply extending the production life of a particular extrusion die set or by replacing its dies. Modine alleges that retooling is inexpensive since die sets wear out quickly and need to be replaced often. Modine also asserts there is a well-established nationwide network of auto dealerships or distributors of aftermarket parts in the United States that importers can utilize to sell their foreign products whether the infringing condensers enter the country already installed in vehicles, as components for air conditioning system kits, or as replacement parts. Modine asserts that its own successful efforts to purchase competitive condensers illustrate this point.

We find that the conditions cited by Modine do not present a compelling case for issuance of a general exclusion order in this investigation. The '580 patent does not cover all parallel flow design condensers. Showa currently manufactures noninfringing parallel flow condensers as does the Harrison Division of General Motors Company and Mandy, Inc. Competitors do not need to infringe in order to compete, and Modine has presented no compelling evidence demonstrating any reason for assuming that they intend to infringe or

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are even likely to do so. The existence of an opportunity to make infringing products will not support a general exclusion order absent a showing that any competitor has an incentive or intends to switch to an infringing process, particularly where, as here, the evidence of record amply demonstrates that non-infringing alternatives to the patented technology exist and are successful in legitimate competition. *See Microsphere Adhesives* Comm. Opinion at 22-23. We note that Showa's sales of non-infringing condensers have out paced Modine's sales of the '580 condenser in the last three and one-half years.

Moreover, given the lack of a necessity to infringe in order to be competitive, there is no reason for manufacturers of parallel flow condensers to face the risk of liability for infringement when they can retool dies at low cost to avoid infringement. Modine measured non-respondents' condensers in 1995 and 1996, prior to the Federal Circuit's decision in *Modine*. Thus, those condensers were sold when the only authoritative interpretation of the '580 claims was that of the Commission which held that diameters greater than 0.040 inch were not infringing. Given the low cost of retooling, it cannot be assumed that manufacturers will not take steps to avoid infringement of the '580 patent claims, as they have been interpreted by the Federal Circuit.

Modine has not contended that the total worldwide number of manufacturers of parallel flow condensers is large, and indeed the record indicates a contrary finding. Thus, there is no reason to find that an order directed at named entities, as opposed to a general exclusion order, would not be effective. This is not a case where a general exclusion order

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is justified because the products in issue are small, cheap, fungible, and susceptible to easy fabrication by entities that can begin infringing with low entry costs and may disappear before their products can be subjected to appropriate trade oversight. *See, e.g., Certain Tape Dispensers, Inv. No. 337-TA-354; Certain Soft Sculpture Dolls, Inv. No. 337-TA-231; and Certain Compound Action Metal Cutting Snips, Inc. No. 337-TA-197.* Rather, there are only a small number of manufacturers in the condenser industry, the product is fairly sophisticated, and start-up costs for manufacture are high.

Modine states that it did not include the named non-respondents in its original complaint because it did not have knowledge of the actual extent of infringement by them until it began a systematic program of purchasing and inspecting competitive condensers in late 1995 and early 1996. But Modine does not explain why it did not begin such a program before it filed its complaint. We are concerned that if a complainant delays naming alleged wrongdoers until the remedy stage, the accused parties will be deprived of a forum and opportunity to raise substantive defenses, and the Commission will not have the benefit of full rebuttal before making a decision that could have significant adverse effects on non-respondents. *See Certain Chemiluminescent Compositions and Components Thereof and Methods of Using, and Products Incorporating the Same, Inv. No. 337-TA-285* (Commission Opinion of March 1991). As the Commission concluded in *Certain Crystalline Cefadroxil Monohydrate, Inv. No. 337-TA-293, 15 USPQ2d 1263, 1275 (1991)* “no inequity exists in issuing a limited exclusion order directed only at the infringing products of named

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respondents” where the non-respondent manufacturers could have been named in the complaint. Any contrary practice would subvert the Commission’s policy of encouraging complainants to include in an investigation all those foreign manufacturers which it believes have entered, or are on the verge of entering, the domestic market with infringing articles. *Id.* Moreover, we believe that granting a general exclusion order under the circumstances here would give future complainants an incentive not to name entities that could raise strong defenses to allegations of section 337 violations as respondents, or to file only against likely defaulters. *See Cefadroxil Monohydrate*, 15 USPQ2d at 1276.

In view of the foregoing, we agree with the ALJ’s recommendation that a general exclusion order is not appropriate in this investigation, and we accept his recommendation to impose a limited exclusion order against the Showa respondents.

### **d. Downstream and Upstream Reach of the Order**

The Commission has identified nine factors in determining whether to extend exclusion orders to downstream products. *See Certain Erasable Programmable Read-only Memories, Components Thereof, Products Containing Such Memories, and Processes for Making Such Memories*, Inv. No. 337-TA-276, (EPROMS) Commission Opinion at 125. Those factors include: (1) the value of the infringing products compared to value of the downstream products in which they are incorporated, (2) whether the downstream products are manufactured by the party found to have committed the unfair act, or by third parties, (3) the incremental value to complainant of the exclusion of downstream products, (4) the

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incremental detriment to respondents of such exclusion, (5) the burdens imposed on third parties by excluding downstream products, (6) the availability of alternative downstream products which do not contain the infringing articles, (7) the likelihood that imported downstream products actually contain the infringing articles and are thereby subject to exclusion, (8) the opportunity for evasion of an exclusion order which does not include downstream products, and (9) the enforceability of an order by Customs. *Id.*

The ALJ recommended that the limited exclusion order not be directed to imported motor vehicles that include Showa condensers. In making this recommendation, the ALJ relied on: (1) his finding that the value of infringing articles compared to the value of imported motor vehicles was very low, (2) the fact that Modine has purchased no infringing Showa condenser since 1993, (3) his finding that the Showa respondents have demonstrated that they have quality control measures in place to assure that no imported Showa Japan condenser infringes the '580 patent, and (4) the burden an exclusion order would place on importers of motor vehicles containing Showa Japan condensers even if importation were permitted under a certification provision.

The ALJ recommended that the limited exclusion order cover imported motor vehicle air conditioning systems that include Showa Japan condensers since the value of the infringing articles compared to the value of imported automotive air conditioning systems is substantial. He also recommended directing the limited exclusion order against "parts" of Showa condensers, in addition to Showa condensers, because there is evidence that the



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Showa respondents have imported the United States condenser tubes and "knockdown" condensers.

We agree with the RD that an exclusion order that does not extend to motor vehicles is consistent with the factors set forth in *EPROMs*. Modine's assertion that the vast majority of condensers enter the U.S. installed in motor vehicles is undisputed. However, the very substantial burdens on legitimate trade that would be caused by an order covering motor vehicles cannot, in our view, be justified in this investigation. The value of a condenser in relation to a motor vehicle is small, and the world market contains many sources of non-infringing condensers. In fact, respondents themselves have not infringed for nearly five years. Furthermore, the number of motor vehicles imported each year into the U.S. is huge, and Customs has expressed concerns about administering an exclusion order that extends to them.

However, we find that an order covering air-conditioning systems is reasonable and would not be unduly burdensome to legitimate commerce. Condensers contribute approximately [\*\*\*] percent of the value to an air-conditioning system. Because the volume of imports of air-conditioning systems is much lower than the volume of imports of motor vehicles, Customs has not expressed concerns about administering an order covering them. We also find it reasonable to include a provision covering condenser parts, since the evidence suggests that infringing condensers can be assembled in the United States from imported parts.

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### e. Certification Requirement

The ALJ recommends that the limited exclusion order contain a “certification” provision whereby the Showa respondents may import goods by providing to the Customs Service a written certification that any imported condensers are not covered by claims 9 or 10 of the ‘580 patent. Such a provision would facilitate Customs’ administration of the order by eliminating the often difficult task of determining how a product was made simply by examining its appearance. Similar certification provisions have been included in previous exclusion orders where respondents imported both infringing and non-infringing products. *See, e.g., Certain Minoxidil Powders, Salts, and Compositions for Use in Hair Treatment*, Inv. No. 337-TA-267 (1988)(*Minoxidil*); *Certain Curable Fluoroelastomer Compositions and Precursors Thereof*, Inv. No. 337-TA-364, USITC Pub. 2890 (May 8, 1995) (*Fluoroelastomers*).

We believe that a certification requirement is the best means of providing protection to Modine without causing significant burdens on legitimate trade. As the ALJ noted, such provisions are appropriate where respondents import both infringing and non-infringing products, *see, e.g., Minoxidil and Fluoroelastomers*. The Mitsubishi respondents expressed concerns about compelling importers to certify that condensers are non-infringing. We believe these concerns are mostly avoided by the limited exclusion order, which does not cover condensers installed in automobiles. Moreover, all certifications of noninfringement are to be made by Showa. Thus, it will be Showa’s responsibility to include a certification

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with all condensers that are intended for export to the United States. Importers of condensers, condenser kits, and condenser parts will bear the responsibility of presenting the certification to Customs.

### **f. Reporting Requirement**

Pursuant to Commission rule 210.71(a), the ALJ recommends a reporting requirement directed to the Showa respondents in order to insure that they comply with the terms of the limited exclusion order. The ALJ recommended that annual reports be submitted to the Commission by the Showa respondents, in English and under oath, that include the following information: (1) the volume (in units and dollars) of imports into the United States of Showa condensers covered by claims 9 or 10 of the '580 patent, parts thereof (including tubes and partially completed condensers), and products containing same (including air conditioning systems and motor vehicles; (2) the volume (in units and dollars) of sales in the United States of such articles; (3) identification of all contracts, whether written or oral, entered into during the reporting period for the purpose of selling such articles in the United States; and (4) a statement of the methodology by which the Showa respondents determine that the products they imported were or were not covered by claims 9 or 10 of the '580 patent with a summary of the resulting data.

We adopt the ALJ's recommended reporting requirement. This requirement, which ensures that Showa does not resume infringing the '580 patent, should address Modine's concerns that infringing condensers will enter the United States in automobiles.

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### g. Type of Entry

Modine has not requested an exclusion order directed against entries other than for consumption of the accused infringing condensers, and neither the ALJ nor any of the parties discussed the issue. See *In the Matter of Certain Devices for Connecting Computers via Telephone Lines*, Inv. No. 337-TA-360, Commission Opinion, USITC Pub. No. 2843 (1994). There appears to be no reason to issue an order against articles other than for consumption here, and we therefore direct the limited exclusion order to entries for consumption only.

### 2. The Public Interest

Prior to issuing relief, the Commission is required to consider the effect of such relief on the public health and welfare, competitive conditions in the U.S. economy, the production of like or directly competitive articles in the United States, and U.S. consumers. 19 U.S.C. §§ 1337(d) and (f). The Commission has found the public interest concerns to be overriding in only three cases to date. In *Certain Automatic Crankpin Grinders*, Inv. No. 337-TA-60, the Commission found issuance of an exclusion order would deprive the domestic automotive industry of a tool needed to supply the domestic market with parts for fuel efficient automobile engines. In *Inclined Field Acceleration Tubes*, Inv. No. 337-TA-67, the Commission determined that continuing basic atomic research using high quality imported acceleration tubes was an overriding public concern and declined to issue an exclusion order. In *Certain Fluidized Support Apparatus*, Inv. No. 337-TA- 182/188, the Commission found

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that the domestic manufacturer was unable to meet the demand for the patented hospital beds for burn patients and that no comparable product was available.

We find that the public interest factors do not militate against issuance of a limited exclusion order in this investigation. Modine, as well as other suppliers, can adequately supply existing demand for parallel flow condensers. Moreover, the limited exclusion order has been crafted to avoid disrupting legitimate trade in the condenser market. The order is directed only to the Showa respondents, and has a limited downstream reach. The reporting and certification provisions, designed to facilitate the importation of noninfringing condensers, ensure that the order poses no unwarranted burdens on legitimate commerce.

### 3. Bonding

Section 337(j) provides for the entry of infringing articles upon the payment of a bond during the 60-day Presidential review period. 19 U.S.C. § 1337(e). The bond is to be set at a level sufficient to “protect complainant from any injury” during the Presidential review period. *Id.* The RD recommends that the Commission set the amount of the bond during the 60-day Presidential review period at five (5) percent of the entered value of Showa SC condensers imported as individual units into the United States, and that no bond be required for entry of parts of Showa SC condensers, or for downstream products containing Showa SC condensers. The recommend bond is based on a stipulation between Modine and respondents. The IA had no objection to the entry of the stipulation, and we see no reason not to accept the stipulated bond. Bond is therefore set at five (5) percent of the entered

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value of Showa SC condensers imported as individual units into the United States. No bond is required for entry of parts of Showa SC condensers, or for downstream products containing Showa SC condensers.

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C. 20436

**DOCKET**

Inv. No. 337-TA-384

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OFFICE OF THE SECRETARY  
U.S. INT'L TRADE COMM.

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In the Matter of )  
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CERTAIN CONDENSERS, PARTS THEREOF )  
AND PRODUCTS CONTAINING SAME, )  
INCLUDING AIR CONDITIONERS FOR )  
AUTOMOBILES )  
)

NOTICE OF COMMISSION DETERMINATION TO REVIEW IN PART AN INITIAL  
DETERMINATION; SCHEDULE FOR THE FILING OF WRITTEN  
SUBMISSIONS ON THE ISSUE UNDER REVIEW, AND ON REMEDY,  
THE PUBLIC INTEREST, AND BONDING

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to review in part the initial determination (ID) issued by the presiding administrative law judge (ALJ) on December 2, 1996, in the above-captioned investigation. The ID found a violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337.

FOR FURTHER INFORMATION CONTACT: Jean Jackson, Esq., Office of the General Counsel, U.S. International Trade Commission, telephone 202-205-3104.

SUPPLEMENTARY INFORMATION: On December 12, 1991, Modine Manufacturing Co. filed a complaint with the Commission alleging a violation of section 337 by respondents Showa Aluminum Corporation, Showa Aluminum Corporation of America, Mitsubishi Motors Corporation, Mitsubishi Motors Sales of America, Mitsubishi Heavy Industries, Ltd., and Mitsubishi Heavy Industries America, Inc. (collectively referred to herein as respondents). Modine alleged that the respondents had infringed claims of Modine's patent, U.S. Letters Patent 4,998,580 (the '580 patent). The investigation was assigned an ALJ, who determined that there was no

infringement, either literally or under the doctrine of equivalents, by the respondents. The ALJ further determined that the patent was invalid and unenforceable due to inequitable conduct. On July 30, 1993, the Commission reversed the ALJ's findings of invalidity and inequitable conduct, but adopted her findings and conclusions on the infringement issues.

Modine appealed the Commission's finding of no infringement, and thus no violation of section 337, to the U.S. Court of Appeals for the Federal Circuit (Federal Circuit). In the same appeal, the respondents challenged the Commission's findings upholding the validity and enforceability of the '580 patent. On February 5, 1996, the Federal Circuit reversed the Commission's claim interpretation and remanded the investigation to the Commission for redetermination of the issues of literal infringement and infringement under the doctrine of equivalents. *Modine Manufacturing Co. v. U.S.I.T.C.*, 75 F.3d 1545, 1549 (Fed. Cir. 1996). The court affirmed the Commission's determination in all other respects. *Id.*

On May 31, 1996, the Commission issued an order remanding the Condensers investigation to the Office of Administrative Law Judges. The order provided that the presiding ALJ conduct further proceedings in accordance with the Federal Circuit's decision in *Modine* and issue an ID on violation, preferably within six months. The Commission's order also directed the ALJ to issue a recommended determination (RD) on the issues of remedy and bonding two weeks after the ID issued. On December 2, 1996, the ALJ issued an ID finding a violation of section 337 by respondents. On December 12, 1996, respondents and the Commission investigative attorney (IA) filed separate petitions for review. Complainant Modine filed a petition for review contingent on the Commission's decision either to grant another party's petition for review or to review the ID on its own motion. All parties filed responses to each petition on December 19, 1996. The ALJ issued his RD on remedy and bonding on December 16, 1996.

Having examined the record in this investigation, including the ID, the Commission has determined to review the reasoning supporting the ALJ's finding that the proper estoppel point for the Cat condenser is 0.04822 inch. The Commission has determined not to review the ID in all other respects. On review, the Commission will consider whether the 0.04822 inch measurement is properly considered law of the case, given that the Commission's previous finding that the Cat condenser's hydraulic diameter was 0.04822 inch was affirmed by the Federal Circuit when it affirmed the Commission's findings on the scope and content of the prior art. *Modine*, 75 F. 3d at 1549.

In connection with final disposition of this investigation, the Commission may issue (1) an order that could result in the exclusion of the subject articles from entry into the United States, and/or (2) cease and desist orders that could result in



respondents being required to cease and desist from engaging in unfair acts in the importation and sale of such articles. Accordingly, the Commission is interested in receiving written submissions that address the form of remedy, if any, that should be ordered. If a party seeks exclusion of an article from entry into the United States for purposes other than entry for consumption, the party should so indicate and provide information establishing that activities involving other types of entry either are adversely affecting it or are likely to do so. For background, see the Commission Opinion in In the Matter of Certain Devices for Connecting Computers via Telephone Lines, Inv. No. 337-TA-360.

If the Commission contemplates some form of remedy, it must consider the effects of that remedy upon the public interest. The factors the Commission will consider include the effect that an exclusion order and/or cease and desist orders would have on (1) the public health and welfare, (2) competitive conditions in the U.S. economy, (3) U.S. production of articles that are like or directly competitive with those that are subject to investigation, and (4) U.S. consumers. The Commission is therefore interested in receiving written submissions that address the aforementioned public interest factors in the context of this investigation.

If the Commission orders some form of remedy, the President has 60 days to approve or disapprove the Commission's action. During this period, the subject articles would be entitled to enter the United States under a bond, in an amount determined by the Commission and prescribed by the Secretary of the Treasury. The Commission is therefore interested in receiving submissions concerning the amount of the bond that should be imposed.

**WRITTEN SUBMISSIONS:** The parties to the investigation are requested to file written submissions on the issue under review. The submissions should be concise and thoroughly referenced to the record in this investigation, including, where necessary, references to specific exhibits and testimony. Additionally, the parties to the investigation, interested government agencies, and any other interested persons are encouraged to file written submissions on the issues of remedy, the public interest, and bonding. Such submissions should address the December 16, 1996, recommended determination by the ALJ on remedy and bonding. Complainant and the Commission investigative attorney are also requested to submit proposed remedial orders for the Commission's consideration. The written submissions and proposed remedial orders must be filed no later than the close of business on January 30, 1997. Reply submissions must be filed no later than the close of business on February 6, 1997. No further submissions will be permitted unless otherwise ordered by the Commission.

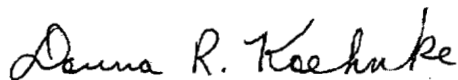
Persons filing written submissions must file with the Office of the Secretary the original document and 14 true copies thereof on or before the deadlines stated above.

Any person desiring to submit a document (or portion thereof) to the Commission in confidence must request confidential treatment unless the information has already been granted such treatment during the proceedings. All such requests should be directed to the Secretary of the Commission and must include a full statement of the reasons why the Commission should grant such treatment. See 19 C.F.R. § 201.6. Documents for which confidential treatment is granted by the Commission will be treated accordingly. All nonconfidential written submissions will be available for public inspection at the Office of the Secretary.

This action is taken under the authority of section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and sections 210.45-.51 of the Commission's Rules of Practice and Procedure (19 C.F.R. §§ 210.45-.51).

Copies of the public version of the ID and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E. Street, S.W., Washington, D.C. 20436, telephone 202-205-2000. Hearing impaired persons are advised that information on the matter can be obtained by contacting the Commission's TDD terminal at 202-205-1810.

By order of the Commission.



Donna R. Koehnke  
Secretary

Issued: January 16, 1997

UNITED STATES INTERNATIONAL TRADE COMMISSION  
WASHINGTON, D.C. 20436

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US INT'L TRADE COMM  
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In the Matter of )  
 )  
CERTAIN CONDENSERS, )  
PARTS THEREOF AND PRODUCTS )  
CONTAINING SAME, INCLUDING AIR )  
CONDITIONERS FOR AUTOMOBILES )  
\_\_\_\_\_ )

Investigation No. 337-TA-334  
REMAND

**DOCKET**

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Order No. 9: Recommended Determination Pursuant To Commission's May 9, 1997 Order

By order, dated May 9, 1997, the Commission determined to remand a petition for reconsideration to this administrative law judge for his recommendation and requested the judge to issue said recommendation on the issue raised in the petition as expeditiously as possible, but no later than six (6) months from the date of the Commission's order.

The Commission's order remanding the petition for reconsideration to the administrative law judge stated that on March 10, 1997, respondents Showa Aluminum Corporation, Showa Aluminum Corporation of America, Mitsubishi Motors Corporation, Mitsubishi Motors Sales of America, Mitsubishi Heavy Industries, Ltd., and Mitsubishi Heavy Industries of America, Inc. (respondents) filed a petition for reconsideration of the Commission's January 16, 1997, decision finding a violation of section 337 of the Tariff Act of 1930;<sup>1</sup> and that the petition was based on the Supreme Court's recent decision in Warner-Jenkinson, Inc. v. Hilton Davis Chemical Company, \_\_\_ U.S. \_\_\_, 117 S.Ct. 1040 (1997)

<sup>1</sup> The Commission's January 16, 1997 Notice at 2 determined to review only the reasoning supporting the finding of the administrative law judge that the proper estoppel point for the Cat condenser is 0.04822 inch.

Hilton Davis),<sup>2</sup> which respondents argued is contrary controlling legal authority.

Respondents argued that in Hilton Davis, the Supreme Court held that prosecution history estoppel prevents any application of the doctrine of equivalents to claim elements that were added or narrowed for reasons related to patentability during the prosecution of the '746 patent in issue; that it has never been disputed, and the Court of Appeals for the Federal Circuit (CAFC) expressly found, that complainant Modine Manufacturing (Modine) narrowed the hydraulic diameter elements of the claims of U.S Pat. No. 4,998,580 (the '580 patent) as originally filed, from an original upper limit of "about 0.070 inch" to an ultimate upper limit of "about 0.040 inch," for reasons related to patentability, i.e., to avoid a prior art rejection based on the Cat Folded Front condenser (the Cat condenser); that application of Hilton Davis mandates that Modine be allowed no equivalents with respect to the hydraulic diameter element of said claims; and that accordingly the Commission should issue a final determination of no violation by respondents.

Modine argued that Hilton Davis does not mandate that Modine be allowed no range of equivalents at all with respect to the hydraulic diameter claim term; that Hilton Davis reaffirmed the vitality of the doctrine of equivalents and explicitly rejected a mechanical application of prosecution history estoppel; that Hilton Davis emphasized that lower courts should invoke estoppel flexibly, taking into account the reasons for claim limitations when determining the extent to which a range of equivalents should be limited; and that since the CAFC followed precisely that approach in Modine, there is no basis in law or fact for

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<sup>2</sup> Justice Thomas delivered the opinion for a unanimous Court. Justice Ginsburg filed a concurring opinion in which Justice Kennedy joined.

respondents' claim that Hilton Davis is a contrary controlling precedent permitting the Commission to ignore the unambiguous law of this investigation that Modine is entitled to a range of equivalents up to at least the overall hydraulic diameter of the Cat condenser.

The staff argued that Hilton Davis does not change the doctrine of equivalents in any way that affects the issues already decided in this investigation.

In issue is whether Hilton Davis interpreted prosecution history estoppel to do away completely with equivalents for any claim element that was added or narrowed for purposes "related to patentability" during prosecution of the '580 patent. If the Supreme Court so interpreted prosecution history estoppel, the Commission should issue a final determination of no violation by respondents. If the Supreme Court did not so interpret prosecution history estoppel, the Commission's Notice of Determination, dated January 16, 1997, should not be affected.

In Hilton Davis, the '746 patent in issue claimed as its invention an improvement in the ultrafiltration process as follows:

" In a process for the purification of a dye . . . the improvement which comprises: subjecting an aqueous solution . . . to ultrafiltration through a membrane having a nominal pore diameter of 5-15 Angstroms under a hydrostatic pressure of approximately 200 to 400 p.s.i.g., *at a pH from approximately 6.0 to 9.0*, to thereby cause separation of said impurities from said dye. . . ." (emphasis added).

The inventors added the phrase "at a pH from approximately 6.0 to 9.0" during patent prosecution. At a minimum, this phrase was added to distinguish a previous patent (the "Booth" patent) that disclosed an ultrafiltration process operating at a pH above 9.0. The parties petitioner Warner-Jenkinson Co. (Warner) and respondent patentee Hilton Davis Chemical Co. (Chemical Co.) in Hilton Davis disagreed as to why the low-end pH limit of

6.0 was included as part of the claim, 117 S.Ct at 1045, 1046.<sup>3</sup>

Hilton Davis found that as trial approached, the Chemical Co. conceded that there was no literal infringement, and relied solely on the doctrine of equivalents; that over Warner's objection that the doctrine of equivalents was an equitable doctrine to be applied by the court, the issue of equivalence was included among those sent to the jury; that the jury found that the '746 patent was not invalid and that Warner infringed upon the patent under the doctrine of equivalents; and that a fractured en banc CAFC affirmed, 62 F.3d 1512 (Fed. Cir. 1995), 117 S.Ct at 1046.

Petitioner Warner's primary argument in Hilton Davis was that the doctrine of equivalents, as set out in Grayer Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605 (1950) (Grayer Tank) in 1950, did not survive the 1952 revision of the Patent Act, 35 U.S.C. § 100 *et seq.*, because in particular of the following four contentions: (1) the doctrine of equivalents is inconsistent with the statutory requirement that a patentee specifically "claim" the invention covered by a patent, 35 U.S.C. § 112; (2) the doctrine circumvents the patent reissue process which was designed to correct mistakes in drafting or the like and avoid the express limitations on that process, 35 U.S.C. §§ 251-252; (3) the doctrine is inconsistent with the primacy of the Patent and Trademark Office (PTO) in setting the scope of a patent through the patent prosecution process; and (4) the doctrine was

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<sup>3</sup> Hilton Davis noted that petitioner Warner contended that the lower limit was added because below a pH of 6.0 the patented process created "foaming" problems in the plant and because the process was not shown to work below that pH level while respondent Chemical Co. countered that the process was successfully tested to pH levels as low as 2.2 with no effect on the process because of foaming, but offered no particular explanation as to why the lower level of 6.0 ph was selected, 117 S.Ct. at 1046, n.2.

implicitly rejected as a general matter by Congress' specific and limited inclusion of the doctrine in one section regarding "means" claiming, 35 U.S.C. § 112, ¶6. Hilton Davis stated that all but one of those arguments were made Graver Tank in the context of the 1870 Patent Act, and failed to command a majority, 117 S.Ct. at 1047.

Hilton Davis rejected petitioner Warner's first three contentions concluding that the 1952 Patent Act is not materially different from The Consolidated Patent Act of 1870 (117 S.Ct. at 1047-1048). Moreover, it also rejected petitioner Warner's fourth contention stating:

Because § 112, ¶6 was enacted as a targeted cure to a specific problem, and because the reference in that provision to "equivalents" appears to be no more than a prophylactic against potential side effects of that cure, such limited congressional action should not be overread for negative implications. Congress in 1952 could easily have responded to Graver Tank as it did to the Halliburton decision. But it did not. Absent something more compelling than the dubious negative inference offered by petitioner, the lengthy history of the doctrine of equivalents strongly supports adherence to our refusal in Graver Tank to find that the Patent Act conflicts with that doctrine. Congress can legislate the doctrine of equivalents out of existence any time it chooses. The various policy arguments now made by both sides are thus best addressed to Congress, not this Court.

117 S.Ct at 1048.

Hilton Davis, however did express concern that the doctrine of equivalents, as it has come to be applied since Graver Tank, has taken on a life of its own, unbounded by the patent claims. It observed that there can be no denying that the doctrine of equivalents, when applied broadly, conflicts with the definitional and public-notice functions of the statutory claiming requirements and referred to the following means, identified by Judge Nies, a dissenter in the en banc Federal Circuit case, of avoiding this conflict:

"[A] distinction can be drawn that is not too esoteric between substitution of

an equivalent for a component *in* an invention and enlarging the metes and bounds of the invention *beyond* what is claimed.

\* \* \*

“Where a claim to an invention is expressed as a combination of elements, as here, ‘equivalents’ in the sobriquet ‘Doctrine of Equivalents’ refers to the equivalency of an *element* or *part* of the invention with one that is substituted in the accused product or process.

\* \* \*

“This view that the accused device or process must be more than ‘equivalent’ *overall* reconciles the Supreme Court’s position on infringement by equivalents with its concurrent statements that ‘the courts have no right to enlarge a patent beyond the scope of its claims as allowed by the Patent Office.’ [Citations omitted.] The ‘scope’ is not enlarged if courts do not go beyond the substitution of equivalent elements,” 62 F.3d, at 1573-1574 (Nies, J., dissenting) (*emphasis in original*).

117 S.Ct. at 1048, 1049. Hilton Davis concurred with “this apt reconciliation of our two lines of precedent,” stating:

Each element contained in a patent claim is deemed material to defining the scope of the patented invention, and thus the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole. It is important to ensure that the application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element in its entirety. So long as the doctrine of equivalents does not encroach beyond the limits just described, [which the Court subsequently discussed]. . . we are confident that the doctrine will not vitiate the central functions of the patent claims themselves.

117 S.Ct. at 1049.

Hilton Davis then addressed the issue raised by respondents’ petition for reconsideration, *viz.* the doctrine of prosecution history estoppel. Petitioner Warner argued that any surrender of subject matter during patent prosecution, regardless of the reason for such surrender, precludes recapturing any part of that subject matter, even if it is equivalent



to the matter expressly claimed. The Court stated that because, during patent prosecution, respondent Chemical Co. limited the pH element of its claim to pH levels between 6.0 and 9.0, petitioner would have those limits form bright lines beyond which no equivalents may be claimed; and that any inquiry into the reasons for a surrender would undermine the public's right to clear notice of the scope of the patent as embodied in the patent file (117 S.Ct. at 1049). While Hilton Davis agreed with petitioner Warner that Graver Tank did not dispose of prosecution history estoppel as a legal limitation on the doctrine of equivalents, the Court stated that petitioner reached too far in arguing that the reason for an amendment during patent prosecution is irrelevant to any subsequent estoppel. It observed that in each of the Supreme Court cases cited by petitioner and by the dissent below, prosecution history estoppel was tied to amendments made to avoid the prior art, or otherwise to address a specific concern, such as obviousness, that arguably would have rendered the claimed subject matter unpatentable. It concluded that in each such case, the Supreme Court probed the reasoning behind the Patent Office's insistence upon a change in the claims, that in each instance, a change was demanded because the claim as otherwise written was viewed as not describing a patentable invention at all, typically because what it described was encompassed within the prior art; that there are a variety of other reasons why the PTO may request a change in claim language; that if the PTO has been requesting changes in claim language without the intent to limit equivalents or, indeed, with the expectation that language it required would in many cases allow for a range of equivalents, the Court should be extremely reluctant to upset the basic assumptions of the PTO without substantial reason for doing so; that the Court's prior cases have consistently applied prosecution history estoppel

only where claims have been amended for a limited set of reasons, and the Court saw no substantial cause for requiring a more rigid rule invoking an estoppel regardless of the reasons for a change, 117 S.Ct. at 1049, 1050.

Hilton Davis was left with the problem of what to do where the record seemed not to reveal the reason for including the lower pH limit of 6.0. It concluded that holding that certain reasons for a claim amendment may avoid the application of prosecution history estoppel is not tantamount to holding that the *absence* of a reason for an amendment may similarly avoid such an estoppel stating:

[m]indful that claims do indeed serve both a definitional and a notice function, we think though the better rule is to place the burden on the patent-holder to establish the reason for an amendment required during patent prosecution. The Court then would decide whether that reason is sufficient to overcome prosecution history estoppel as a bar to application of the doctrine of equivalents to the element added by that amendment. Where no explanation is established, however, the court should presume that the PTO had a substantial reason related to patentability for including the limiting element added by amendment. In those circumstances, prosecution history estoppel would bar the application of the doctrine equivalents as to that element. The presumption, one subject to rebuttal if an appropriate reason for a required amendment is established, gives proper deference to the role of claims in defining an invention and providing public notice, and to the primacy of the PTO in ensuring that the claims allowed cover only subject matter that is properly patentable in a proffered patent application.

117 S.Ct at 1051 (emphasis added). Hilton Davis reasoned that so applied prosecution history estoppel places reasonable limits on the doctrine of equivalents, and further insulates the doctrine from any feared conflict with the Patent Act; that because respondent Chemical Co. had not proffered a reason for the addition of a lower pH limit, Hilton Davis found it impossible to tell whether the reason for that addition could properly avoid an estoppel and that whether a reason in fact exists, but simply was not adequately developed, it could not

say. Hence, Hilton Davis remanded the case to the CAFC so the CAFC can consider whether reasons for that portion of the amendment involving the addition of a lower pH limit to the claimed subject matter were offered or not and whether further opportunity to establish such reasons would be proper, 117 S.Ct. at 1051.

From the foregoing, the administrative law judge finds that Hilton Davis did not mandate that there be no application of the doctrine of equivalents to claim elements that were added or narrowed for reasons related to patentability during a prosecution of a patent. To the contrary, Hilton Davis remanded the case to the CAFC so it could take into account the reasons for the addition of a lower pH limit to the claimed subject matter. Thus, Hilton-Davis wanted an explanation established as to why there was a pH lower limit added to the claimed subject matter. If the CAFC finds no explanation the CAFC:

should presume that the PTO had a substantial reason related to patentability for including the limiting element added by amendment. In those circumstances, prosecution history estoppel would bar the application of the doctrine [of] equivalents as to that element.

117 S.Ct. at 1051 (Emphasis added). The administrative law judge finds it that Hilton-Davis made clear that its holding applied to “those circumstances” in which an amendment is “required” by the PTO “in order to overcome an objection based on the prior art,” 117 S.Ct. at 1051 and n.7. The Court in Hilton Davis spoke of situations “where the allegedly infringing equivalent element was outside of the revised claims and within the prior art that formed the basis for the rejection of the earlier claims,” 117 S.Ct at 1049-50 and n.5 (quoting Keystone Driller Co. v. Northwest Engineering Corp., 294 U.S. 42, 48 (1935)). “In those circumstances,” the Court held, “prosecution history estoppel would bar the application of the doctrine [of] equivalents as to that element,” Id. (emphasis added).

Specifically, the Court noted:

What *is* permissible for a court to explore is the reason (right or wrong) for the objection and the manner in which the amendment addressed and avoided the objection.

*Id.* at n.7 (emphasis in original). The administrative law judge finds that the CAFC in Modine did undertake the analysis Hilton-Davis found permissible. Thus, the CAFC in Modine, under the heading “D. INFRINGEMENT BY EQUIVALENCY” stated:

. . . the ALJ correctly recognized that prosecution history estoppel limits the application of the doctrine of equivalents, even when the function/way/result or other test of equivalency is met by the accused devices. Prosecution history estoppel implements the principle that a patentee can not obtain, in an infringement suit, protection of subject matter that was relinquished in order to obtain allowance of other subject matter during prosecution of the patent application. . . . The standard for determining whether particular subject matter was relinquished and was material is an objective one which we determine as a matter of law, . . . , and is based on the reasonable reading, by a person of skill in the field of the invention, of the entire prosecution history.

We have discussed the prosecution history ante, and concluded that in connection with the patent application that led to the ‘580 patent, Modine relinquished the range of hydraulic diameters that extended to 0.070 inch, based in substantial part on the hydraulic diameter of the prior art Cat-Folded Front condenser. . . .

Thus we conclude that the available range of equivalency is limited, by estoppel, to the hydraulic diameter of the Cat condenser. Within this boundary, however, the prosecution history and the prior art do not eliminate equivalents if substantial identity is shown. The controlling criterion . . . is whether the accused device is substantially the same as the claimed invention.

The ALJ incorrectly held that Modine was estopped to assert equivalency against any condenser with a hydraulic diameter larger than exactly 0.040 inch. . . .

Modine, 75 F.3d at 1555, 1556, 37 U.S.P.Q.2d at 1615, 1616 (emphasis added). Thus, the

CAFC in Modine undertook the analysis, of “the reason for an amendment required during patent prosecution” required by Hilton Davis, 117 S.Ct. at 1051. Based on that analysis, the CAFC concluded:

that the available range of equivalency is limited, by estoppel, to the hydraulic diameter of the Cat condenser. Within this boundary, however, the prosecution history and the prior art do not eliminate equivalents if substantial identity is shown.

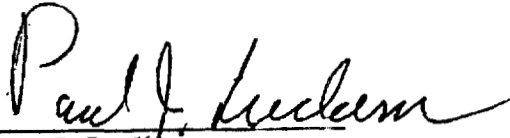
Modine, 75 F.3d at 1556, 37 USPQ2d at 1616. Thus, the CAFC decided in Modine that the reason for the amendment was “sufficient to overcome prosecution history estoppel as a bar to application of the doctrine of equivalents to the element added by that amendment,” Hilton Davis, 117 S.Ct. at 1051. Accordingly, the administrative law judge finds that Hilton Davis creates no conflict with the CAFC’s holding in Modine.

Based on the foregoing, it is the recommendation of the administrative law judge that Hilton Davis does not change the doctrine of equivalents in any way that affects the issues already decided in this investigation and accordingly that the Commission’s Notice of Determination, dated January 16, 1997, should not be affected by Hilton Davis.

This recommended determination is hereby CERTIFIED to the Commission. Pleadings filed in connection with the Commission’s order of May 9, 1997, and with the administrative law judge’s Order No. 8 are already in the Commission’s possession in accordance with Commission rules and hence are not included with this recommended determination.

Pursuant to the Commission’s order, parties to this investigation may file comments on the administrative law judge’s recommendation within fourteen (14) days after its issuance and may file reply comments within twenty-one (21) days after issuance of this recommended

determination.

  
Paul J. Luckern  
Administrative Law Judge

Issued: June 12, 1997

UNITED STATES INTERNATIONAL TRADE COMMISSION  
WASHINGTON, D.C. 20436

1100022

In the Matter of

CERTAIN CONDENSERS,  
PARTS THEREOF AND PRODUCTS  
CONTAINING SAME, INCLUDING AIR  
CONDITIONERS FOR AUTOMOBILES

**DOCKET**

Inv. No. 337-TA-334 (Remand)

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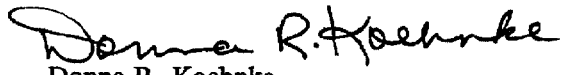
**ORDER**

On March 10, 1997, respondents Showa Aluminum Corporation, Showa Aluminum Corporation of America, Mitsubishi Motors Corporation, Mitsubishi Motors Sales of America, Mitsubishi Heavy Industries, Ltd., and Mitsubishi Heavy Industries of America, Inc. filed a petition for reconsideration of the Commission's January 16, 1997, decision finding a violation of section 337 of the Tariff Act of 1930. That petition was based on the Supreme Court's recent decision in *Warner-Jenkinson, Inc. v. Hilton Davis Chemical Company*, \_\_\_ U.S. \_\_\_, 117 S.Ct. 1040 (1997), which respondents argue is contrary controlling legal authority. In view of the fact that respondents' petition could not have been filed within the 14-day time period provided for in Commission rule 210.47, 19 C.F.R. § 210.47, the Commission has determined, pursuant to rule 201.4, 19 C.F.R. § 201.4, to waive the time requirement and accept the petition. However, because the Commission would like the views of the presiding ALJ on the issue raised in the petition, the Commission has determined to remand the petition for reconsideration to the ALJ for his recommendation. On remand the ALJ is requested to:

1. Issue a recommendation on the issue raised in the petition for reconsideration as expeditiously as possible, but no later than six (6) months from the date of this order.
2. The ALJ may, in his discretion, order further briefing by the parties or he may issue his recommendation based on the papers already filed with the Commission.

3. The ALJ may, in his discretion, hold oral argument.
4. Parties to the investigation may file comments on the ALJ's recommendation within fourteen (14) days after its issuance.
5. Parties to the investigation may file reply comments within twenty-one (21) days after issuance of the ALJ's recommendation.

By Order of the Commission.

  
Donna R. Koehnke  
Secretary

Issued: May 9, 1997



PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION  
WASHINGTON, D.C. 20436  
Before the Honorable Paul J. Luckern

# DOCKET

In the Matter of )

CERTAIN CONDENSERS, )  
PARTS THEREOF AND PRODUCTS )  
CONTAINING SAME, INCLUDING AIR )  
CONDITIONERS FOR AUTOMOBILES )

Inv. No. 337-TA-334  
(Remand)

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DFC OFFICE OF THE SECRETARY  
US INT'L TRADE COMMISSION

000004

### Recommended Determination

Paul J. Luckern, Administrative Law Judge

This is the administrative law judge's recommended determination concerning permanent relief and bonding. The administrative law judge, based on his finding in his initial determination which issued on December 2, 1996 that only the Mazda 929 and the Audi 90 condensers infringe the patent in issue, recommends a limited exclusion order against the Showa respondents directed to condensers, parts thereof, and certain downstream products, not including motor vehicles, and which order should include certification and reporting provisions. He further recommends a bond pursuant to a stipulation of the complainant and the respondents.

## APPEARANCES

### **For Complainant Modine Manufacturing Company:**

V. James Adduci, II, Esq.  
ADDUCI, MASTRIANI & SCHAUMBERG, L.L.P.  
1140 Connecticut Avenue, N.W.  
Suite 250  
Washington, D.C. 20036

Richard J. Hoskins, Esq.  
Thomas B. Quinn, Esq.  
SCHIFF HARDIN & WAITE  
7200 Sears Tower  
Chicago, Illinois 60606

### **For Respondent Showa Aluminum Corporation and Showa Aluminum Corporation of America:**

James E. Armstrong, III, Esq.  
Ronald F. Naughton, Esq.  
Joseph J. Zito, Esq.  
ARMSTRONG & KUBOVCIK  
1725 K Street, N.W, Suite 1000  
Washington, D.C. 20006

John S. Kiernan, Esq.  
Carl Oberdier, Esq.  
DEBEVOISE & PLIMPTON  
875 Third Avenue  
New York, New York 10022

### **For Respondents Mitsubishi Heavy Industries Ltd. and Mitsubishi Heavy Industries America Inc.:**

Robert P. Parker, Esq.  
Robert E. Montgomery, Jr., Esq.  
PAUL, WEISS, RIFKIND, WHARTON & GARRISON  
1615 L Street, N.W., Suite 1300  
Washington, D.C. 20036-5694

**For Respondents Mitsubishi Motors Corporation and Mitsubishi Motors Sales of America:**

Bernard L. Sweeney, Esq.  
Terrell C. Birch, Esq.  
Charles Gorenstein, Esq.  
BIRCH, STEWART, KOLASCH & BIRCH  
8110 Gatehouse Road, Suite 500 East  
Falls Church, Virginia 22042

**For the U.S. International Trade Commission:**

Steven Glazer, Esq.  
Office of Unfair Import Investigation  
500 E Street, Room 401, N.W.  
Washington, D.C. 20436

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## ABBREVIATIONS

ReCB	Complainant's Initial Submission On Remedy and Bonding
ReCBS	Complainant's Submission on December 9, 1996
ReMB	Mitsubishi Respondents' Initial Submission On Remedy and Bonding
ReMBS	Mitsubishi Respondents' Submission on December 9, 1996
ReRB	Respondents' Initial Submission On Remedy and Bonding
ReSB	Staff's Initial Submission on Remedy and Bonding
ReSBS	Staff's Submission on December 9, 1996
Tr.	Transcript of closing arguments on August 22, 1996
4/23/93 ID	Initial Determination Finding No Violation of Section 337, dated April 23, 1993

## I. Procedural History

The Commission's notice of this investigation was published in the Federal Register on January 23, 1992, more than four years ago. It was based on a complaint filed on December 12, 1991 by complainant alleging infringement of a '580 patent in the importation and sale of certain condensers used in automobile air conditioning systems.<sup>1</sup> The 4/23/93 ID finding no violation of section 337 was filed on April 26, 1993.<sup>2</sup> Thereafter, the Commission held that section 337 was not violated by the importation of certain automotive condensers. Complainant appealed that holding to the United States Court of Appeals for the Federal Circuit. On February 5, 1996 the Court in Modine Manufacturing Co. v. U.S. Int'l Trade Commission, 1575 F.3d 1545, 37 U.S.P.Q.2d 1069 (1966) (Modine) vacated the Commission rulings on the issues of infringement, and remanded the investigation to the Commission for findings and redetermination with respect to literal infringement and infringement under the doctrine of equivalents. Modine affirmed the Commission's holding in all other respects, Modine 75 F.3d at 1558, 37 U.S.P.Q.2d 1618. To comply with the Court's remand, a May 31, 1996 ORDER of the Commission remanded the matter to this administrative law judge.

As this administrative law judge found in his final initial determination which issued

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<sup>1</sup> Complainant in this investigation is Modine Manufacturing Company (Modine). The named respondents are Showa Aluminum Corporation (Showa Japan) and Showa Aluminum Corporation of America (Showa America) (Showa respondents); and Mitsubishi Motors Corporation (MMC), Mitsubishi Motors Sales of America (MMSA), Mitsubishi Heavy Industries, Ltd. (MHI) and Mitsubishi Heavy Industries Climate Control, Inc., successor in interest to Mitsubishi Heavy Industries of America Inc. (MHIA) (Mitsubishi respondents) (ReSB at 2). The Showa respondents and Mitsubishi respondents are collectively referred to as "respondents."

<sup>2</sup> See Notice Of Commission Decision To Review Portions Of An Initial Determination Finding No Violation Of Section 337 Of The Tariff Act of 1930; Decision To Deny Motion To Reopen dated June 25, 1993.

on December 2, 1996, at 10, while complainant originally put some twelve accused condensers in issue, in the remand proceeding complainant put in issue only five of the originally accused condensers. The reasons for complainant restricting the "twelve" to "five" were (1) the language in independent claim 9 that requires "a plurality of discrete, hydraulically parallel flow paths . . ." (2) complainant's position that "a plurality" means more than one, (3) the reliance in Modine on the prior art Cat condenser, Modine, 75 F.3d at 1552, 37 U.S.P.Q.2d at 1613, 1614, and (4) the fact that only five of the originally twelve accused condensers showed at least two tubes with hydraulic diameter less than 0.0496 inch, viz., condenser nos. 2, 4, 5, 6 and 11. Moreover, in this administrative law judge's initial final determination he found that only two of the five condensers now in issue infringe the '580 patent, viz the Mazda 929 and the Audi 90 condensers.

Order No. 6, which issued on September 6, 1996, set the procedural schedule for the remedy and bonding phase of this investigation, including a discovery period and dates for complainant's and the staff's briefs on remedy and bonding, for respondents' brief in response and for complainant's and the staff's reply brief to respondents' brief.

By letter dated October 16, 1996 to the administrative law judge, counsel for the private parties stated that they had agreed not to request an evidentiary hearing on issues relating to remedy and bonding and that, while they intended to offer evidence to establish certain facts which they considered to be material to those issues, they believed that such facts would efficiently and effectively be established by affidavits and documentary evidence. It was further represented that the staff did not oppose this agreement. In said letter, respondents requested that the parties have an opportunity for brief oral arguments on the

remedy and bonding issues within two days after the initial determination of violation was issued. It was represented in the letter that complainant did not join in respondents' request for oral argument and that the staff neither supported nor opposed respondents' request for oral argument. Respondents' request for oral argument was denied. However, referring to the request of the parties for additional briefing of the remedy and bonding issues as set forth in Order No. 6 at 2, the parties, including the staff, filed additional comments on remedy and bonding on December 9, 1996.

All submissions having been made, the matter is now ready for a recommended determination concerning permanent relief and bonding.<sup>3</sup>

## II. Opinion

### A. Remedy

#### 1. A Remedy Is Recommended

Respondents, recognizing that the Commission has broad discretion in selecting the form, scope and extent of the remedy for Section 337 violations, citing Viscofan, S.A. v. United States Int'l Trade Comm'n, 787 F.2d 544, 548 (Fed. Cir. 1986) (Viscofan) and Hyundai Electronics Industries Co., Ltd. v. United States Int'l Trade Comm'n, 899 F.2d 1204 (Fed. Cir. 1990) (Hyundai), argued that such discretion includes the power to impose no remedy at all in this investigation because imposition of any remedy against any of the respondents would be unwarranted and inconsistent with the recognized purposes of

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<sup>3</sup> Commission rule 210.42(a)(1)(ii) reads in part:

Unless the Commission orders otherwise, within 14 days after issuance of the initial determination on violation of section 337 of the Tariff Act of 1930, the administrative law judge shall issue a recommended determination [concerning permanent relief and bonding] . . . .



Commission remedies, in light of the longstanding record of the Showa respondents in avoiding infringement and the absence of any reason to expect that the Showa respondents will infringe in the future. It was argued that section 337 is a remedial statute and does not empower the Commission to impose punitive remedies, citing Certain Electric Power Tools, Battery Cartridges, and Battery Chargers, Inv. No. 337-TA-284, USITC Pub. 2389, Commission Opinion Concerning Complainants' Motion for Reconsideration and the Issues of Remedy, the Public Interest, and Bonding at 14 n. 36 (March 2, 1990) (Power Tools). Respondents also argued that section 337 is complementary to, and different from, the patent statutes that permit claims for past injury to be maintained in federal district courts, since the patent statutes permit relief for past infringement while section 337 does not, citing Certain Ultrafiltration Membrane Systems and Components Thereof, Including Ultrafiltration Membranes, Inv. No. 337-TA-107, Recommended Determination On Termination of the Investigation at 15 (Nov. 20, 1981) (Membrane Systems). Respondents further argued that in enacting the remedy provisions of section 337, Congress empowered the Commission to act only prospectively to halt current violations and prevent future violations because those limitations are evident from the reference in 19 U.S.C. § 1337(d) to violations only in the present tense, and from its selection of exclusion orders and cease and desist orders as the Commission's only enforcement mechanisms. It is also argued by respondents that the Commission has never stated that a cease and desist order or an exclusion order must be imposed automatically whenever a past violation has been found and that such a rule would be at odds with the statutorily limited reach of the Commission's remedial authority, as well as with the complementary relationship between that remedial authority and the authority of

the federal courts; and that the Executive Branch has similarly recognized in the course of Presidential Review that a remedy should not be applied to the extent that there is no current violation, citing 52 Fed. Reg. 46011-02 (Dec. 3, 1987), reporting Presidential Review of In the Matter of Certain Dynamic Random Access Memories, Components Thereof and Products Containing Same, Inv. No. 337-TA-242, USITC Pub. 2034, Commission Opinion on Violation, Remedy, Bonding, and Public Interest (Sept. 21, 1987).<sup>4</sup> (ReRB at 23-27).

The statute, viz. 19 U.S.C. §§ 1337 (d) and (f)(1), authorizes the Commission “to provide relief in the form of an exclusion order, a cease and desist order, or both -- unless the Commission finds that such relief is precluded by public interest considerations.” Power Tools, Commission Opinion at 13.<sup>5</sup> The staff has argued that once a violation of section 337 is found, the plain language of the statute indicates that the Commission can deny a remedy only if the remedy would adversely impact the four statutory public interest factors, citing

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<sup>4</sup> Respondents noted that while complainant cited Certain Integrated Circuit Telecommunications Chips and Products Containing Same Including Dialing Apparatus, Inv. 337-TA-337, USITC Pub. 2670, Commission Opinion on the Issues under Review and on Remedy, The Public Interest, and Bonding at 36-37 (Aug. 1993) (Telecommunication Chips) as standing for the proposition that a record of changes to avoid infringement introduced for the first time in the remedy phase does not undermine a complainant’s entitlement to a remedy, Telecommunication Chips made it clear that the scope and appropriateness of any remedy would be affected by a properly developed record of long time non-infringement and that in this investigation the Showa respondents have made a record of changes in dies and a “quality control” program back in the February 1993 hearing, which record has been fully developed in this investigation in a way that did not yet exist in Telecommunication Chips although the Commission in that investigation stated that “HMC is free to seek a modification of the order, or an advisory opinion, as to whether its redesigned chips are non-infringing.”

<sup>5</sup> Commission rule 210.50(b)(1) states in pertinent part that “[u]nless the Commission orders otherwise, . . . an administrative law judge shall not address the issue of the public interest for purposes of an initial determination on violation of section 337 of the Tariff Act under §210.42(a)(1)(i).” In this investigation, the Commission has not ordered this administrative law judge to address the issue of the public interest.

19 U.S.C. § 1337(d), (f), (ReSBR at 10, 11).<sup>6</sup>

The use of both “shall” and “may” in section 337 suggests the usual construction of each word,<sup>7</sup> where the use of “may” confers discretion, while “shall” imposes an obligation to act.<sup>8</sup> However, such a presumption may be defeated by obvious inferences from the structure and purpose of the statute. See United States v. Rodgers, 461 U.S. 677, 706 (1983). The Commission has broad discretion in selecting the form, scope, and extent of the remedy in section 337 proceedings. See Telecommunication Chips, Comm. Opinion at 21, citing Viscofan (affirming Commission remedy determination in Processes for the Manufacture of Skinless Sausage Casings and Resulting Products, Inv. Nos. 337-TA-148/169, USITC Pub. No. 1624 (December 1984)) and Hyundai (affirming Commission remedy determination in Erasable Programmable Read-Only Memories, Components Thereof, Products Containing Such Memories, and Processes for Making Such Memories, Inv. No. 337-TA-276, USITC Pub. No. 2196 (May 1989) (Memories)). While section 337(d)(1) states that the Commission “shall” issue an exclusion order, section 337(f)(1)

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<sup>6</sup> The staff noted that section 337(d)(1) provides, in relevant part, that “[i]f the Commission determines, as a result of an investigation under this section, that there is a violation of this section, it shall [issue an exclusion order] unless, after considering the effect of such exclusion upon [the relevant public interest factors], it finds that such articles should not be excluded from entry.” 19 U.S.C. § 1337(d)(1) (emphasis added by staff). It also noted that section 337(f)(1) further provides, in relevant part, that “[i]n addition to, or in lieu of, taking action under subsection (d) . . . of this section, the Commission may issue . . . [a cease and desist order] . . . .” 19 U.S.C. § 1337 (f)(1) (emphasis added by staff). Thus, the staff concluded that the statutory language indicates that relief in the form of an exclusion order, a cease and desist order, or both, must be issued if a violation is found, unless public interest factors warrant that no remedy should issue. The staff cited no legislative history in support of that conclusion.

<sup>7</sup> See Crockett Telephone Co. v. F.C.C., 963 F.2d 1564, 1570 (D.C. Cir. 1992).

<sup>8</sup> Id., citing International Union, UAW v. Dole, 919 F.2d 753, 756 (D.C. Cir. 1990).

provides that, in lieu of the issuance of any exclusion order, the Commission "may" issue a cease and desist order. Thus, the Commission clearly has discretion to issue a cease and desist order and no exclusion order. If no cease and desist order issued, there would be no remedy.<sup>9</sup> Accordingly, the administrative law judge finds that the broad discretion the Commission has, in selecting the form, scope and extent of the remedy in a section 337 investigation, allows the Commission to deny a remedy should the underlying facts so dictate, irrespective of any public interest factors.

The administrative law judge does recommend in this investigation that the Commission issue a remedy. The Showa respondents have admitted that, in the period from January 1993 through August 1996, Showa Japan directly exported[ ]condensers to Showa America which was characterized as a "substantial number." See Respondents' Proposed Findings 60 and 61 in their submission dated November 15, 1996. This administrative law judge has found that the Mazda 929 and the Audi 90 condensers which originated from the Showa respondents (FF 34) infringe the patent in issue. Complainant

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<sup>9</sup> In Power Tools the Commission determined that the "sole remedial order that should be used against [respondent] Jet is a cease and desist order" although it noted that Commissioners Eckes and Rohr have determined that no remedy should be issued against Jet, stating that Commissioners Eckes and Rohr:

note that violations of section 337 by Jet ceased more than four years before the investigation was instituted. As the statute is remedial rather than punitive and there is nothing to remedy at this time. ... [they] believe that the issuance of either a cease and desist order or an exclusion order directed to Jet is inappropriate.

Power Tools, Commission Opinion at 14. A majority of the Commission however found a remedy necessary in light of the record developed. The back of the cover sheet of USITC Pub. No. 2389, which is the public version of Power Tools, lists only Commissioners Brunsdale, Lodwick, Rohr and Newquist as participating in the opinion. However, the Office of the Secretary has confirmed that the action jacket for Power Tools shows that the following Commissioners participated in the opinion: Chairman Brunsdale, Vice Chairman Cass and Commissioners Newquist, Rohr, Lodwick and Eckes. Of those Commissioners today only Commissioner Newquist is on the Commission.

purchased the Mazda 929 in October 1991 shortly before the complaint was filed on December 12, 1991, and then purchased the Audi 90 condenser in January 1993, shortly before the investigative hearing began, which is an indication that the Showa's infringement was not unintended and was not quickly corrected (ReCBS at 2, 3). See also FF 40, 41. Thus, the administrative law judge believes that there should be some remedy to monitor the activities of the Showa respondents to detect and prevent potential future violations.

Respondents, in support of their argument that no remedy should be recommended, have made reference to Membrane Systems, Memorandum from Commission General Counsel to the Commission Regarding Termination of Investigation, 1982 ITC (Feb. 24, 1982) (memo) and the statements in that memorandum that "[r]elief under section 337 is prospective in nature" and "it is not the function of the Commission to punish complainants nor to remedy any and all injury that may already have been suffered." (ReRB at 25, 26). That memorandum from the Commission General Counsel was addressing respondents' recommendation that the Commission order the complainant to issue a certain press release. The Commission concluded that such an order would operate as a sanction against the "complainants' bad faith attempt to wrest a portion of the U.S. ultrafiltration membrane market from the respondents" (memo at 6, 7). A sanction is not in issue in this investigation.<sup>10</sup>

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<sup>10</sup> The February 24, 1982 memorandum from General Counsel stated that the Commission granted complainant's motion and terminated the investigation on the basis of a determination that there was no violation of section 337 and that the "Commission's determination of no violation was based upon complainant's concession of no injury rather than upon the fact that the complained of importation had ended." In this investigation the administrative law judge has found a violation of section 337.

## 2. Type of Remedy

Complainant argued for an order “generally” excluding from entry into the United States any parallel flow vehicular condensers infringing, or likely to infringe, claims 9 and 10 of the ‘580 patent in issue, as well as any parts of such infringing condensers and any air conditioning systems and vehicles containing such infringing condensers (ReCB at 31, 32).<sup>11</sup> Thus complainant wants a general exclusion order extending to downstream products, including automotive air conditioning systems and motor vehicles in which infringing parallel-flow condensers are installed.

Complainant also proposed that the exclusion order contain a requirement that respondents and other importers of parallel flow condensers and downstream products certify to U.S. Customs either that their products are not subject to the exclusion order or that the downstream products do not contain condensers subject to the exclusion order (ReCB at 2). Complainant is willing to incorporate a requirement in the exclusion order that an importer of condensers, or downstream products such as air conditioning kits or vehicles containing parallel flow condensers, include a certification to U.S. Customs in each shipment of imports that such imports are not subject to the exclusion order or do not contain condensers subject to the exclusion order. It is also prepared to accept a provision in the exclusion order that would permit an importer of downstream products to satisfy its own certification requirement by (1) identifying the manufacturer of the parallel flow condensers contained in the air conditioning kits or vehicles being imported and (2) presenting to Customs a certification of

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<sup>11</sup> Complainant confirmed that it is seeking a general exclusion order that extends to downstream products, including motor vehicles (Tr. at 160).

the condenser manufacturer that such condensers are not subject to the exclusion order. Complainant does not request that the Commission issue a cease and desist order (ReCB at 2).<sup>12</sup>

The staff argued for a limited exclusion order against the Showa respondents and the Mitsubishi respondents directed to condensers, parts thereof, and certain downstream products, not including motor vehicles. The staff further argued that any such order should include certification and reporting provisions directed to the named respondents (ReSB at 2, 3, 4).

Respondents argued that only a cease and desist order that prohibits the Showa respondents from importing infringing condensers should be recommended (ReRB at 63). However, they argued that if an exclusion order is recommended, it should be limited to products imported directly by respondent Showa America and should not include downstream products (i.e., the automobiles in which the condensers are installed) (ReRB at 3, 4). The Mitsubishi respondents further joined in the recommendation of the staff that any limited exclusion order should not pertain to motor vehicles (ReMB at 1). The Mitsubishi respondents also argued that since the initial determination which issued on December 2, 1996, found in effect that they have not committed any violation of section 337, it is inequitable and illogical to burden, hamper or attempt to control in any way their legitimate importation activities (ReMBS at 4).

In Certain Airless Paint Spray Pumps and Components Thereof, Inv. No. 337-TA-90,

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<sup>12</sup> The record contains no evidence that the Showa respondents have accumulated "commercially significant" inventories of infringing products in the United States. See Certain Crystalline Cefadroxil Monohydrate, Inv. No. 337-TA-293, Commission Opinion, 15 U.S.P.Q.2d 1263, 1277-78 (1990).

USITC Pub. 1199 (May 1981), Commission Opinion, 216 U.S.P.Q. 465 (1981) (Spray Pumps) the Commission determined that a complainant seeking a general exclusion order must prove “both a widespread pattern of unauthorized use of its patented invention and certain business conditions from which one might reasonably infer that foreign manufacturers other than the respondents to the investigation may attempt to enter the U.S. market with infringing articles.” (Spray Pumps at 18)<sup>13</sup> (Emphasis added). Factors relevant to demonstrating whether there is a “widespread pattern of unauthorized use” include:

- (a) a Commission determination of unauthorized importation into the United States of infringing articles by numerous foreign manufacturers;
- (b) the pendency of foreign infringement suits based upon foreign patents which correspond to the domestic patent at issue;
- (c) other evidence which demonstrates a history of unauthorized foreign use of the patented invention.

Id. at 18-19.

The Commission may, in issuing exclusion orders, balance a complainant’s interest in obtaining complete protection from all infringing imports by means of exclusion of downstream products against the inherent potential of even a limited exclusion order, when extended to downstream products, to disrupt legitimate trade in products which were not themselves the subject of a finding of violation of section 337. In performing this balancing,

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<sup>13</sup> As the staff noted (ReSB at 16), in 1994 statutory standards, viz. 19 U.S.C. §1337(d)(2) (effective January 1, 1995), governing the issuance of general exclusion orders were adopted in the amendments to section 337 in the Uruguay Round Agreements Act (URAA) and were incorporated into Commission rule 210.50(c). As the staff further noted (Id.) (1) the pertinent legislative history indicates that those statutory standards “do not differ significantly” from the Commission’s traditional framework for analyzing the appropriateness of a general exclusion order, i.e. the Spray Pumps standard, as shown by S. Rep. No. 412, 103d Cong., 2d Sess. 120 (1994) and H.R. Rep. No. 826, 103d Cong., 2d Sess., pt. 1, at 141 (1994) and (2) in any event this investigation was instituted prior to the effective date of the URAA amendments to section 337.



the Commission may consider such matters as the value of the infringing articles compared to the value of the downstream products in which they are incorporated, the identity of the manufacturer of the downstream products (i.e., are the downstream products manufactured by the party found to have committed the unfair act, or by third parties), the incremental value to complainant of the exclusion of downstream products, the incremental detriment to respondents of such exclusion, the burdens imposed on third parties resulting from exclusion of downstream products, the availability of alternative downstream products which do not contain the infringing articles, the likelihood that imported downstream products actually contain the infringing articles and are thereby subject to exclusion, the opportunity for evasion of an exclusion order which does not include downstream products, and the enforceability of an order by Customs. Moreover, that list is not exclusive because the Commission may identify and take into account any other factor which it believes would bear on the question of whether to extend remedial exclusion to downstream products, and if so to what specific products. Memories, Commission Opinion at 125, 126<sup>14</sup>

This administrative law judge believes that, after balancing the Spray Pumps criteria, complainant has not established that the issuance of a general exclusion order is appropriate in this investigation. While this administrative law judge in his initial determination, which issued on December 2, 1996, found unauthorized importation into the United States of infringing articles, he did not find that the some twelve originally accused condensers

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<sup>14</sup> The Commissioners participating in the remedy opinion of Memories, as the inside cover of USITC Pub. No. 2196 shows, were Chairman Brunsdale, Vice Chairman Cass and Commissioners Eckes, Lodwick, Rohr and Newquist. However Commissioners Eckes, Rohr and Lodwick did not join in the discussion of the basis for determining the scope of exclusion of downstream products. Memories, Commission Opinion at 123, 145, 149.

infringe the '580 patent but rather that only two of those condensers, viz. the Mazda 929 and the Audi 90 condensers, infringe the patent in issue. Moreover, the Mazda 929 and the Audi 90 condensers originated from only one foreign manufacturer, viz. Showa Japan (FF34). Complainant has further admitted that since the date of the hearing in February 1993, it has not purchased any Showa condensers that have a plurality of tubes with overall hydraulic diameters of less than 0.04822 inch, or even less than 0.0496 inch (ReCB at 7).

In addition, based on discovery obtained by the staff, the share of the condenser market represented by alleged non-respondent infringers relative to companies that presently do not infringe or are licensed under the '580 patent that is in issue appears to be relatively small. See FF24 to 29. Complainant did provide a table showing both imported and domestic condensers made by non-respondent manufacturers other than Showa Japan that purportedly infringe the '580 patent (FF20). However, in the underlying data for the table only one of those manufacturers appeared to be positively identified as having made any of the identified imported condensers (FF21, 22). Moreover at least two of the non-respondents manufacturers (Zexel and Valeo) appeared to manufacture allegedly infringing condensers domestically as well as outside the United States and it was unknown where a third non-respondent manufacturer (Wynn's) manufactured allegedly infringing condensers (FF20). The record in the remedy phase of this investigation does not show the pendency of foreign infringement suits based upon foreign patents which correspond to the '580 patent in issue. Hence, the administrative law judge does not find that complainant has demonstrated a widespread pattern of unauthorized use. Accordingly, he recommends a limited exclusion order against only the Showa respondents.

The administrative law judge believes the limited exclusion order should not be directed to imported motor vehicles themselves that include condensers of the Showa respondents. In particular for this recommendation he relies on (1) the value of infringing articles compared to the value of imported motor vehicles (See FF30, 31, 32), (2) the fact that since the hearing in 1993 complainant has purchased no Showa condenser that has a plurality of tubes with overall hydraulic diameters of less than 0.04822, or even 0.0496 inch, supra, (3) the fact that the Showa respondents have, in discovery and in the hearing resulting in the 4/23/93 ID, demonstrated that they have quality control measures in place to assure that no imported Showa Japan condenser infringes the '580 patent (See FF1 to 19), and (4) the burden it would place on importers of motor vehicles containing Showa Japan condensers even with the certification requirement proposed by complainant. The administrative law judge does believe that the limited exclusion order should cover imported automotive vehicle air conditioning systems that include Showa Japan condensers in view of the value of the infringing articles compared to the value of imported automotive air conditioning systems (FF30, 31). He also believes that the limited exclusion order should be directed to "parts" of Showa condensers in addition to Showa condensers themselves, because there is evidence that demonstrates that the Showa respondents have imported not only finished condensers into the United States but also condenser tubes and "knockdown" condensers (FF38).

The administrative law judge further recommends that the limited exclusion order should contain a "certification" provision whereby the Showa respondents may import goods by providing to the Customs Service a written certification that any imported condensers are

not covered by claims 9 or 10 of the '580 patent. Such a provision would facilitate Customs' administration of the order by eliminating the often difficult task of determining how a product was made simply by examining its appearance. Similar certification provisions have been included in previous exclusion orders issued by the Commission where respondents imported both infringing and non-infringing products.<sup>15</sup>

The administrative law judge also recommends a reporting requirement, pursuant to Commission rule 210.71(a), on the Showa respondents in order to assure that they comply with the terms of the limited exclusion order. The administrative law judge believes that any report should be submitted to the Commission on an annual basis by the Showa respondents, in English and under oath, that include the following information: (i) the volume (in units and dollars) of imports into the United States of Showa condensers covered by claims 9 or 10 of the '580 patent, parts thereof (including tubes and partially completed condensers), and products containing same (including air conditioning systems and motor vehicles; (ii) the volume (in units and dollars) of sales in the United States of such articles; (iii) identification of all contracts, whether written or oral, entered into during the reporting period for the purpose of selling such articles in the United States and (iv) a statement of the methodology by which the Showa respondents determines that the Showa parallel-flow condensers they imported were or were not covered by claims 9 or 10 of the '580 patent with a summary of the resulting data.

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<sup>15</sup> See e.g., Certain Minoxidil Powders, Salts, and Compositions for Use in Hair Treatment, Inv. No. 337-TA-267 (1988), General Exclusion Order, ¶ 2; Certain Curable Fluoroelastomer Compositions and Precursors Thereof, Inv. No. 337-TA-364, USITC Pub. 2890 (May 8, 1995) (certification provision where respondent shown to have both infringing and non-infringing products).

## **B. Bonding**

Complainant and the respondents have entered into a stipulation that in the event that the Commission finds a violation of section 337, they will jointly request that the amount of the bond during the Presidential review period be set at five (5) percent of the entered value of Showa SC condensers imported as individual units into the United States, and that no bond be required for entry of parts of Showa SC condensers, or for downstream products containing Showa SC condensers (ReSB at 23, Exhibit L). The staff has no objection to the entry of the stipulation. Id. The administrative law judge recommends a bond pursuant to said stipulation.

## **III. Recommended Findings**

1. Norio Ishimura is Chief Manager of the CAD/CAM System Project for the Heat Exchanger Headquarters of Showa Japan, located at 480 Inuzuka, Oyama City, Tochigi Prefecture, Japan 323. (Ishimura Decl. ¶ 1).<sup>16</sup>

2. Since early 1992, Showa Japan has had in place stringent quality control processes to ensure that no SC condenser is manufactured or sold that has even one tube with hydraulic diameters below minimum manufacturing standards of 0.050 inch. (Ishimura Decl. ¶ 4).

3. Showa Japan manufactures tubes for its SC condensers by extruding them. The extrusion process involves forcing very hot aluminum through a die containing "male" and "female" chips to produce a one-piece, fully-formed tube with interior walls and flow

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<sup>16</sup> The Ishimura Decl. was a portion of "Appendix To Brief Of Respondents With Respect To Remedy And Bonding Issues," dated November 15, 1996.

paths. (Ishimura Decl. ¶ 5).

4. In approximately May 1991, Showa Japan discovered that the steel dies it was using to extrude its tubes were eroding during the extrusion process, resulting in tubes that had thicker than intended walls. Showa Japan made this discovery, and decided to make appropriate changes, because the wasted aluminum resulting from this die erosion undesirably increased the manufacturing cost of producing the condensers. (Ishimura Decl. ¶ 10).

5. Since September 1990, Showa Japan had already been testing new ultra-hard carbide dies. Showa Japan found that these new dies did not erode nearly as quickly or unpredictably as the older steel dies, that they extruded tubes more accurately, and that they resulted in substantial cost savings in the extrusion process. Because of those advantages, Showa Japan decided to retool its tube extrusion lines with ultra-hard dies beginning in June 1991. (Ishimura Decl. ¶ 12).

6. Because Showa Japan's new ultra-hard dies have a much slower rate of erosion than the older steel dies, they tend to crack or break -- and be replaced -- before they erode to the point of extruding tubes with undesirably small flow passages. Nevertheless, very soon after Showa Japan installed the new ultra-hard dies, it also established procedures for the regular monitoring and replacement of those dies. Because the rate of erosion of these dies was regular and predictable, Showa Japan was able to determine the point at which the dies should be replaced in order to avoid extruding tubes with undesirably small flow passages. (Ishimura Decl. ¶ 14).

7. In addition to and independent of the switch to the more reliable ultra hard

dies, in March 1992 Showa Japan implemented "quality control" procedures to insure that all SC condensers manufactured by Showa Japan had hydraulic diameters of at least .050 inch, although optimally they would be at the substantially higher design points. By the time when Showa Japan instituted its "quality control" process, this investigation had commenced, and Showa Japan was aware of Modine's '580 patent. (Ishimura Decl. ¶ 18).

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12. Hisashi Maehara is the Chief Manager of the Production Department for the Extrusion Division of Showa Japan, located at 480 Inuzuka, Oyama City, Tochigi Prefecture, Japan 323. (Maehara Decl. ¶ 1).<sup>17</sup>

13. Showa Japan's Production Department, of which Maehara is Chief Manager, extrudes tube coils that are used to make tubes for use in SC condensers. His department is responsible for testing and measuring these tubes coils, ensuring that they comply with minimum hydraulic diameter specifications, and maintaining and replacing the extrusion dies in such fashion as to ensure that tube coils with hydraulic diameters below minimum product specifications are not extruded. (Maehara Decl. ¶ 3).

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<sup>17</sup> The Maehara Decl. was a portion of "Appendix To Brief Of Respondents With Respect To Remedy And Bonding Issues," dated November 15, 1996.



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20. In response to discovery requests, complainant presented a Table A showing both imported and domestic condensers made by manufacturers other than Showa Japan that complainant alleges infringe the '580 patent (ReSB at 16, Exhibit A; Complainant's Proposed Finding C10). The table identifies five non-respondent manufacturers that makes condensers, viz. Behr GmbH (Behr) and Valeo said to be condenser manufacturers principally based in Europe, Calsonic Corp (Calsonic) and Zexel Corp. (Zexel) said to be principally based in Japan and Wynn's (Id.). Zexel and Valeo manufacture allegedly infringing condensers domestically as well as outside the United States, and it is not known where Wynn's manufactures condensers (Exhibit A of ReSB).

21. Complainant also presented the underlying data for its Table A (ReSB at 16, Exhibit B).

22. In the underlying data for complainant's Table B, the manufacturer for each of the following condensers was not specifically identified as shown by the following documents: M200164 ("Not shown on shipping container of core (Might be Zexel)"), M200148 ("Not shown on shipping container of core (Might be Zexel)"), M200151 ("Not shown on shipping container of core (Might be Zexel)"), M200599 ("Not shown on shipping container or core (Assumed to be Zexel)"), M200602 ("Not shown on shipping container or core (Assumed to be Zexel)"), M200136 ("No labels on condenser, assumed to be

Calsonic”), M200139 (“No labels on condenser, assumed to be Calsonic”), M200241 (“No labels on core or shipping container (Calsonic)”), M200244 (“No labels on core or shipping container (Calsonic)”), M200768 (“No labels on core or shipping container (Calsonic)”), M200771 (“No labels on core or shipping container (Calsonic)”), M200256 (?) and M200259 (?).

23. In the remaining underlying data for complainant’s Table B, the manufacturer for each of the following condensers is identified on the underlying document as: M200202 (“Core has Behr Logo, and a sticker indicating it is made in France”) and M200205 (“Core has Behr Logo, and a sticker indicating it is made in France”).

24. An “Analysis of A/C Market Trends” was prepared in November 1995 by complainant’s Japanese subsidiary Modine Asia. One section at M201453 of the Trends report details the “automotive A/C market in Japan” and identifies the principal manufacturers of heat exchanger products, including condensers, in Japan. [

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30. Based on evidence produced by the parties in response to the staff's discovery requests, the average price of a parallel-flow condenser is on the order of \$50. (ReSB at 7, Appendix A).

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33. Three of the five accused condensers in issue in the remand proceeding were components of Mitsubishi automobiles (ReSB at 8). The administrative law judge in his final initial determination which issued on December 2, 1996 did not find that those condensers infringed the '580 patent.

34. The Mazda and Audi condensers found by this administrative law judge to infringe the '580 patent are Showa Japan condensers (ReSB at 8).

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36. The U.S. Customs Service has informally advised the staff that it does not foresee enforcement difficulties with the staff's remedy and bonding recommendations although Customs to the staff did express some concern regarding the enforcement of an exclusion order covering motor vehicles (ReSB at 12).

37. Condenser components of air conditioning systems all currently shipped in boxes labeled "CONDENSERS" that contain only that component. (ReSB at 12).

38. The Showa respondents have produced evidence in response to the staff's discovery requests that demonstrates that Showa America imports not only finished condensers into the United States but also condenser tubes and products ("knockdown" condensers) that are imported in partially completed states of fabrication, assembled into finished condensers in the United States and sold in finished form in the United States. In addition, Showa Japan has imported "knockdown" partially-completed condensers to Showa America for sale to U.S. customers (ReSB at 13).

39. The Showa respondents first had notice of complainant's patent rights by letter dated February 5, 1991. There is no evidence that the Showa respondents did anything then to measure the hydraulic diameter of their fabricated products, nor did they then give any consideration to instituting manufacturing standards to insure that their products did not infringe complainant's patent right (ReCBS at 6, 7).

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41. The Showa respondents appear not to have identified a manufacturing standard for hydraulic diameter of their condenser tubes until March 1992 when it set the standard at 0.050 inch in response to the initiation of this investigation (ReCBS at 8).



#### **IV. Recommended Conclusions of Law**

The administrative law judge recommends the following conclusions of law:

1. A remedy should issue in this investigation;
2. A remedy should issue against only the Showa respondents;
3. A remedy should not issue against the Mitsubishi respondents because the initial determination which issued on December 2, 1996 found only that Showa Mazda 929 and Showa Audi condensers infringe the '580 patent in issue;
4. The remedy should consist of a limited exclusion order against the Showa respondents directed to condensers, parts thereof and certain downstream products, not including motor vehicles, and which order should include certification and reporting provisions; and
5. A bond should be set pursuant to a stipulation between the complainant and the respondents.

#### **V. Recommended Determination and Order**


Pursuant to Commission rule 210.42(a)(1)(ii) and based on the foregoing recommended findings of fact, the opinion and having considered all of the submissions on remedy and bonding in this remand proceeding, the administrative law judge recommends a limited exclusion order against the Showa respondents directed to condensers, parts thereof, and certain downstream products, not including motor vehicles, and which order should include certification and reporting provisions. The administrative law judge further recommends a bond pursuant to a stipulation between the complainant and the respondents.

The administrative law judge hereby CERTIFIES to the Commission this recommended determination. The submissions of the parties filed with the Secretary on remedy and bonding are not certified, since they are already in the Commission's possession as confirmed by the Office of the Secretary.

Further it is ordered that:

1. In accordance with Commission rule 210.39, all material heretofore marked in camera because of business, financial and marketing data found by the administrative law judge to be cognizable as confidential business information under Commission rule 201.6(a) is to be given in camera treatment continuing after the date this investigation is terminated.

2. Counsel for the parties shall have in the hands of the administrative law judge a copy of this recommended determination with those portions containing confidential business information designated in brackets, no later than Monday, December 23, 1996. Any such bracketed version shall not be served by telecopy on the administrative law judge. If no such version is received from a party, it will mean that the party has no objection to removing the confidential status, in its entirety, from this recommended determination.

  
Paul J. Luckem  
Administrative Law Judge

Issued: December 16, 1996

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION  
WASHINGTON, D.C. 20436  
Before the Honorable Paul J. Luckern

DOCKET

In the Matter of

CERTAIN CONDENSERS,  
PARTS THEREOF AND PRODUCTS  
CONTAINING SAME, INCLUDING AIR  
CONDITIONERS FOR AUTOMOBILES

Inv. No. 337-TA-334  
(Remand)

Initial Determination

Paul J. Luckern, Administrative Law Judge

RECEIVED  
OFC OF THE SECRETARY  
US INT'L TRADE COMM  
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This is the administrative law judge's initial determination, pursuant to the May 30, 1996 ORDER of the Commission in response to the opinion of the United States Court of Appeals for the Federal Circuit in Modine Manufacturing Co. v. U.S. Int'l Trade Commission, 75 F.3d 1545, 37 U.S.P.Q.2d 1609 (1996) (Modine). Pursuant to said ORDER, the administrative law judge finds that none of the five condensers now in issue literally infringes independent claim 9 and dependent claim 10 of the '580 patent. He further finds that two of the five condensers now in issue, and only two, viz. the Mazda 929 and the

Audi 90 condensers, infringe those claims under the doctrine of equivalents. Accordingly, he finds a violation of section 337 of the Tariff Act of 1930.<sup>1</sup>

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<sup>1</sup> A recommended determination on remedy and bonding may issue no later than December 16, 1996. By letter dated October 16, 1996, to the administrative law judge, counsel for the private parties stated that they have agreed not to request an evidentiary hearing on issues relating to remedy and bonding and that while they intend to offer their evidence to establish certain facts which they consider to be material to those issues, they believe that such facts can efficiently and effectively be established by affidavits and documentary evidence. It was further represented that the staff did not oppose this agreement. In said letter, respondents requested that the parties have an opportunity for brief oral arguments on the remedy and bonding issues within two days after the initial determination on violation is issued. It was represented in the letter that complainant did not join in respondents' request for oral argument and that the staff neither supported nor opposed respondents' request for oral argument. Respondents' request for oral argument is denied. However, referring to the request of the parties for additional briefing of the remedy and bonding issues, in addition to what was submitted on November 14, 15, and 22 (see Order No. 6 at 2, 4), the parties, including the staff, may submit additional comments on remedy and bonding no later than Monday, December 9, 1996, limited to no more than eight pages for each party.

**APPEARANCES**

**For Complainant Modine Manufacturing Company:**

V. James Adduci, II, Esq.  
ADDUCI, MASTRIANI & SCHAUMBERG, L.L.P.  
1140 Connecticut Avenue, N.W.  
Suite 250  
Washington, D.C. 20036

Richard J. Hoskins, Esq.  
Thomas B. Quinn, Esq.  
SCHIFF HARDIN & WAITE  
7200 Sears Tower  
Chicago, Illinois 60606

**For Respondent Showa Aluminum Corporation and Showa Aluminum Corporation of America:**

James E. Armstrong, III, Esq.  
Ronald F. Naughton, Esq.  
Joseph J. Zito, Esq.  
ARMSTRONG & KUBOVCIK  
1725 K Street, N.W, Suite 1000  
Washington, D.C. 20006

John S. Kiernan, Esq.  
Carl Oberdier, Esq.  
DEBEVOISE & PLIMPTON  
875 Third Avenue  
New York, New York 10022

**For Respondents Mitsubishi Heavy Industries Ltd. and Mitsubishi Heavy Industries America Inc.:**

Robert P. Parker, Esq.  
Robert E. Montgomery, Jr., Esq.  
PAUL, WEISS, RIFKIND, WHARTON & GARRISON  
1615 L Street, N.W., Suite 1300  
Washington, D.C. 20036-5694

**For Respondents Mitsubishi Motors Corporation and Mitsubishi Motors Sales of America:**

Bernard L. Sweeney, Esq.  
Terrell C. Birch, Esq.  
Charles Gorenstein, Esq.  
BIRCH, STEWART, KOLASCH & BIRCH  
8110 Gatehouse Road, Suite 500 East  
Falls Church, Virginia 22042

**For the U.S. International Trade Commission:**

Steven Glazer, Esq.  
Office of Unfair Import Investigation  
500 E Street, Room 401, N.W.  
Washington, D.C. 20436

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## ABBREVIATIONS

4/14/92 ID	The Initial Determination On Violation Dated April 14, 1992
ALJ Ex.	Administrative Law Judge Exhibit
CX	Complainant's Cumulative Exhibit <sup>2</sup>
CBr	Complainant Modine's Memorandum in Response to Order No. 1 (Remand), dated June 21, 1996
CPh. Ex.	Complainant Modine's Physical Exhibit
CRBr	Complainant Modine's Reply Memorandum In This Remand Proceeding
SBr	Staff's response to questions 3, 4 and 5 of the Administrative Law Judge's Order No. 1, dated June 28, 1996
SRBr	Staff's Reply Memorandum In This Remand Proceeding
RX	Respondents' Cumulative Exhibit
Tr	Transcript of closing arguments on August 22, 1996

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<sup>2</sup> See fn 4 Procedural History, *infra*.



## I. Procedural History

On May 31, 1996, the Commission issued an ORDER<sup>3</sup> in response to the opinion of the United States Court of Appeals for the Federal Circuit in Modine Manufacturing Co. v. U.S. Int'l Trade Commission, 75 F.3d 1545, 37 U.S.P.Q.2d 1609 (1996) (Modine), and the judgement of that Court. Modine vacated the Commission rulings in this investigation (original investigation) on the issues of infringement, and remanded the investigation to the Commission for findings and redetermination with respect to literal infringement and infringement under the doctrine of equivalents. Modine affirmed the Commission's decision in all other respects, Modine 75 F.3d at 1558, 37 U.S.P.Q.2d 1618. To comply with the Court's remand, the ORDER remanded the matter to this administrative law judge so that he may conduct such further proceedings as may be necessary to carry out the mandate of Modine and conclude the investigation. Specifically, the Order stated, in pertinent part, the following:

1. The administrative law judge (ALJ) shall issue an initial determination (ID) as expeditiously as practicable, preferably within six months of the date of this Order, which includes determinations, in light of the guidance provided in Modine on:
  - a. Whether any of respondents' accused condensers imported into or sold in the United States literally infringe claims 9 or 10 of the '580 patent<sup>4</sup>;
  - b. Whether any of respondents' accused condensers imported into or sold in the United States infringe claims 9 or 10 of the '580 patent under the doctrine of equivalents; and

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<sup>3</sup> This ORDER bears a date stamp from the Secretary's office of May 30, 1996. The order however, is dated May 31, 1996.

<sup>4</sup> The '580 patent refers to complainant's United States Patent No. 4,998,580 in issue.

- c. Whether there is, in light of the determinations made in accordance with paragraphs a and b supra, a violation of section 337 of the Tariff Act of 1930.

\* \* \*

2. The ALJ may, in his discretion, reopen the evidentiary record to the extent necessary to resolve any new factual questions presented by the Court's opinion.
3. In the event that the ALJ determines that there has been a violation of section 337 of the Tariff Act of 1930, the ALJ shall issue, pursuant to Commission rule 210.42(a)(1)(ii), a recommended determination on the appropriate remedy in the event the Commission finds a violation of section 337 and the amount of the bond to be posted by respondents during the period of Presidential review.<sup>5</sup>

Order No. 1, which issued on May 31, 1996, ordered each of complainant Modine Manufacturing Company (Modine) and respondents Showa Aluminum Corporation, Showa Aluminum Corporation of America, Mitsubishi Motors Corporation, Mitsubishi Motors Sales of America, Mitsubishi Heavy Industries, Ltd., and Mitsubishi Heavy Industries of America, Inc. (respondents) to state whether it wants the evidentiary record reopened to the extent necessary to resolve any new factual questions presented by Modine. It also directed each of the parties to address points 1 (a) (b) and (c), supra, of the ORDER. Responding to Order

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<sup>5</sup> Commission rule 210.42(a)(1)(ii) reads in part:

"Unless the Commission orders otherwise, within 14 days after issuance of the initial determination on violation of section 337 of the Tariff Act of 1930, the administrative law judge shall issue a recommended determination [concerning permanent relief and bonding] . .

A recommended determination on remedy and bonding may issue no later than December 16, 1996.

No. 1, each of the parties indicated that it did not want the evidentiary record reopened.<sup>6</sup>

Accordingly, Order No. 4 stated that the record will not be reopened.

Order No. 4 ordered each of the parties to submit proposed findings of fact, a brief in reply to what was submitted in response to Order No. 1, proposed conclusions of law and proposed rebutted findings with supporting exhibits from the original investigation.<sup>7</sup> It further set the matter down for oral argument on August 22, 1996.<sup>8</sup>

The matter is now ready for decision.

This initial determination relies on the guidance provided in Modine and takes into consideration the evidentiary record generated prior to Modine which is consistent with

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<sup>6</sup> See, however, fn. 10, infra and FF 45 whereby the parties in this remand proceeding agreed on corrections in the original record, which corrections have been adopted. Also, see fn. 26 where certain additional measurements, supplementing CX-57 and 58 were submitted by complainant, and also utilized by respondents at closing arguments.

<sup>7</sup> Complainant has submitted a cumulative appendix of exhibits and testimony which bear cumulative exhibit numbers CX 1 to CX 90 inclusive and correlate those exhibits to the hearing transcripts, respondents' physical exhibits, respondents' documentary exhibits, complainant's physical exhibits, complainant's documentary exhibits, federal register notices and opinions and court papers resulting from the original investigation. Similarly, respondents' submitted a set of exhibits, RX-1 to RX-61, which also correlate to the hearing transcripts, respondents' physical exhibits, respondents' documentary exhibits, complainant's physical exhibits, complainant's documentary exhibits, federal register notices and opinions and court papers resulting from the original investigation. In this initial determination, the cumulative exhibit numbers (CX- and RX-) are used.

<sup>8</sup> Complainant, in a submission dated August 13, 1996, objected to respondents' attempt to "introduce evidence" from other patent prosecutions in its submissions pursuant to Order No. 4. Specifically, respondents, in responding to Order No. 4, requested that the administrative law judge take "judicial notice of two office actions of the Patent and Trademark Office – PTO Office Action, Ser. No. 07/620,729 . . . Paper No. 87 . . . and PTO Office Action, Ser. No. 90/003,911 . . . Paper No. 7 . . ." (respondents' memo at 1 in response to complainant's objections). The staff in a response dated August 20, 1996, supported complainant's objections. It argued, inter alia, that respondents' attempted introduction of new evidence into the record is contrary to Order No. 4 not to reopen the record and that, respondents have not filed a motion to revisit the question of whether the record should be reopened. On August 22, 1996 the administrative law judge sustained complainant's objections (Tr at 18).

Modine. Proposed findings submitted by the parties not herein adopted, in the form submitted or in substance, are rejected as either not supported by the evidence or as involving immaterial matter and/or as irrelevant. The findings of fact which form a portion of this initial determination include references to supporting evidence in the record. Such references are intended to serve as guides. They do not necessarily represent complete summaries of the evidence supporting said findings.

## II. The Guidance Provided in Modine

The ORDER states that the initial determination should include determinations “in light of the guidance” provided in Modine. Modine, under the heading THE PATENTED INVENTION, stated that:

The invention of the ‘580 patent is described by [complainant] Modine as a highly efficient and environmentally advanced condenser for use in automotive air conditioning. It is more compact, lighter, uses less refrigerant, outperforms prior condensers, and has the additional advantage of being usable with refrigerants other than chlorofluorocarbons. Modine states that it converted the entire industry to a new standard.

Modine, 75 F.3d at 1549, 37 U.S.P.Q.2d at 1610. It then reproduced the following independent claim 9 and dependent claim 10 in issue “with emphasis added [by Modine] to point out the two terms that are the focus of the infringement issues:”

Claim 9. A condenser for a refrigerant in a cooling system comprising:

[1] a pair of spaced, generally parallel, elongated cylindrical tubes defining headers;

[2] a vapor inlet in one of said tubes;

[3] a condensate outlet from one of said tubes;

[4] said header tubes each having a series of elongated generally parallel slots with the slots in the series on one header tube aligned with and facing the slots in the series on the other header tube;

[5] a tube row defined by a plurality of straight, tubes of flat cross-section and with flat side walls and having opposed ends extending in parallel between said header tubes, the ends of said flat cross-section tubes being disposed in corresponding aligned ones of said slots and in fluid communication with the interior of said header tubes, at least some of said tubes being in hydraulic parallel with each other;

[6] web means within said flat cross-section tubes and extending between and joined to the flat side walls at spaced intervals to (a) define a plurality of discrete, hydraulically parallel flow paths within each flat cross-section tube that extend between said header tubes; to (b) absorb forces resulting from internal pressure within said condenser and tending to expand the flat cross-section tubes; and to (c) conduct heat between both said flat sides and fluid in said flow paths,

[7] said flow paths being of relatively small hydraulic diameter which is defined as the cross-sectional area of the corresponding flow path multiplied by four (4) and divided by the wetted perimeter of the corresponding flow path;

[8] serpentine fins incapable of supporting said flat cross-section tubes against substantial internal pressure extending between facing flat side walls of adjacent flat cross-section tubes;

[9] each of said flow paths including at least one elongated crevice extending generally along the length of the associated flow path.

Claim 10. The condenser of claim 9 wherein each flow path has a plurality of said crevices.

Modine, 75 F.3d at 1549, 37 U.S.P.Q.2d at 1610, 1611. Modine then concluded, under the heading THE PATENTED INVENTION:

It is not disputed that all of the elements of the claimed invention have counterparts in the accused condensers, and that infringement turns on the meaning and scope of the terms "flat side walls" and "relatively small hydraulic diameter." [Complainant] Modine challenges the correctness of the Commission's claim interpretation and the ensuing finding of non-infringement. [Emphasis added]

Modine, 75 F.3d at 1549, 37 U.S.P.Q.2d at 1611.

Modine, under the heading INFRINGEMENT and subheading "A. THE FLAT SIDE WALLS," concluded that:

. . . the term "flat side walls" means that the tube structure is flat, as the specification states, and does not prohibit the presence of fins, webs, or other attachments to either the interior or exterior surfaces. Those Showa tubes that bear inner fins (the 3mm models), and those that do not (the 2mm models), all have flat side walls as the term is correctly construed. This claim limitation is not a ground for a finding of noninfringement. [Emphasis added.]

Modine, 75 F.3d at 1550, 37 U.S.P.Q.2d at 1612. Thereafter, in the INFRINGEMENT section under the subheading "B. RELATIVELY SMALL HYDRAULIC DIAMETER,"

Modine agreed:

with the Commission that "relatively small" in claims 9 and 10, interpreted in light of the '580 specification and the prosecution history, is not entitled to the range of up to 0.070 inch as sought by Modine. However, the Commission erred in literally restricting the hydraulic diameter range to an upper limit of exactly 0.040 inch, and in barring access to the doctrine of equivalents.

Modine, 75 F.3d at 1551, 1552, 37 U.S.P.Q.2d at 1613. In the INFRINGEMENT section II., under the subheading "B. RELATIVELY SMALL HYDRAULIC DIAMETER,"

Modine analyzed the specification and prosecution history of the '580 patent as follows:

The '580 patent evolved from two continuation-in-part applications. The first-filed application, called the "grandparent," described condenser tubes with flow paths having hydraulic diameters in the range of "about 0.015-0.070" inch. The specification stated that "heat transfer is increased in the range of hydraulic diameters of about 0.015 inches to about 0.070 through the use of the invention with some variance depending upon air flow." The specification also stated that the preferred range was "about 0.015-0.040" inch. The specification included a graph of heat transfer as a function of hydraulic diameter, and described the graph as showing improved performance at hydraulic diameters up to about 0.070 inch.

In the second-filed application, called the "parent," the hydraulic diameter upper limit of "about 0.070" inch in the grandparent was replaced, at every

occurrence in the text, with "about 0.040" inch. The graph showing improved performance at hydraulic diameters up to 0.070 inch was retained in the application, but the explanatory text now described the graph as showing that

heat transfer is advantageously and substantially increased in the range of hydraulic diameters of about 0.015 inches to about 0.040 inches through the use of the invention with some variance depending upon air flow.

In the ensuing prosecution, when the examiner objected that the specification did not show "criticality" of the 0.015-0.040 inch range, Modine argued that this was the peak range "and it is this peak heat range that is sought to be covered by the applicant." During prosecution of the parent application Modine told the patent examiner of the "Cat-Folded Front" condenser that was made by Modine for the Caterpillar Company for use in tractors, and sold more than a year before the filing date of the grandparent application. The Cat condenser had several structural differences from the condenser described in these applications: it had an overall hydraulic diameter of 0.0496 inch (or 0.04822, the record shows both figures)<sup>9</sup>; it did not have a web joined to the tube walls; and it did not have a plurality of elongated crevices in the flow paths. The Cat condenser was treated as prior art, along with several cited references.

Modine again refiled the patent application (the "child" application), without further change in the description of the hydraulic diameter. Although Modine points out that hydraulic diameters up to 0.070 inch continued to be shown in the graph that appeared in all three applications, the replacement of 0.070 with 0.040 in the text requires the conclusion that the applicant limited the invention

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<sup>9</sup> Modine does not state which of 0.049 inch and 0.04822 inch is the correct figure. The staff argued (Tr at 374):

But clearly, that the Federal Circuit was aware of both measurements doesn't explain what aspects, whether they were aware of one was more accurate, or what the arguments were. But at least they were aware that there were two measurements and did not take the position as to which one was the appropriate one. Which I think leaves that an open question for Your Honor (emphasis added).

The 4/14/92 ID at 46 however, stated that "[a]lthough the Cat Condenser's parallel flow condenser had an overall hydraulic diameter of 0.04822, the Cat had individual segments with hydraulic diameters within the ranges claimed by Modine in the '580 patent." The Commission opinion dated July 30, 1993 at 13 stated that "[w]e adopt the ALJ's findings and conclusions in regard to the scope and content of the prior art, the differences between the prior art and the claimed inventions, and the level of skill in the art."

described in the refiled applications to hydraulic diameters of up to about 0.040 inch. [Emphasis added.]

\* \* \*

Although Modine may be correct that it is not necessary to reduce 0.070 to 0.040, this change was conspicuous and unambiguous. It was made in the context of the cited references and the Cat condenser, and the interested public is entitled to rely on it in interpreting the claim term “relatively small” as used in the ‘580 patent. [Emphasis added.]

Modine, 75 F.3d at 1552, 37 U.S.P.Q.2d at 1613, 1614. Modine concluded the

“B. RELATIVELY SMALL HYDRAULIC DIAMETER” section as follows:

The specification and prosecution history of the ‘580 patent do not permit a construction of “relatively small” [language found in claim 9] to include the 0.070 inch range that was described in the grandparent application, when that range was reduced in the parent and child to about 0.040 inch. However, neither are the claims correctly construed as limited to exactly 0.040 inch. Although the Commission correctly held that “relatively small” in claims 9 and 10 is limited by the description of the invention in the specification, the Commission incorrectly limited the hydraulic diameter to exactly 0.040 inch, for that is not the description in the specification and is not required by the prosecution history.

The specification uses the qualifier “about,” and also states that the optimum hydraulic diameter varies with the conditions. Such broadening usages as “about” must be given reasonable scope; they must be viewed by the decisionmaker as they would be understood by persons experienced in the field of the invention. . . . Although it is rarely feasible to attach a precise limit to “about,” the usage can usually be understood in light of the technology embodied in the invention. When the claims are applied to an accused device, it is a question of technologic fact whether the accused device meets a reasonable meaning of “about” in the particular circumstances. . . . [Emphasis added.]

Modine, 75 F.3d at 1554, 37 U.S.P.Q.2d at 1615.



### III. Question 1a of ORDER

“Whether any of respondents’ accused condensers imported into or sold in the United States literally infringe claims 9 or 20 of the ‘580 patent.”

Modine under the heading “C. LITERAL INFRINGEMENT” concluded:

The Commission’s determination of literal infringement was based on a hydraulic diameter limit of exactly 0.040 inch, with no consideration of the scope of “about” and no determination of the effect of relevant factors such as the nature of the coolant and the precision of measurement. The finding of non-infringement was based on an incorrect claim construction, leading to an inadequate application of the claims to the accused devices. The finding is vacated. On remand the Commission shall determine whether any of the accused condenser models literally infringes the claims, upon construction of the claim term “relatively small” as meaning a hydraulic diameter in the range of about 0.015-0.040 inch, and upon applying the claims to the various accused Showa models.

Modine, 75 F.3d at 1554, 1555, 37 U.S.P.Q.2d at 1615 (Emphasis added).

#### A. The Accused Condensers In Issue On Remand

A preliminary issue is what are the “accused condensers” in issue in this remand proceeding. Modine stated under the heading “C. LITERAL INFRINGEMENT;”

The record shows hydraulic diameter ranges of the nine Showa models before the Commission as follows: 0.0484-0.0519 inch; 0.0453-0.0520 inch; 0.0477-0.0577 inch; 0.0577-0.0606 inch; 0.0482-0.0497 inch; 0.061-0.065 inch; 0.0445-0.0682 inch; 0.0424-0.0573 inch; and 0.0513-0.0547 inch. The ALJ also referred to a model having a range of 0.0453-0.0477 inch.

Modine, 75 F.3d at 1554, 37 U.S.P.Q.2d at 1615. The staff, however, in its proposed finding 115, contrary to the “ten” models referenced in Modine, has set forth a “corrected table” of “twelve” accused condensers “in question” which identified each of the originally accused condensers with a hydraulic diameter range in inches. Complainant and the

respondents agree with the information set forth in the corrected table (Tr at 196, 210) (FF 45)<sup>10</sup>.

While complainant in the original investigation put twelve accused condensers in issue, in this remand complainant has put in issue only five of the originally accused condensers (Tr at 260). The reasons for complainant now restricting "twelve" to "five" are (1) the language in independent claim 9 that requires "a plurality of discrete, hydraulically parallel flow paths . . ." (paragraph [6] supra), (2) complainant's position that "a plurality" means more than one (CRBr. at 12), (3) the reliance in Modine on the prior art Cat condenser, Modine, 75 F.3d at 1552, 37 U.S.P.Q.2d at 1613, 1614 (quoted supra), and (4) the fact that only five of the originally twelve accused condensers showed at least two tubes with hydraulic diameter less than 0.0496 inch, viz., condenser nos. 2, 4, 5, 6 and 11 (FF 46 to 52).

#### **B. Literal Infringement**

While complainant argued that the five accused condensers literally infringe claims 9 and 10 in issue, each of the staff and the respondents argued that there is no literal

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<sup>10</sup> The 4/14/92 ID at 86 stated that "Modine reported a hydraulic diameter range for each condenser tested. The ranges were: 0.0484-0.0519; 0.0453-0.0520; 0.0577-0.0477; 0.0577-0.0606; 0.0482-0.0497; 0.061-0.065; 0.0445-0.0682; 0.0424-0.0573 and 0.0513-0.0547." Said third range, viz. "0.0577-0.0477" however should have been "0.0453-0.0477" because the only condenser that had that number was the 1992 Mazda 929, and the smallest hydraulic diameter range was 0.0453 for that condenser, viz. condenser no. 5 in CX 58 (FF 50). Modine apparently picked up the discrepancy in the 4/14/92 ID because Modine stated that "The ALJ also referred to a model having a range of 0.0453-0.0477 inch." Modine, 75 F.3d at 1554, 37 U.S.P.Q.2d at 1615.

While Modine, supra, referred to "nine" Showa models, "nine" should be "eleven." This error was pointed out in "Complainant's Supplement To Its Response To Order No. 1" dated July 2, 1996 (ALJ Ex. 1). Hence, the total number of accused condensers that was, or should have been, in issue in the original investigation was twelve as shown in FF 45.

infringement. Pursuant to Modine the administrative law judge is to construe the term “relatively small” in independent claim 9 to mean a range of “about 0.015-0.040 inch” taking into account “the effect of relevant factors such as the nature of the coolant and the precision of measurement.” Modine, 75 F.3d at 1554, 37 U.S.P.Q.2d at 1615.

i. Nature of the Coolant

Referring to the “nature of the coolant,” complainant stated that it has based its infringement allegation upon the sole use of the coolant R-12 (Tr at 253)<sup>11</sup>. Moreover, the administrative law judge finds nothing in the record as to the effect, if any, the nature of the coolant would have on the range “about 0.015-0.040 inch.” In addition, all parties agree that the record does not support taking into account the nature of the coolant as to the phrase “about 0.015-0.040 inch.” Thus at closing arguments, the parties represented (Tr at 251-253):

JUDGE LUCKERN: Is R-12 freon?

MR. HOSKINS: Yes. I’ve got my expert back here. It’s a form of freon.

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MR. HOSKINS: . . . . But the point is, we did not make the record here. And we’re not asking you to make a finding based on any refrigerant other than R-12.

JUDGE LUCKERN: All right. Obviously, Complainant, I mean, Respondents have no problem with what you’ve just heard the Complainant say; correct?

MR. KIERNAN: That’s correct.

JUDGE LUCKERN: And the staff certainly doesn’t have any problem.

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<sup>11</sup> The values of hydraulic diameters given in the ‘580 patent are for condensers in R-12 systems. See CX42, col. 4, lines 55-56.

MR. GLAZER: Well, Your Honor, the staff's position has been that the record wouldn't even support such a finding.

JUDGE LUCKERN: So, really what the Federal Circuit said about the nature, and I've got that underlined here in the opinion, is really irrelevant in light of the facts in this case.

MR. HOSKINS: Your Honor, we're not making a claim -- what the Federal Circuit was referring to Judge was the possibility.

JUDGE LUCKERN: Right.

MR. HOSKINS: We did raise this possibility in the patent examination that one of the reasons why --

JUDGE LUCKERN: This was at 1554, the bridging paragraph on 1555. They [Modine] talk about the relevant factor such as the nature of coolant. Now, go ahead, Mr. Hoskins.

MR. HOSKINS: That as being one possible reference to look to in determining the flexibility of about. That's a possibility in some other case. We're not arguing that, that could be or should be a basis here. We're arguing other reasons that I've presented.

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MR. HOSKINS: We don't think the record, as it stands now, is adequate for that. We've got too many other things as to which the record is adequate and it was just a strategic judgment. I mean you can't argue everything at least on our side. We don't try to argue everything. We tried to stick with where we thought the record was strong.

Based on the foregoing the administrative law judge finds that the nature of the coolant sheds no light in interpreting the literal scope of independent claim 9 with respect to the phrase "about 0.015-0.040 inch."

ii. Precision of Measurement

Modine stated that the "Commission's determination of literal infringement ... [gave] no consideration of the scope of 'about' and no determination of ... the precision of

measurement,”<sup>12</sup> as a factor that could give meaning to the phrase “relatively small hydraulic diameter” in independent claim 9 and dependent claim 10 which Modine construed as referring to “about 0.015-0.040 inch.” Measurement error has been used by courts for interpreting the claimed term “about” in reference to numerical claim limitations. In Hybritech Inc. v. Abbott Laboratories, 849 F.2d 1446, 1455, 7 U.S.P.Q.2d 1191, 1199 (Fed. Cir. 1988) (Hybritech), cited in Modine, 75 F.3d at 1554, the Court upheld the district court’s interpretation of “at least about 10<sup>8</sup> liters/mole” to include an inherent two to three fold measurement error, thus including measurements of 4.8 x 10<sup>7</sup> liters/mole and 7.1 x 10<sup>7</sup> liters/mole within the literal scope of the claim, see Hybritech, 7 U.S.P.Q.2d at 1199. In E.I. DuPont De Nemours v. Phillips Pet. Co. 656 F. Supp. 1343, 2 U.S.P.Q.2d 1545 (D.Del 1987), aff’d in part, rev’d. in part on other grounds, vacated in part, and remanded, 849 F.2d 1430, 7 U.S.P.Q.2d 1129 (Fed. Cir. 1988), (DuPont) in issue was a claim 2 which read in part “An interpolymer of ethylene and from 1% to 20% by weight of a [comonomer] higher olefinic hydrocarbon . . . .” The district court stated that DuPont’s (patentee’s) comonomer content proofs are based on two showings of infringement:

“First, that the comonomer content data determined by the uncorrected infrared spectroscopy technique used in the mid 1950s by DuPont [when the application for the patent in issue was filed] . . . establish that the accused Phillips copolymers meet the 1% by weight limitation of claim 2.

Second, that when the margin of error inherent . . . [for determining whether the accused copolymers meet the 1% by weight limitation of claim 2] in the mid-1950s, is taken into account, even the comonomer content data . . . presented at trial, whether by NMR or by correcting DuPont’s infrared data, also prove literal infringement of claim 2.”

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<sup>12</sup> Modine, 75 F.3d at 1554, 1555, 37 U.S.P.Q.2d at 1615.

DuPont then stated that the infringer had “overlooked the second showing completely and hence even if [the infringer’s] . . . challenge to DuPont’s comonomer content proofs are accepted, the data presented at trial by the infringer is sufficient to sustain DuPont’s burden of proof as to infringement of claim 2. DuPont then made reference to Cosden Oil & Chemical Co. v. American Hoechst Corp., 543 F. Supp. 522, 530 214 USPQ 244 (D. Del. 1982) (Cosden Oil) where the court stated that “[i]n determining the boundaries of ‘not more than about 10%,’ for example, it is helpful to know the margin of error in the measurement techniques of the day.” DuPont concluded that for those products of the infringer that the infringer contended have less than 1% comonomer, claim 2 plainly included them when it is construed “in light of the degree of accuracy of infrared spectroscopy in the 1950’s, as required by Cosden Oil.” DuPont 656 F. Supp. at 1384, 2 U.S.P.Q.2d at 1576. In Therma-Tru Corp. v. Peachtree Doors Inc. Peachtree Doors Inc. 24 U.S.P.Q.2d 1493, 1499 (E. D. Mich. 1992) (Therma) in issue was a claim to a door assembly comprising “at least 0.005 inch” claim limitation of depth in a recited element. The infringers argued that there was no substantial evidence upon which a jury could have found that the infringer’s door met the 0.005 inch limitation. The district court, however, in denying the infringer’s motion for JNOV, pointed to testimony of witnesses that the infringer’s mold was etched to a depth of 0.0045 inch, plus or minus 0.0005 and concluded that the testimony provided the substantial evidence upon which a jury could find literal infringement of the 0.005 inch limitation. Id.

In Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes, Inv. No. 337-TA-366, Initial Determination on remand at 23-27 (August 8, 1995)(Microsphere Adhesives), at issue was

the claimed term for interfacial tension of “at least about 15.0 dynes per centimeter.” This administrative law judge found that all references in the specification were reported in tenths of a dyne per centimeter, thus putting a man of ordinary skill in the art on notice that a tenth of a dyne per centimeter is a significant digit, and that evidence showed that interfacial tension could be measured within an experimental error range of 0.2 dynes per centimeter. Microsphere Adhesives at 25. Accordingly, this administrative law judge found the claimed term to literally encompass values only as low as 14.8 dynes per centimeter. Id. at 27.

In this investigation, the administrative law judge finds that construction of “about 0.015 to about 0.040” is determined based on the methods generally used by those skilled in the art at the time the patent application was filed Cosden Oil, 543 F. Supp. at 530, 214 USPQ at 250. In dealing with the precision of measurement in interpreting the claimed term “about,” each of complainant, respondents, and the staff relied on evidence presented at the hearing in the original investigation relating to hydraulic diameter measurements taken from certain accused condensers in issue (FF 45, 53), as well as testimony of complainant’s Saperstein regarding the accuracy of those measurements (SBr. at 14-15, 17-18, RBr. at 24, CRBr. at 9). However, none of that testimony relates the measurement methods used in this investigation to any methods generally used by those skilled in the art at the time the application for the ‘580 patent was filed (FF 53).

During the original investigation, certain measurements were obtained by a Briggs and Stratton technique, which complainant’s Saperstein described as “ultra precise.” (FF 53). However, because that Briggs and Stratton measurement technique was expensive, complainant also used another measurement technique that Saperstein testified had variances

of less than one thousandth of an inch compared to the Briggs and Stratton technique (FF 53).<sup>13</sup> Saperstein further testified regarding multiple measurements of two single mount locations, reflected in CX-57 (FF 53). For the 6/91 Mitsubishi 3000 GT, a mount number 3491-M7 gave a two thousandths difference between measurements (FF 48, 53). For certain tubes received from Showa during discovery dated 12/11/92, a mount number 3486-S20A was measured six times, with a maximum difference of 1.3 thousandths of an inch between the lowest and highest measurement (FF 53).<sup>14</sup>

The specification of the '580 patent, in Table 1, lists a hydraulic diameter measurement of .07871 inch for the "Current Production 1E2803," and of .0302 inches for the "Present Invention," thus putting one of ordinary skill in the art on notice that hydraulic diameter could be measured to a greater precision than one thousandth of an inch, possibly even to one millionth of an inch (FF 55).<sup>15</sup> Similarly, the prosecution history refers to flow paths in the prior art Cat condenser having hydraulic diameters of from 0.0382 to 0.0448, with an "overall" hydraulic diameter of 0.0496 inch, thus reporting hydraulic diameters to within one ten-thousandth (0.0001) of an inch (FF 16). The prosecution history also refers

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<sup>13</sup> Exhibit CX-57 shows two instances where the Briggs and Stratton method was used. These are the Mitsubishi 3000GT purchased from Steve Foley Mitsubishi, and the Mitsubishi Diamante purchased from Steve Foley Mitsubishi.

<sup>14</sup> No party has pointed to any statistical analysis or expert testimony regarding the significance of these variations to a determination of measurement accuracy. For example, there is nothing in the record to indicate whether comparing two measurements at one mount location and six measurements at a second mount location would be sufficient to predict the actual measurement error of the method used to measure hydraulic diameter. Moreover, it is unclear if a person skilled in the art would consider two measurements that differed by .002 inch to be evidence of a measurement error of +/- .002 inch, or if it would represent an error of +/- .001 inch, or some other number.

<sup>15</sup> Complainant's Saperstein, in testimony not specifically directed to the term "about" as used in the '580 patent, testified that a value of "about .045" would include a value of .0448, due to rounding (FF 54).



to the Cat condenser having a hydraulic diameter of "0.04822 inch not 0.049 inch," thus putting one of skill in the art on notice that a change in hydraulic diameter of 0.00078 inch (or at most a difference of .00138 inch, if the value of 0.0496 inch, which is earlier reported for the Cat condenser, is used), was a measurable difference (FF 16, 32, 36, 37). In view of the fact that no testimony given at the hearing which resulted in the 4/14/92 ID (the only hearing in this investigation), was specifically directed to either the actual measurement error achievable at the time of filing of the '580 patent, or the understanding of a man skilled in the art at that time as to the effect of measurement error on the meaning of the term "about," the administrative law judge finds that, based on the values reported in the specification (FF 55), which show hydraulic diameter values reported to one millionth (0.000001) of an inch, and prosecution history (FF 16, 27, 31), which shows a difference of 0.00138 inch (1.38 thousandths of an inch) to be a measurable difference, any measurement error contemplated by the term "about 0.015 to about 0.040 inch" is no more than one thousandth of an inch. Accordingly, taking into account measurement error, the administrative law judge reads the term "about 0.015 to about 0.040 inches" to include hydraulic diameters from 0.014 to 0.041 inches. See DuPont, Cosden and Therma supra. The administrative law judge further finds that, because the five accused condensers in issue have a hydraulic diameter greater than 0.041 inch (FF 45, 47-52), the precision of measurement factor does not establish literal infringement of independent claim 9 and dependent claim 10 with respect to any of the five accused condensers in issue.

**iii. Significance of “about 0.015 - 0.040 inch”**

Complainant argued that, when Modine referred to the “precision or significance of the measurements used,” Modine, 75 F.3d at 1554, 37 USPQ2d at 1615 (emphasis added), the Federal Circuit intended “significance” to be a separate consideration from “precision.” (Tr at 28, 29, 33, 34). Thus, complainant argued that the term “about 0.015-0.040 inch” should be read to include literally up to 0.0496 inch, because one of ordinary skill in the art would understand that the term “about” should be given a “very expansive reading.” (CBr. at 31). Complainant also argued that, by setting a minimum manufacturing standard of 0.050 inch, respondents’ engineers and patent experts recognized that the range of “about 0.015 - 0.040 inch” entitled Modine to an overall hydraulic diameter range of at least 0.0496 inch. (CBr. at 31). Respondents (Tr. at 95-96) and the staff (SRBr. at 4-5) rejected this argument. (Tr at 95-96, SRBr at 4-5).

Complainant relied on testimony of its expert Marto that the term “relatively small hydraulic diameter” should be interpreted to include condensers with a hydraulic diameter from 0.015 to 0.070 inch (CX-1, Marto at 725-727). However, the testimony of Marto is not directed to his understanding of the term “about 0.015 to 0.040 inch.” The testimony cited by complainant is instead directed to his understanding of the term “relatively small.” Thus, he testified:

looking at [figure 5] and in particular looking at curve B drawn in for the invention, I would feel that the hydraulic diameter of .07 is a reasonable number defined as a small hydraulic diameter.

(Tr. at 726). Moreover, Modine disagreed with that testimony, and found:

Although Modine points out that hydraulic diameters up to 0.070 inch continued to be shown in the graph that appeared in all three applications, the

replacement of 0.070 with 0.040 in the text requires the conclusion that the applicant limited the invention described in the refiled applications to hydraulic diameters of up to about 0.040 inch.

\* \* \*

Although Modine may be correct that it is not necessary to reduce 0.070 to 0.040, this change was conspicuous and unambiguous. It was made in the context of the cited references and the Cat condenser, and the interested public is entitled to rely on it in interpreting the claim term "relatively small" as used in the '580 patent. [Emphasis added.]

Modine, 75 F.3d at 1552, 37 U.S.P.Q.2d at 1614.

Complainant relies on Kolene Corp. v. Motor City Metal Treating, Inc., 440 F.2d 77, 169 USPQ 77 (6th Cir.), cert denied 404 U.S. 886 (1971) (Kolene), to support its argument that a literal reading should be up to 0.0496 inch. However, in Kolene, the upper limit of the claimed range "about 25 and 40%" was not found critical, Kolene 440 F.2d at 82, see Conopco, Inc. v. May Dept. Stores Co., 46 F.3d 1556, 1562 (Fed. Cir. 1994). Conversely, during prosecution of the '580 patent, the examiner stated in a November 18, 1986 rejection that he was "unclear how the specification supports the criticality of the hydraulic diameter range 0.015 - 0.040 inches." (FF 13). Applicants, in a March 19, 1987 amendment in the prosecution of the '580 patent argued in response:

Quite simply, the specification supports the criticality of hydraulic diameter and the range specified [about 0.015 - 0.040] simply because it says so.

\* \* \*

peak heat transfer according to the invention is achieved in this range of hydraulic diameters [about 0.015 - 0.040 inch] and it is this peak area that is sought to be covered by the applicant.

(FF 14) (emphasis added). Thus, applicants in the prosecution have pointed to the "criticality" of the upper limit of "about 0.015 - 0.040 inch." Accordingly, the

administrative law judge rejects complainant's argument that a person of ordinary skill in the art would understand the term "about 0.015 to 0.040 inch" to include literally up to 0.0496 inch.

Other than (i), (ii) and (iii), supra, the administrative law judge finds nothing in the record or in Modine to the effect that there is any other factor to be considered in the construction of the claimed term "relatively small."

#### IV Question 1b of ORDER

“Whether any of respondents’ accused condensers imported into or sold in the United States infringe claims 9 or 10 of the ‘580 patent under the doctrine of equivalents.”

Modine under the heading “D. INFRINGEMENT BY EQUIVALENCY” stated:

The Commission held that the doctrine of equivalents did not apply because Showa did not “unscrupulously” copy the Modine condenser. This ruling was based on an incorrect view of the law. . . . Although the ALJ received evidence on the facts relevant to equivalency, the findings were made in the context of an incorrect view of prosecution history estoppel, the ALJ holding that Modine’s claims were limited to hydraulic diameters no larger than exactly 0.040 inch. The ALJ’s determination of estoppel was based on the same factors that led to the incorrect claim interpretation.

\* \* \*

Discussing the imported accused condensers, the ALJ found as fact that their function and result are the same as those of the claimed invention, but that the imported condenser do not meet the “same way” test because of the presence of internal fins in some of the Showa models. However, Modine’s evidence was substantially un rebutted that the presence of inner fins did not substantially change the way the condensers function, by surface tension and capillary forces. Although the intervenors argue that their condensers with larger hydraulic diameters are less efficient, equal performance is not required to establish equivalency. . . . The ALJ’s finding is against the heavy weight of the evidence. There was not substantial evidence supporting the finding of non-equivalence.

However, the ALJ correctly recognized that prosecution history estoppel limits the application of the doctrine of equivalents, even when the function/way/result or other test of equivalency is met by the accused devices. Prosecution history estoppel implements the principle that a patentee can not obtain, in an infringement suit, protection of subject matter that was relinquished in order to obtain allowance of other subject matter during prosecution of the patent application. . . . The standard for determining whether particular subject matter was relinquished and was material is an objective one which we determine as a matter of law, . . . , and is based on the reasonable reading, by a person of skill in the field of the invention, of the entire prosecution history.

We have discussed the prosecution history ante, and concluded that in connection with the patent application that led to the '580 patent, Modine relinquished the range of hydraulic diameters that extended to 0.070 inch, based in substantial part on the hydraulic diameter of the prior art Cat-Folded Front condenser. . . .

Within this boundary, however, the prosecution history and the prior art do not eliminate equivalents if substantial identity is shown. The controlling criterion . . . is whether the accused device is substantially the same as the claimed invention.

The ALJ incorrectly held that Modine was estopped to assert equivalency against any condenser with a hydraulic diameter larger than exactly 0.040 inch. . . .

Modine, 75 F.3d at 1555, 1556, 37 U.S.P.Q.2d at 1615, 1616.

**A. Hydraulic Diameter of the Cat Condenser**

Complainant argued that the five accused condensers in issue infringe claims 9 and 10 under the doctrine of equivalents; that in an effort to escape the effect of Modine respondents argued that complainant is entitled to a range of equivalent hydraulic diameters up to that of the prior art Cat condenser, viz. "--0.48 inch-- . . . the lowest hydraulic diameter figure reported for the Cat condenser during the prosecution of the '580 patent rounded down to the nearest thousandth of an inch," (CRBr. at 16); that while complainant "conceded coverage of hydraulic diameters above 0.0496 inch, which is the overall hydraulic diameter that Modine reported for the Cat condenser (based on a part drawing) and which is stated in the prosecution history 'should be accorded anticipatory effect, if any.' . . . [and] Modine later reported a lower figure for the overall hydraulic diameter of the Cat condenser (0.04822), Modine never reflected an intent to surrender additional subject matter," (Emphasis added) (CRBR. at 16).

The staff argued that the five accused condensers in issue infringe claims 9 and 10 under the doctrine of equivalents. In support it was argued that:

[i]nasmuch as the 0.0496 inch figure was what Modine affirmatively surrendered during the prosecution history, estoppel effect should be accorded at or above that hydraulic diameter size. It is anomalous to accord estoppel effect to a lower figure, even if it is a correction of the earlier figure, that was inserted later in the prosecution history with no apparent intention to surrender additional subject matter. While it is true that a patentee's unmistakable assertions to the PTO in support of patentability will estop the patentee from recovering subject matter surrendered thereby, it is difficult to conclude in this case, in light of truly equivocal claim language and conflicting evidence in the prosecution history, that the patentee has surrendered subject matter with the clarity that prosecution history estoppel requires, citing Athletic Alternatives inc. v. Prince Manufacturing, Inc., 73 F.3d 1573, 1582 (Fed. Cir. 1996) [footnote omitted] [emphasis added by the staff].

(SBr at 22, 23).

The 4/14/92 ID found in its consideration of the scope and content of the prior art that the overall hydraulic diameter of the Cat condenser was 0.04822, (4/14/92 at 46). This finding was adopted by the Commission (Commission 7/30/93 opinion at 13). It was also affirmed by Modine in its determination that reversible error had not been shown in the Commission's determination that the patent in issue is not invalid on the ground of obviousness. Modine, 75 F.3d at 1556, 37 U.S.P.Q.2d at 1617. However, Modine reversed and remanded the Commission opinion on infringement under the doctrine of equivalents stating that the:

ALJ incorrectly held that Modine was estopped to assert equivalency against any condenser with a hydraulic diameter larger than exactly 0.040 inch. The holding is vacated, and the case is remanded to the Commission for findings in accordance with the doctrine of equivalents.

Modine, 75 F.3d at 1556, 37 U.S.P.Q.2d at 1616. Moreover, Modine stated that the Cat condenser "had an overall hydraulic diameter of 0.0496 inch (or 0.04822, the record shows

both figures).” Modine, 75 F.3d at 1552, 37 U.S.P.Q.2d at 1613. Thus, the administrative law judge finds that he should consider whether estoppel was created by the 0.0496 inch value or the 0.04822 inch value of the Cat condenser.<sup>16</sup>

The phrase “should be accorded anticipatory effect, if any” from the prosecution of the patent in issue relied on by complainant (CRBr at 16), is taken from the remarks of complainant’s counsel in the amendment filed on March 6, 1988 in the Child Application<sup>17</sup> requesting reconsideration of the various rejections of original claims 1-24 of the Child Application “based on Yoko in view of the condenser of Exhibits A-G (the prior art Cat condenser), frequently with reference to Oohara and sometime with reference to one or more additional references . . . in the light of the information that follows.” (FF 25). In those remarks of October 6, 1988 (FF27) complainant’s counsel represented:

With regard to certain comments made by the examiner, the fact that a Cat Folded Front condenser [prior art referred to in Modine] may have one or more passages with hydraulic diameters of less than 0.040 is not dispositive since the overall hydraulic diameter was 0.049 inches. . . . It is, of course, conceivable that some insert location might be found wherein none of the flow paths have hydraulic diameters less than 0.040 inches and since the overall hydraulic diameter is 25% above the top end of the range claimed, that should be the one that is accorded anticipatory effect if any particularly since improved results with the PF condenser [the claimed condenser] are demonstrated at hydraulic diameters of 0.035 inches and 0.039 inches (the latter being almost right at the top end of the claimed range) over the Cat Folded Front having an overall hydraulic diameter of 0.049 inches. [Emphasis added]

(FF 27).

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<sup>16</sup> Arguments of each of complainant and the staff at (CBr. at 40, SBr. at 20-23) put this question in issue irrespective of the finding of the 4/14/92 ID and the Commission’s 7/30/93 opinion.

<sup>17</sup> The ‘580 patent in issue resulted from a series of three applications, viz. a Grandparent application, a Parent Application and a Child Application (FF 3).



Original claim 10 in the Child application included the language “hydraulic diameter in the range of 0.015 to 0.040 inches.” (FF 21). The Examiner in his rejection of May 4, 1988 had rejected original claims 1-7, 9, 11 and 19 under 35 U.S.C. 103 as being unpatentable “over Yoko in view of the condenser of Exhibits A-G (the prior art Cat condenser) . . . and further in view of Oohara” (FF 25). Moreover the Examiner in the same rejection had rejected original claims 8 and 10 of the Child Application “under 35 U.S.C. 103 as being unpatentable over Yoko in view of Exhibits A-G [the prior art Cat condenser] as applied to claim 5 above, and further in view of Mosier et al.” (FF 25). Thus what complainant’s counsel was stating in his remarks of October 6, 1988 (FF 27), supra, was that since the overall hydraulic diameter 0.049 inches of the prior art Cat condenser is 25% above the top end range claimed, viz. “the “0.040” of original claim 10, the anticipatory effect “if any” is in the 25% range, viz. 0.040 to .050, particularly since improved results with the PF condenser are demonstrated at “hydraulic diameters of 0.035 inches and 0.039 inches . . . over the Cat Folded Front having an overall hydraulic diameter of 0.049 inches.” (FF 27). The administrative law judge rejects that argument and finds, based on the prosecution history of the Child Application, that complainant is entitled only to a range of equivalent hydraulic diameters up to the 0.4822 inch of the prior art Cat condenser.

Complainant’s argument (FF 27) is based on remarks made by complainant’s counsel on October 6, 1988 responding to the Examiner’s rejection of original claims 1-24 of the Child application dated May 4, 1988 (FF 25). Significantly the Examiner in a subsequent rejection, dated January 12, 1989 (FF 30), did not accept the October 6, 1988 arguments of

complainant's counsel (FF 27) but instead rejected original claims 1-24 again on prior art. Thus, in the subsequent rejection, claims 1-7, 9, 11 and 19 were rejected under 35 U.S.C. 103 "as being unpatentable over Yoko in view of the [prior art Cat condenser] . . . and further in view of Asselman et al.;" claims 8 and 10 were rejected under 35 U.S.C. 103 as being unpatentable "over Yoko in view of [the prior art Cat condenser] . . . and Asselman et al. . . . and further in view of Mosier et al.;" claims 12-15 were rejected under 35 U.S.C. 103 as being unpatentable "over Yoko in view of [the prior art Cat condenser] . . . and Asselman et al. . . . and further in view of Oohara;" and claims 16, 17, 18 and 20 and 22 were rejected under 35 U.S.C. 103 "as being unpatentable over Yoko in view of [the prior art Cat condenser]. . . or Yoko in view of [the prior art Cat condenser] . . . and Oohara as applied to claims 19 and 15 . . . and further in view of Sonoda" (FF 30). Moreover the Examiner in his rejection of January 12, 1989, dated "12/30/88," specifically stated that "[a]pplicants arguments [of October 6, 1988] with respect to claims 1-24 have been considered but are deemed to be moot in view of the new grounds of rejection;" that "[a]pplicant's arguments filed 10/6/84 [sic] have been considered but they are not deemed to be persuasive;" and that the "Declaration under 37 CFR 1.132 filed 10/20/88 is insufficient to overcome the rejection of claims 1-24 based upon Yoko in view of [the prior art Cat condenser]. . . set forth in the last Office action because the apparent superior results achieved would have been obvious to one of ordinary skill in view of the teaching of newly cited Asselman et al." (FF 30). Hence the administrative law judge finds in the Examiner's rejection of January 12, 1989 (FF 30), that he rejected the argument of complainant's counsel on October 8, 1986, that complainant is entitled to a range of equivalent hydraulic

diameters up to 0.496 inch. Thus he finds that the remarks of October 6, 1988 in the prosecution of the Child Application relied on by complainant in this remand are not found controlling in interpreting the phrase "relatively small hydraulic diameter" of independent claim 9 in issue in, in view of the Examiner's rejection of January 12, 1989.

In addition the argument of complainant's counsel on October 6, 1988 relied on by complainant was directed to the Examiner's rejection of original claims 1-24 (FF 30). None of those original claims contained the language of independent claim 9 in issue, viz. "said flow paths being of relatively small hydraulic diameter which is defined as the cross-sectional area of the corresponding flow path multiplied by four (4) and divided by the wetted perimeter of the corresponding flow path" (emphasis added) (FF 23). Independent claim 9 in issue was derived from what was claim 27 of the Child Application (FF 32, 34, 43). Dependent claim 10 in issue was derived from what was claim 28 of the Child Application (FF 32, 35, 43). Claims 27 and 28 were not added to the Child Application until the amendment filed by Modine on July 17, 1989 (FF 32), which responded to the Examiner's rejection of January 12, 1989 (FF 30), a rejection that did not accept the argument of complainant's counsel on October 6, 1988. Claim 27 was dependent on independent claim 25 first added by the amendment filed July 17, 1989 (FF 32). It was claim 25 that first introduced into the claimed subject matter of the Child Application the phrase "relatively small diameter" which is in the language of claim 9 in issue, viz. "said flow paths being of relatively small hydraulic diameter (defined as the cross-sectional area of the corresponding flow path multiplied by four (4) and divided by the wetted perimeter of the corresponding flow path) (emphasis added)," (FF 33). Dependent claim 27 read:

27. The condenser of claim 25 wherein each of said flow paths includes at least one elongated crevice extending generally along the length of the associated flow path.

(FF 34). Moreover, claim 25 was not a copy of any of the original claims in issue in the Child Application. Thus, in the amendment filed on July 17, 1989, new claim 25 was represented by complainant's counsel to be "somewhat like original claim 10 although it is broader in some respects and narrower in others," (FF 32) (emphasis added).

On November 7, 1989, the Examiner, responding to the amendment filed July 17, 1989, rejected claim 25 under 35 U.S.C. "as being unpatentable over Yoko in view of [the prior art Cat condenser] . . . and further in view of Asselman et al." He stated that claim 27 and claim 28 would be allowable "if rewritten to overcome the rejections under 35 U.S.C. 112 and to include all of the limitations of the base claim and intervening claim." (FF 39). In an amendment filed on February 20, 1990 complainant rewrote claim 27 such that it was in independent form and contained the language "said flow path being of relatively small hydraulic diameter (defined as the cross-sectional area of the corresponding flow path multiplied by four (4) and divided by the wetted perimeter of the corresponding flow path);". (FF 40). The Examiner in a Patent Office action dated May 23, 1990 then stated that while claims 27 and 28 were indicated previously as containing allowable subject matter, the claims on final review have been found to contain informalities under 35 U.S.C. 112 and indicated that they should be rewritten (FF 42). In an amendment filed on claim 27 was rewritten to read as claim 9 in issue (FF 43). Thereafter, the Examiner issued a notice of allowance (FF 44).

As seen from the foregoing, claims 25 and 27 of the Child Application, which are the basis for independent claim 9 in issue, was not even in existence when complainant's counsel made his arguments on October 6 to the Patent Office. Moreover claim 25 was broader in some respects than original claim 10 (FF 32). Hence, the administrative law judge finds yet another ground for rejecting complainant's arguments that the remarks of October 6, 1988 should be controlling for interpreting the phrase "relatively small hydraulic diameter" of independent claim 9 in issue.

There is yet a third independent ground that supports the finding of the administrative law judge that the argument of complainant's counsel on October 6, 1988 in the prosecution of the patent in issue relied on by complainant in this remand, is not controlling in interpreting the claimed phrase "relatively small hydraulic diameter" of independent claim 9 in issue. In the response of October 6, 1988, relied on by complainant's counsel, it was represented:

particularly since improved results with the PF condenser [the claimed condenser in issue] are demonstrated at hydraulic diameters of 0.035 inches and 0.039 inches (the latter being almost right at the top end of the claimed range) over the Cat Folded Front having an overall hydraulic diameter of 0.049 inches. [FF 27]

While inventor Guntly, in a declaration dated October 12, 1988, affirmed the accuracy of the data appearing in the amendment filed October 6, 1988 (FF 28, 29), he later stated that the numbers "0.035," "0.039" and "0.049," supra, are incorrect. Thus, subsequent to the Examiner's January 12, 1989 amendment, in an amendment filed on July 17, 1989 it was represented:

Further, at least the number for the Cat folded front [the claimed condenser in issue] is in error and should be about 0.041 inches. We are reviewing the

entire table and expect to provide correct values within the next two to three weeks. [FF 32]

Thereafter on August 31, 1989 complainant filed a letter supplementing its response dated July 17, 1989 and which included a table correcting errors in the remarks filed on October 6, 1988 (FF 36). Thus the August 31, 1989 supplemental letter showed the revised new hydraulic diameter for the claimed condenser as 0.04822 inch and not 0.049 inch. Moreover it showed the claimed condenser had an equal air side pressure drop of "0.0231" not "0.035" and an equal heat transfer of "0.0238" and not "0.039" (FF 36, 37). Inventor Guntly in a September 1989 declaration stating that "[m]ore recently" he had come to learn that certain of the data contained in the amendment filed on October 6, 1988 is inaccurate causing complainant to recheck the data submitted on October 6, 1988 and that the "new" data is now accurate (FF 38). It was only after the corrections were made on August 31, 1989 that the Examiner in his November 7, 1989 rejection stated that "claims 16, 17, 18, 20-24, 27 and 28, are believed to contain allowable subject matter" (FF 39). It is claim 27 that forms the basis for independent claim 9 in issue (FF 43). Significantly the Examiner stated in his November 7, 1989 rejection that "[a]pplicant's declarations directed to errors in Table 1 previous submitted have been noted and fully considered." (FF 39). Modine has stated:

Although Modine may be correct that it was not necessary to reduce 0.070 to 0.040, this change was conspicuous and unambiguous. It was made in the context of the cited references and the Cat condenser, and the interested public is entitled to rely on it in interpreting the claim term 'relatively small' as used in the '580 patent.

Modine 75 F.3d at 1552, 37 U.S.P.Q.2d at 1613, 1614. The administrative law judge finds that the corrections to the data submitted by complainant on October 6, 1988 were conspicuous and unambiguous and were made in the context of the cited art relied on by the

Examiner in his rejection of January 12, 1989 and the claimed condenser in issue, and that the interested public is entitled to rely on the corrections in interpreting the claimed term "relatively small hydraulic diameter." Accordingly, the administrative law judge finds yet another independent ground that supports the finding that the argument of complainant's counsel on October 6, 1988, relied on by complainant in this remand, is not controlling in interpreting the claimed phrase "relatively small hydraulic diameter."

Based on the three independent grounds, supra, the administrative law judge finds that the figure of "0.04822 inch" and not the figure of ".0496 inch" is the hydraulic diameter of the prior art Cat condenser that will be given estoppel effect. Based on this finding, only two of the five accused condensers remain in issue, viz. condenser nos. 5 (1992 Mazda 929) and 11 (Audi 90) on CX-58, because only those two condensers showed at least two tubes with a hydraulic diameter of less than 0.04822 inch (FF 47 - 52).

**B. The Accused 1992 Mazda 929 and Audi 90 Condensers**

With respect to the accused 1992 Mazda 929 condenser (condenser no. 5) and the accused Audi 90 condenser (condenser no. 11),<sup>18</sup> the proper method for determining the hydraulic diameter of each accused condenser pursuant to the language of independent claim 9 and dependent claim 10 was put in issue by the parties in the remand proceeding, solely by argument and with reference to the record developed in the original investigation.<sup>19</sup>

Complainant and the staff argued that the two claims in issue merely state a tube row defined

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<sup>18</sup> The "Mazda 929" referenced is the 1992 Mazda 929 was purchased from Racine VW/Mazda on 10/17/91 (FF 45). The "Audi 90" referenced is the 1993 Audi 90 was purchased from Semersky Enterprises on 1/15/93 (FF 45).

<sup>19</sup> No party wanted the record reopened and the record was not reopened. Hence, no additional evidence was received to resolve any "new" issues in this remand proceeding.

by a plurality of straight tubes, within which relatively small hydraulic diameter flow paths must appear, and not defined by all straight tubes within which relatively small hydraulic diameter flow paths must appear (Tr at 139). They argued that infringement is established if at least two of those tubes have flow paths of relatively small hydraulic diameter (Tr. at 126, 243-244). Respondents argued that to prove infringement complainant must prove that the average hydraulic diameter of all tubes in a tube row is within the claimed range. (Tr at 367).

The 4/14/92 ID found that the “overall” hydraulic diameter of the prior art Cat condenser, which the 4/14/92 ID found was synonymous with the average of the hydraulic diameter measurements of flow paths in the tubes at different points in the condenser, was critical, and that individual hydraulic diameter measurements for a condenser were not critical.<sup>20</sup> Thus, based on arguments made to distinguish over the prior art Cat condenser, the 4/14/92 ID found, regarding the accused condensers, as follows:

The hydraulic diameter of a single flow path at a single point within a condenser cannot be characterized as the hydraulic diameter of the flow paths of that condenser. Because of these variations in the sizes of the hydraulic diameters, the average of the hydraulic diameter measurements of flow paths in the tubes at different points in the

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<sup>20</sup> The 4/14/92 ID at 46 stated:

Although the Cat condenser’s parallel flow condenser had an overall hydraulic diameter of 0.04822, the Cat had individual segments with hydraulic diameters within the ranges claimed by Modine in the ‘580 patent. Modine urged the examiner to use the overall hydraulic diameter of the Cat instead of individual measurements. Modine had measured individual hydraulic diameters for the Cat in the range of 0.0382-0.0448 inch. [Emphasis added].

The 4/14/92 ID’s findings regarding the scope and content of the prior art, i.e. the Cat condenser, and the differences between the prior art and the claimed invention were adopted by the Commission, Comm’n Op. at 13. The Commission’s opinion on obviousness was affirmed by the Federal Circuit, see Modine at 1556.



condenser will be used as the overall hydraulic diameter. Modine itself urged the examiner in the '580 patent prosecution to use only the overall or average hydraulic diameter of the Cat condenser (0.04822), instead of the variable hydraulic diameters of individual flow paths, for the same reason. Showa Ex. 4 at 192 [FF 18], Showa Ex. 5 at 364 [FF 27].

4/14/92 ID at 88 (emphasis added).<sup>21</sup> Hence the 4/14/92 ID, in stating that "the average of the hydraulic diameter measurements . . . will be used as the overall hydraulic diameter," found that "overall hydraulic diameter" is synonymous with the average of the hydraulic diameters listed in CX-57 and CX-58.<sup>22</sup> The finding of the 4/14/92 ID, regarding the use of average hydraulic diameters of the accused condensers to determine infringement, was not reviewed by the Commission, and therefore became the Commission's final determination. See Comm'n Op. at 1. Modine did not directly address the Commission's finding that the average of the hydraulic diameter measurements in CX-57 and CX-58 should be used as the overall hydraulic diameter. However, the Commission's findings on infringement (including that finding) were vacated by Modine 75 F.3d at 1555, 1556, as admitted by respondents.<sup>23</sup>

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<sup>21</sup> The administrative law judge finds nothing in the 4/14/92 ID to indicate what the average value for each condenser was.

<sup>22</sup> Complainant admits that the 4/14/92 ID relied on the average hydraulic diameter measurement for each accused condensers, although complainant argued that such reliance was incorrect. Thus complainant argued in its rebuttal to RPPF 58, that:

The ID's reliance upon the average hydraulic diameter measurement for each of the accused condensers (ID at 88-89) was . . . at odds with the asserted claims' language. In addition, the ID's premise for that conclusion -- that Modine allegedly relied on such an average when distinguishing the Cat condenser during the prosecution of the '580 patent . . . is also mistaken. The overall hydraulic diameter of the Cat condenser cited by Modine during the prosecution [sic] of the '580 patent was the average of the hydraulic diameter measurements of the flow paths in a representative tube.

<sup>23</sup> Respondents stated "that [4/14/92] decision is formally not a matter of law of the case, because a vacator [sic] has that . . . effect." (Tr. at 333).

Regarding the 4/14/92 ID's decision to use the average of the hydraulic diameter measurements for the accused condensers, claim 9 of the '580 patent reads in relevant part:

a tube row defined by a plurality of straight tubes of flat cross-section . . . web means within said flat cross section tubes . . . define a plurality of discrete, hydraulically parallel flow paths . . . said flow paths being of relatively small hydraulic diameter

'580 patent col. 12, lns. 3-21 (emphasis added). To ascertain the meaning of claim language, the claims, as well as the specification and the prosecution history should be considered. Thus, claims must be read in view of the specification of which they are a part. The specification contains a written description of the invention that must enable one of ordinary skill in the art to make and use the invention. For claim construction purposes, the written description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. A patentee is free to be his own lexicographer, although any special definition given to a word must be clearly defined in the specification.

Markman, 52 F.3d at 978, 979, 34 U.S.P.Q.2d at 1328, 1329.<sup>24</sup>

Respondents read claim 9 to require either that each of a plurality of tubes in a tube row must be of "relatively small hydraulic diameter," or that the average hydraulic diameter of all tubes in a tube row must be of "relatively small hydraulic diameter." (Tr. at 367).

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<sup>24</sup> The administrative law judge may, in his discretion, receive extrinsic evidence to aid him in coming to a correct conclusion as to the true meaning of language employed in a patent. Extrinsic evidence may be necessary to inform the administrative law judge about the language in which the patent is written. Extrinsic evidence, however, is not for the purpose of clarifying ambiguity in claim terminology. It is not ambiguity in the document that creates the need for extrinsic evidence but rather an unfamiliarity of the administrative law judge with the terminology of the art to which the patent is addressed. Markman, 52 F.3d at 981, 34 U.S.P.Q.2d at 1331. Neither complainant, respondents, or the staff wanted the evidentiary record in this investigation to be reopened to introduce any extrinsic evidence on the meaning of the claim term in issue, and the record was not reopened.

The language of claim 9, however, does not recite “each tube” or the “average of all tubes.” Instead, claim 9 merely requires “a tube row defined by a plurality of . . . tubes.” Claim 9 further requires a “web means within said . . . tubes . . . joined to the flat side walls at spaced intervals to (a) define a plurality of discrete, hydraulically parallel flow paths . . . said flow paths being of relatively small hydraulic diameter.” The ordinary meaning of “plurality” is “1a: the state of being plural,” where “plural” is defined as “2: relating to or consisting of or containing more than one” Webster’s Third New International Dictionary 1745 (1976). Thus, the administrative law judge finds that the ordinary meaning of claim 9 would require a tube row, defined by two or more tubes, wherein said tubes have a plurality (two or more) of flow paths of relatively small hydraulic diameter (“about 0.015 - 0.040 inch”).

Respondents do not dispute that the word “plurality,” by itself, is defined as two or more. However, with reference to the accused device, CPh. Ex. JJ, respondents argued that the tube row of the accused condenser “if it has 30 tubes, all of those tubes do define the tube row.” (Tr. at 315-316). Therefore, respondents would exclude an accused condenser from claim 9 if, in addition to two tubes with flow paths of “relatively small hydraulic diameter” that condenser had additional tubes that were not of “relatively small hydraulic diameter.” However, claims should be construed without reference to the accused device. SRI Int’l v. Matsushita Elec. Corp., 775 F.2d 1107, 227 USPQ 577 (Fed. Cir. 1985). In addition, claim 9 uses the transitional term “comprising.” See claim 9 recited in Section II, supra. It is well settled that use of the transition term “comprising” means that the recited elements are only a part of the device. Thus, “if the invention is claimed as ‘comprising

elements X and Y, it may also 'read on' and cover a device with elements X, Y, and Z."

See Certain Hardware Logic Emulation Systems and Components Thereof, Inv. No. 337-TA-383, Unreviewed Initial Determination Granting Temporary Relief, at 32 (July 8, 1996); 2 Chisum, Patents, § 8.06[1][b] (1995) (citations omitted); compare Moleculon, 793 F.2d at 1271, 229 USPQ at 812. However, the scope of a particular structure recited in a claim is not affected by the mere use of the term "comprising." As the Federal Circuit stated in Stiftung v. Renishaw PLC, 945 F.2d 1173 (Fed. Cir. 1991) (Stiftung), the issue is:

whether the claim and specification in effect preclude any additional . . . means or otherwise require that the claims be limited to devices containing only the structures of the embodiments specifically described in the specification. Indeed, claim 2, which uses the term 'comprising,' is an 'open' claim which will read on devices which add additional element.

Id. at 1178, citing A.B. Dick Co. v. Burroughs Corp., 713 F.2d 700, 703, 218 USPQ 965, 967-68 (Fed. Cir. 1983), cert. denied, 464 U.S. 1042 (1984) (A.B. Dick). Claim 9 of the '580 patent merely requires a tube row, defined by a plurality of tubes with flow paths of relatively small hydraulic diameter. Thus, based on the plain language of claim 9, the administrative law judge finds that, if the accused device has a plurality of tubes (two or more), with flow paths of relatively small hydraulic diameter, the fact that additional tubes that are not as claimed, i.e. do not have flow paths of relatively small hydraulic diameter, would not remove that accused device from the scope of claims 9 and 10.

The administrative law judge finds that his interpretation of claim 9 is further supported by the prosecution history. During prosecution, in U.S. Serial No. 902,697, in an Amendment filed on March 23, 1987 applicants argued regarding the Cat condenser:

The hydraulic diameter of the cavities on the brazed side of the insert, that is, the cavities between the side of the tube that was lowermost during the brazing process

and spaced portions of the insert, have been calculated to be in the range of .0382 - .0448 inches respectively while the overall hydraulic diameter has been calculated to be .0496 inches.

Because the opposite or unbrazed side of the insert has a larger hydraulic diameter and thus is less resistant to flow, it would be expected that the majority of coolant flow and condensation would occur on such side of the insert.

Exhibit H to that March 23, 1987 amendment illustrates a "cross section of tube/insert in caterpillar condenser 1AB1662-1A11669," which is a single tube in the Cat condenser. That single tube illustrated in Exhibit H shows a number of cavities between the lowermost side of the tube and spaced portions of the insert (FF 14). Similarly, the prosecution history reference relied on by the 4/14/92 ID makes reference to the average hydraulic diameter of flow paths within that single tube in the Cat condenser (FF 27). Hence, the "overall" or "average" hydraulic diameter referenced in the prosecution history is the average of the hydraulic diameters of cavities within a single tube. Hence, the administrative law judge finds that the prosecution history does not teach that the hydraulic diameter required by claim 9 is an average of all tubes within a condenser, as found in the 4/14/92 ID and argued by respondents, but rather that in the prior art Cat condenser, the "overall" hydraulic diameter in each tube, was the appropriate hydraulic diameter to use. Thus, the administrative law judge finds that the prosecution history supports a finding that claim 9 requires the average of the hydraulic diameters in each of a plurality (two or more) of tubes must be of relatively small hydraulic diameter (about 0.015 to 0.040 inches, which is extended to not more than 0.04822 inches under the doctrine of equivalents).

In addition, the specification of the '580 patent supports a finding that all flow paths are not required to be of "relatively small hydraulic diameter." With reference to Fig. 2, the specification of the '580 patent states:

According to the invention, each of the flow paths 48, 50, 52, 54, 56 and 58, and to the extent possible depending upon the shape of the spacer 40, the flow paths 46 and 60 as well, are capillary flow paths and have hydraulic diameters in the range of about 0.015 to 0.040 inches.

CX-42 at Col. 4, Ins. 42-47. The administrative law judge finds that this portion of the specification teaches that each flow path is within the range of about 0.015 to 0.040 inches only "to the extent possible." Also, Fig. 2 discloses only a single tube, as did Exhibit H to the March 23, 1987 amendment (FF 14). Thus, the specification supports a finding that claims 9 and 10 only require a plurality of tubes with flow paths of relatively small hydraulic diameter, and do not require that each tube in a condenser, or the average of all tubes must have flow paths of relatively small hydraulic diameter.

Accordingly, based on the plain language of claim 9, the specification, and the prosecution history of the '580 patent, and contrary to the finding of the 4/14/92 ID, the administrative law judge finds that claims 9 and 10 at issue require only a plurality of tubes where the "average" or "overall" hydraulic diameter of flow paths in each of said plurality of tubes is of relatively small hydraulic diameter (about 0.015 to 0.040 inches), and does not require an average of all tubes in a condenser to be of relatively small hydraulic diameter (about 0.015 to 0.040 inches). Under the doctrine of equivalents, the administrative law judge finds that claims 9 and 10 at issue are infringed by a condenser containing a tube row, which tube row is defined by two or more tubes, wherein said two or more tubes each have an average hydraulic diameter of less than the 0.04882 inch limit of the Cat condenser.

Evidence of record shows that at least three tubes for the Mazda 929 and seven tubes in the Audi 90 have an “average” or “overall” hydraulic diameter of less than 0.04822 inches (FF 50, 52). (Tr. at 368-370). Accordingly, each of the Mazda 929 and the Audi 90 infringes independent claim 9 and dependent claim 10 at issue under the doctrine of equivalents.

### C. Reliability of Evidence on Infringement

Assuming arguendo that the finding of the 4/14/92 ID interpreting claims 9 and 10 required an “overall” or “average” hydraulic diameter of less than 0.04882 inch, wherein said “average” is the average of all measurements for the accused condenser presented in CX-57 and CX-58, and not the “average” or “overall” hydraulic diameter within each of two or more tubes, the average of the measurements presented for the Mazda 929 is less than 0.04822 inches, and thus the Mazda 929 would infringe the two claims in issue under the doctrine of equivalents (Tr at 368-371).<sup>25</sup> However, respondents argued that while the average of the measurements of the Mazda 929 condenser that were before the administrative law judge in the original investigation shows a number smaller than the 0.04822 inch hydraulic diameter of the Cat condenser (Tr at 127, 128),<sup>26</sup> that average value has not been

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<sup>25</sup> The average of the Audi 90 hydraulic diameter measurements is 0.0513 inch (FF 52). Hence, the Audi 90 would not infringe the two claims in issue if the 4/14/92 ID’s claim interpretation was adopted.

<sup>26</sup> None of the parties, in responding to Order No. 1, wanted to reopen the evidentiary record on violation. However, complainant introduced additional readings for the Mazda 929 during this remand proceeding that were not a part of the record in the hearing that resulted in the 4/14/92 ID. See CBr. at fn. 9. Those readings from the same 1992 Mazda 929 identified on pages 1 of CX-57 and CX-58 are (1) 3491-MZ6: 0.0472; (2) 3491-MZ9: 0.0495; (3) 3491-MZ17: 0.0456; (4) 3491-MZ20: 0.0482; (5) 3491-MZ22: 0.04998. While respondents’ counsel at closing arguments stated that “I’m sort of uncertain what to do about – this outside the record stuff, because it so clearly should have been in the record in the earlier proceeding. But it is outside the record here.” (Tr. at 132), he relied on those numbers in his argument (Tr. at 129-133). If those additional measurements  
(continued...)

proven by "competent evidence" and hence that complainant has not sustained its burden in establishing infringement (Tr at 127 to 134, 368, 369).

The 4/14/92 ID, found as follows regarding the accused Mazda 929 condenser:

Modine Ex. 48 was received in evidence without objection by respondents. In short, respondents argue that Modine's evidence about this Showa condenser [the Mazda 929 purchased in October, 1991] is not worth believing, but they made no serious effort to prove that the condenser in fact had a higher average hydraulic diameter. On the other hand, the only evidence that Modine has offered of an SC condenser with any hydraulic diameter less than the average hydraulic diameter of the Cat is based on a limited number of samples selected by Modine from a much larger number of samples removed from a single condenser. The only evidence in the record on the hydraulic diameter range found by Modine in the Mazda condenser is not entitled to much weight. The hydraulic diameters listed by Modine in Modine Ex. 48 is, however, the only evidence relating to the hydraulic diameter of that particular condenser in the record. Both the upper limit and the lower limit of the hydraulic diameter range for this condenser are below the overall hydraulic diameter of the Cat condenser (0.04822) but above the upper limit of the hydraulic diameter range of claims 9 and 10 (0.040), so that the condenser does not literally infringe the claims.

4/14/92 ID at 89-90 (emphasis added). An average of the values given for the Mazda 929 (FF 50) is admitted by respondents to be 0.047 inch. (RPFF 61, citing RX-8 at 1, RX-15 at 2).<sup>27</sup> Respondents have pointed to nothing in the record that would contradict the finding of the 4/14/92 ID, supra, that "Both the upper limit and the lower limit of the hydraulic diameter range for [the Mazda 929] condenser [and thus the average hydraulic diameter] are below the overall hydraulic diameter of the Cat condenser (0.04822)." Based on the present

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<sup>26</sup>(...continued)

were considered, the average hydraulic diameter for all tube measurements given for the Mazda 929 would be 0.047685 inches.

<sup>27</sup> Even taking into account the five additional mounts for the Mazda 929 presented by complainant during this remand, the average hydraulic diameter for the Mazda 929 would be 0.047685 inch, which is also less than the 0.04882 hydraulic diameter of the prior art Cat condenser (Tr. at 129-133).



record, the administrative law judge finds that the 1992 Mazda 929 has an average hydraulic diameter of less than 0.04882 inch, and therefore would infringe independent claim 9 and dependent claim 10 under the doctrine of equivalents, assuming arguendo that respondents' and the 4/14/92 ID's construction of independent claim 9 as requiring an average of the hydraulic diameter measurements is accepted.

**V. Question 1c of Order**

“Whether there is, in light of the determinations made in accordance with paragraphs a. and b. . . ., a violation of section 337 of the Tariff Act of 1930”

In view of section IV., supra, coupled with the cited findings, the administrative law judge finds that there is a violation of section 337 of the Tariff Act of 1930.

## **VI. Findings of Fact**

### **A. The '580 Patent**

1. U.S. Letters Patent 4,998,580 ('580 patent), entitled "Condenser With Small Hydraulic Diameter Flow Path," issued on March 12, 1991 to Modine as the assignee of the inventors (CX 42).

2. The named inventors on the '580 patent are Leon A. Guntly and Norman F. Costello. A "Verified Statement Regarding Correction Of Inventorship" included in the prosecution file history named two additional inventors, viz. Russell C. Awe and Jack C. Dudley (CX 42, ALJ Ex. 4 at 249 to 251).

3. The '580 patent resulted from a series of three applications. The first application (Serial No. 783,087), referred to as the "Grandparent Application," was filed by the inventors on October 2, 1985 and subsequently abandoned (ALJ Ex. 2). The second application (Serial No. 902,697), referred to as the "Parent Application," was filed on September 5, 1986, as a continuation-in-part of the Grandparent Application and was abandoned (ALJ Ex. 3). The third and final application (Serial No. 141,628), referred to as the "Child Application," was filed on January 7, 1988 as a continuation-in-part of the Parent Application and led directly to the issuance of the '580 patent (ALJ Ex. 4).

### **B. Grandparent Application**

4. The Grandparent Application Serial No. 783,087 as originally filed, contained nine claims and each independent claim included as an element condenser tubes with "flow

paths having a hydraulic diameter in the range of about 0.015 to 0.070 inches," (ALJ Ex. 2 at 387 to 389).<sup>28</sup>

5. The Grandparent Application contained a graph identified as "Figure 3" which compared the heat transfer efficiency of the invention over a range of hydraulic diameters (shown on the x-axis as "cavity diameter--inches) compared to prior-art condensers for various air-flow levels (shown in "SCFM," or standard cubic feet per minute) (ALJ Ex. 2 at 398).

6. In explaining Figure 3, the Grandparent Application stated:

As can be appreciated from Fig. 3, heat transfer is increased in the range of hydraulic diameters of about 0.015 inches to about 0.07 inches through the use of the invention with some variance depending upon air flow.

(ALJ Ex. 2 at 381).

7. All nine claims of the Grandparent Application were rejected by the PTO Examiner on March 14, 1986. The rejection stated:

Claims 1-9 are rejected under 35 U.S.C. 103 as being unpatentable over Oohara. Oohara discloses a heat exchanger comprising a pair of spaced headers and a plurality of spaced flow paths each with a diameter in the range of about 0.015 to 0.07 inches. Official notice is taken of the fact that heat exchangers utilizing a plurality of tubes are well known in the art. Also it would have been obvious to one of ordinary skill in art to use the heat exchanger of Oohara as a condenser.

Claims 1-9 are rejected under 35 U.S.C. 103 as being unpatentable over Berti in view of Little. Berti discloses a heat exchanger comprising a pair of spaced headers, a plurality of tubes, each tube being flat and containing an undulating spacer within the tube. Berti does not show the diameter of the flow path in the range of 0.015 to 0.07 inches. Little discloses a heat exchanger with a

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<sup>28</sup> Page reference in ALJ Ex. 2, 3, and 4 is to the lowermost Bates numbers on each page.

diameter of the flow path being in the range of 0.015 to 0.07 inches. Since Berti and Little are both analogous heat exchangers it would have been obvious to one of ordinary skill in the art to incorporate the diameter of the flow path as taught by Little in Berti to perform the known function. The use of generally cylindrical tubes defining the headers is seen as an obvious matter of design. Once again, to use the heat exchanger as taught by Berti in view of Little as a condenser would have been obvious to one of ordinary skill in the art.

(ALJ Ex. 2 at 404 to 406).

8. On November 13, 1986, a Notice of Abandonment of the Grandparent Application was issued by the Patent Office, (ALJ Ex. 2 at 414).

**C. Parent Application**

9. The Parent Application Serial No. 902,697 as originally filed on September 5, 1986 contained nine claims, and each independent claim included, as an element, a range of hydraulic diameters that was narrower than the range than claimed in the Grandparent Application. Thus, the nine claims of the Parent Application recited condenser tubes with "flow path having a hydraulic diameter in the range of about 0.015 to 0.040 inches" (ALJ Ex. 3 at 279 to 281).

10. The Parent Application stated that "[a]ccording to the invention, each of . . . [certain flow paths] have a hydraulic diameter in the range of about 0.015 to 0.040 inches (ALJ Ex. 3 at 271, 272).

11. The language in the Parent Application explaining Figure 3 was changed from what was in the Grandparent Application to read as follows (additional and changed words identified in italics):

As can be appreciated from Fig. 3, heat transfer is *advantageously and substantially* increased in the range of hydraulic diameters of about

0.015 inches to about 0.040 inches through the use of the invention with some variance depending upon air flow.

(ALJ Ex. 3 at 274).

12. The specification of the Parent Application was changed from the specification of the Grandparent Application by the addition of the following language:

The values of hydraulic diameter given are for condensers in R-12 systems. Somewhat different values might be expected in systems using a different refrigerant.

(ALJ Ex. 3 at 272).

13. On November 18, 1986, the Examiner rejected all nine claims of the Parent Application. The rejection stated:

Claims 1-9 are rejected under 35 U.S.C. 103 as being unpatentable over Oohara. Oohara discloses a heat exchanger comprising a pair of spaced headers and a plurality of spaced flow paths each with a diameter in the range of about 0.015 to 0.07 inches. Official notice is taken of the fact that heat exchanger utilizing a plurality of tubes are well known in the art. Also it would have been obvious to one of ordinary skill in the art to use the heat exchanger of Oohara as a condenser.

Claims 1-9 are rejected under 35 U.S.C. 103 as being unpatentable over Berti in view of Little. Berti discloses a heat exchanger comprising a pair of spaced headers, a plurality of tubes, each tube being flat and containing an undulating spacer within the tube. Berti does not show the diameter of the flow path in the range of 0.015 to 0.017 inches. Little discloses a heat exchanger with a diameter of the flow path being in the range of 0.015 to 0.07 inches. Since Berti and Little are both analogous heat exchangers it would have been obvious to one of ordinary skill in the art to incorporate the diameter of the flow path as taught by Little in Berti to perform the known function. The use of generally cylindrical tubes defining the headers is seen as an obvious matter of design. Once again, to use the heat exchanger as taught by Berti in view of Little as a condenser would have been obvious to one of ordinary skill in the art.

Claims 1-9 are rejected under 35 U.S.C. 103 as being unpatentable over Oohara in view of Berti. Oohara discloses a heat exchanger with undulating

spacers in the tubes in figure 3 and appears to discuss the hydraulic diameter on page 3, and this is also an obvious matter of design. Oohara does not show the heat exchanger being a condenser. It is the Examiner's position that to use the undulating spacers in the tubes of a condenser would have been obvious to one of ordinary skill in the art.

\* \* \*

The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to provide an adequate written description of the invention. The Examiner is unclear how the specification supports the criticality of the hydraulic diameter range 0.015-0.040 inches.

(ALJ Ex. 3 at 298 - 300).

14. On March 23, 1987, Modine filed an amendment to the Parent Application which modified the language of certain claims and added a tenth claim which also contained the hydraulic diameter element of "0.015 to 0.040 inches" as an express numerical range, (ALJ Ex. 3 at 308 to 311). In the amendment filed on March 23, 1987, applicants argued regarding the criticality of the hydraulic diameter range in the specification:

The objection to the specification and the rejection thereof based on Section 112, first paragraph, is respectfully but strongly traversed. Quite simply, the specification supports the criticality of hydraulic diameter and the range specified [about 0.015 to 0.040 inches] simply because it says so. There is no requirement in the law or anywhere else that says that the inventor must explain why something works or why it is critical.

\* \* \*

But in any event, the data illustrated in Fig. 3 comparing heat transfer against hydraulic diameter for both the invention and the prior art shows that peak heat transfer according to the invention is achieved in this range of hydraulic diameters and it is this peak area that is sought to be covered by the applicant.

Regarding the Cat condenser, applicant argued in the amendment filed on March 23, 1987:

The hydraulic diameter of the cavities on the brazed side of the insert, that is, the cavities between the side of the tube that was lowermost during the brazing process and spaced portions of the insert, have been calculated to be in the

range of .0382 - .0448 inches respectively while the overall hydraulic diameter has been calculated to be .0496 inches.

Because the opposite or unbrazed side of the insert has a larger hydraulic diameter and thus is less resistant to flow, it would be expected that the majority of coolant flow and condensation would occur on such side of the insert.

(ALJ Ex. 3 at 312, 318). Exhibit H to that March 23, 1987 amendment illustrates a "cross section of tube/insert in caterpillar condenser 1AB1662-1A11669," which is a single tube in the Cat condenser. That single tube illustrated in Exhibit H shows a number of cavities between the lowermost side of the tube and spaced portions of the insert. (ALJ Ex. 3 at 337).

15. In the amendment filed on November 16, 1987, new claim 10 read:

10. A condenser for a refrigerant such as R-12 comprising:

a pair of spaced, generally cylindrical tubes defining headers;

one of said header tubes having a vapor inlet;

the other of said header tubes having a condensate outlet;

said header tubes each having a series of elongated slots, the slots on one header tube facing the slots of the other header tube;

a plurality of straight, flattened tubes having opposed ends extending in parallel between said headers, the ends of said flattened tubes being disposed in corresponding ones of said slots and in fluid communication with each of said header tubes;

an undulating insert in each of said flattened tubes defining a plurality of discrete, hydraulically parallel flow paths within each flattened tube between said header tubes, said insert having crests on opposite side thereof, said crests being bonded along their entire length to the corresponding tube to provide said discrete flow paths and to absorb forces resulting from internal pressure within the tubes and tending to expand the tube;

each of said fluid flow paths having a hydraulic diameter in the range of 0.015 to 0.040 inches where hydraulic diameter is defined as the cross-sectional area of the corresponding flow path multiplied by four (4) and divided by the wetted perimeter of the corresponding flow path; and

serpentine fins extending between the exterior of adjacent ones of said flattened tubes.

(ALJ Ex. 3 at 309 to 311).

16. The March 23, 1987 amendment disclosed that more than a year prior to filing the Grandparent Application, Modine had manufactured and sold a condenser to the Caterpillar Tractor Company (the "Cat Condenser") that had a number of flow paths with hydraulic diameters of from 0.0382 to 0.0448 inches and an "overall" hydraulic diameter of 0.0496 inches. The amendment represented that the "plate fin condensers were manufactured by the assignee . . . and sold to Caterpillar . . . more than one year prior to the critical date [and that] [t]he components (except tanks and headers, which are not believed to be of particular relevance to the issue) are shown in [attached] Exhibits A-G."

(ALJ Ex. 3 at 315 to 318).

17. On June 10, 1987, the Examiner rejected the ten claims of the Parent Application. The rejection stated:

Claims 1-9 are rejected under 35 U.S.C. 103 as being unpatentable over the condenser of exhibits A-G of the amendment filed 3/23/87. The condenser of exhibits A-G is essentially the same as that being claimed. It is felt that the minimal change of the hydraulic diameter from .049 in. to .04 in. (Less than 1/100 of an inch) would be an obvious matter of design choice.

Claim 10 is rejected under 35 U.S.C. 103 as being unpatentable over the condenser of exhibits A-G as applied to claims 1-9 above, and further in view of Oohara. Oohara shows a similar heat exchanger having serpentine fins (the use of which is well known in the art). Thus it would be obvious to use



serpentine fins as taught by Oohara in place of the plate fins in the condenser of exhibits A-G.

(ALJ Ex. 3 at 321).

18. Modine filed another amendment to the Parent Application on November 16, 1987, requesting “[r]econsideration of the rejection of the various claims on the condenser of Exhibits A-G, with or without further reference to Oohara . . .” It was argued inter alia that one reason why the Cat Condenser was distinguishable from the claimed invention was that the claimed hydraulic diameter “is smaller than even the average hydraulic diameter of the passages in the [Cat Condenser],” (ALJ Ex. 3 at 326, 328). The relevant portion of Showa Ex. 4 at 192, relied on by the 4/14/92 ID at 88, is in the November 16, 1987 Amendment in Serial No. 902,697 and reads:

Thus, the invention claimed herein clearly distinguishes over that prior art, both in terms of specifying a hydraulic diameter that is smaller than even the average hydraulic diameter of the passages in the prior art [Cat] condenser. . . . (ALJ Ex. 3 at 328).

19. The amended claims were rejected by the Examiner, this time in a final rejection, on March 1, 1988. The rejection stated:

Claims 1-10 are rejected under 35 U.S.C. 103 as being unpatentable over Exhibits A-G in view of Oohara. The condenser of exhibits A-G is essentially the same as that being claimed. It is felt that the minimal change of the hydraulic diameter from .049 in. to .04 in. (Less than 1/100 of an inch) would be an obvious matter of design choice. Oohara shows a similar heat exchanger having serpentine fins (the use of which is well known in the art). Thus it would be obvious to use serpentine fins as taught by Oohara in place of the plate fins in the condenser of exhibits A-G. Regarding applicant’s arguments that Oohara does not teach the specific advantages (not having to expand the tube to make tube/fin contact) of using serpentine fins in a heat exchanger having small hydraulic diameter it is felt that this advantage is the same advantage that exists and is well known in the art with regards to tubes of any diameter. Thus it would be obvious advantage to tubes of small diameters.

(ALJ Ex. 3 at 320).

20. On October 7, 1988, a Notice of Abandonment of the Parent Application was issued by the Patent Office, (ALJ Ex. 3 at 332).

**D. Child Application**

21. Twenty-four claims were presented in the originally filed Child Application Serial No. 141,628, on January 7, 1988, not all of which limited their scope to a numerical range of hydraulic diameters. Claim 10 which included the language "hydraulic diameter in the range of 0.015 to 0.040 inches" (ALJ Ex. 4 at 26 to 31) was identical to new claim 10 in the Parent Application. The Child Application retained Figure 3 of the Parent Application which in the Child Application was renumbered "Figure 5," (ALJ Ex. 3 at 290, ALJ Ex. 4 at 38).

22. Original claims 11 and 22 of Child Application read:

11. A condenser comprising:

a pair of spaced headers arranged to have a vapor inlet and a condensate outlet;

a plurality of tubes extending in hydraulic parallel between said headers, each in fluid communication with each of said headers;

said tubes defining a plurality of discrete hydraulically parallel capillary fluid flow paths between said headers;

each of said fluid flow paths being noncircular in cross section and having an elongated crevice extending along the length thereof.

22. A condenser comprising:

a pair of spaced headers;

one of said headers having a vapor inlet;

the other said headers having a condensate outlet; and

a plurality of tubes extending in hydraulic parallel between said headers, each in fluid communication with each of said headers;

said tubes defining a plurality of discrete hydraulically parallel fluid flow paths between said headers;

each of said fluid flow paths having at least one elongated crevice and an internal surface provided with microcracks or channels, each of said fluid flow paths further having a sufficiently small hydraulic diameter so that surface tension and capillary forces acting upon condensate within said flow paths improve heat transfer efficiency of said condenser, said hydraulic diameter being the cross-sectional area of the corresponding flow path multiplied by four and divided by the wetter perimeter of the corresponding flow path.

(ALJ Ex. 4 at 29, 31, 32).

23. None of original claims 1-24 contained the language of independent claim 9 in issue, viz. "said flow paths being of relatively small hydraulic diameter which is defined as the cross-sectional area of the corresponding flow path multiplied by four (4) and divided by the wetted perimeter of the corresponding flow path" or even the language "relatively small diameter" put in issue by Modine, (ALJ Ex. 4 at 26 to 32).

24. On April 25, 1988, Modine submitted a Disclosure Statement to the PTO which again disclosed the Cat Condenser. (ALJ Ex. 4 at 42-47).

25. On May 4, 1988, the Examiner rejected all twenty-four claims. The rejection read in part:

Claims 1-7, 9, 11, and 19 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of the condenser of Exhibits A-G [the prior art Cat condenser] of the amendment filed 3/23/87, paper no. 7 of the parent application S.N.-06/902,697 and further in view of Oohara. Yoko shows a heat exchanger with an undulating insert (9) in contact with the tube walls and external serpentine fins (6) biased to the tubs (5). The condenser of exhibits A-G includes inlet and outlet headers, plural parallel straight condenser tubes, each tube having a plurality of discrete flow paths defined by an undulating

insert biased, at least partially, to the inner surface of the tube (see applicant's discussion on pages 9-11 of paper no. 7). On page 11 paper no. 7 the applicant discusses flow path hydraulic diameters to be 0.0382-0.0448 and 0.0496 for the known condenser. Since both Yoko and the condenser of Exhibits A-G are similar, in that they have plural parallel tubes with undulating inserts wherein the tubes are connected on the exterior by fins, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the heat exchange core of Yoko with headers and to use the device as a condenser, per se. Also, to particularly modify the flow paths of Yoko to operate effectively as a condenser by choosing a hydraulic diameter between 0.015 and 0.040 inches would have been obvious to one of ordinary skill in view of the known range of 0.038 to 0.0448 discussed by applicant's Exhibits A-G (i.e. 0.04 falling within these known values for condenser flow paths).

Claims 8 and 10 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of Exhibits A-G [the prior art Cat condenser] as applied to claim 5 above, and further in view of Mosier et al. Mosier et al teaches shaping headers to be slotted and tubular (Figure 2) for an array of plural straight flattened tubes (13). Since Yoko is clearly intended to be used with a header and indeed shows a header wall portion (7) with slots, it would have been obvious to one of ordinary skill in the art to provide Yoko particularly with slotted "tubular" shaped headers to convey fluid to and from the exchanger core.

Claims 12-15 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of Exhibits A-G as applied to claim 11 above, and further in view of Oohara. Oohara expressly teaches bonding both sides of an undulating fin (8) to the interior of a flat straight tube of a heat exchanger. Both Yoko and Oohara pass fluid through the plural paths formed by the respective inserts. Therefore, in regard to claim 12, it would have been obvious to one of ordinary skill in the art at the time the invention was made to bond each crest of the Yoko insert to the inner tube wall to create discrete flow paths. In regards to claims 13-15, the device as modified above would operate as claimed. The undulating passages shown by Yoko are deemed the structural equivalent to applicant's "nominally triangular cross section".

Claims 16 and 21-22 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of Exhibits A-G or Yoko in view of Exhibits A-G and Oohara as applied to claims 19 and 15, respectively above, and further in view of German (497). German (497) teaches that it is known to have micro cracks formed on the flow path surface of a heat exchanger. The heat exchanger of German (497) surface intended to prevent corrosion and being similar to Yoko since it has plural straight parallel tubes between headers and serpentine fins separating the tubes. Because of this similarity it would have been obvious to

provide the flow path surfaces of Yoko with microcrack surface to prevent corrosion of the tube surface.

Claim 16, 17, 18, 20 and 21 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of Exhibits A-G or Yoko in view of Exhibits A-G and Oohara as applied to claims 19 and 15, respectively above, and further in view of Sonoda. Sonoda teaches that it is known to coat undulating fluid flow passages in heat exchangers with a brazing wherein the residue (8) protects the flow path from corrosion. In regard to the claims, it would have therefore been obvious to one of ordinary skill in the art at the time the invention was made to coat the inner surface of any or all of the fluid flow paths defined by undulating inserts of Yoko with a brazing flux residue which is taught by Sonoda to inherently form a protective surface. It is noted that the brazing material used by Sonoda is the same as that disclosed by the applicant.

(ALJ Ex. 4 at 58 to 61).

26. On October 6, 1988, Modine filed an amendment dated October 4, 1988 to the Child Application which requested reconsideration of the "various rejections of claims 1-24 which are principally based on Yoko in view of the condenser of Exhibits A-G [the prior art Cat condenser], frequently with reference to Oohara and sometimes with reference to one or more additional references . . . in the light of the information that follows" and which then included a table comparing "various characteristics of the [prior art Cat Condenser] . . . with a 'PF' condenser made according to each of the claims contained in [the Child] application,"

(ALJ Ex. 4 at 103, 104, 105).

27. In the October 6, 1988 amendment, Modine argued that:

It is the applicants' position that the comparative data contained in the SAE paper, clearly shows unexpected results obtainable through the use of the invention that cannot be obtained from whatever is suggested or disclosed by either Yoko or Oohara. That in turn leave only consideration of the condenser of Exhibits A-G, known as the "Cat Folded Front" condenser.

The table that follows compares various characteristics of the Cat Folded Front core which is that of Exhibits A-G with a "PF" condenser made according to each of the claims contained in this application. The comparison is made both for equal air side pressure drop, and for equal heat transfer. The data listed for the Cat Folded Front is actual test data as is the data listed for the PF condenser for equal air side pressure drop. The data listed for the PF condenser for each heat transfer is based on a computer model which is known to reliably predict matters of this sort.

		CAT FOLDED FRONT	PF EQUAL dp	PF EQUAL Q
LENGTH	in	29.25	29.25	29.25
WIDTH	in	6.48	6.5	6.5
DEPTH	in	1.004	0.83	0.625
FINS/IN		34	28.5	22
FIN THICK	in	0.0061	0.004	0.004
NUMBER TUBES		16	16	16
TUBE MAJOR	in	0.76	0.732	0.535
TUBE MINOR OUT	in	0.118	0.075	0.075
TUBE MINOR IN	in	0.088	0.043	0.043
TUBE WALL	in	0.015	0.016	0.106
INSERT BLANK	in	0.79	0.9	0.62
INSERT THICK	in	0.01	0.012	0.012
FACE AREA	ft <sup>2</sup>	1.31625	1.320312	1.320312
VOLUME	ft <sup>3</sup>	0.11012625	0.091321	0.068766
FIN FREE FLOW	ft <sup>2</sup>	0.73929765	0.953834	0.981825
FIN SURFACE	ft <sup>2</sup>	89.86302	62.46398	36.30859
FIN EQUIV DIA	ft	0.03185687	0.047792	0.062859
TUBE OUTSIDE	ft <sup>2</sup>	3.33569009	3.796384	2.739974

TUBE INSIDE	ft2	5.07149549	4.275219	2.994719
INSERT AREA	ft2	5.135	4.314855	3.008355
TUBE FREE FLOW	ft2	0.00810272	0.002584	0.002016
TUBE HYDRAULIC DIAMETER	in	0.049	0.035	0.039
TOT INNER AREA	ft2	10.2064954	8.590075	6.003075
METAL VOLUME	in3	21.7971199	20.44535	15.92260
INTERNAL VOLUME	in3	546.058607	174.1694	135.8982
ACTUAL "CORE" WEIGHT	lb	6.16828220	1.998574	1.557245
WEIGHT ALL ALUMINUM	lb	2,13177851	1.999574	1.557245
PERFORMANCE AT 1000 FT/MIN				
HEAT TRANSFER BTU/HR		25200	32800	25500
AIR PRESS LOSS IN WATER		0.94	0.92	0.57
REFRIGERANT PRESS LOSS PSI		2.65	6.75	7.3

The comparative data contained in the table as well as in an accompanying graph that compares heat transfer versus air flow as well as air side pressure drop versus air flow demonstrate that a number of items stand out. For example, where the air side pressure drop is the same, meaning that the PF condenser will exchange more heat, a 80-85% decrease in volume of the heat exchanger is obtainable.

Where one is only striving for equal heat transfer, a 40% reduction in volume is obtained.

Note that in both cases, the PF condenser has a lesser volume of metal than does the Cat Folded Front meaning that less material is required.

Similarly, internal volume of a PF condenser is considerably less than that of the Cat Folded Front. For the equal pressure drop comparison, the PF condenser has but 32% of the internal volume of the Cat Folded Front while for the Equal Q comparison, the volume is but 25%. This means that a considerable reduction in the refrigerant charge is obtainable. This of course means that a system utilizing the PF condenser may operate with a lesser charge of chlorofluorocarbon refrigerants, something that is a substantial advantage in view of impending Government regulations controlling chlorofluorocarbon levels.

The Cat Folded Front condenser is formed of steel and fabricated using a copper brazing process. Consequently, the weight of a Cat Folded Front core is three to four times that of a PF condenser. But even if the Cat Folded Front condenser could have been formed of aluminum as is the PF condenser in the comparison, it still would have had a greater weight.

The weight savings, of course, equates to lesser vehicle weight when used in a vehicular air conditioning system; and that in turn equates to improved fuel economy.

The attached graph shows data comparing the difference in heat transfer for common air side pressure drops. The marked superiority of the PF condenser over the Cat Folded Front is apparent and this is an indication that the improvement is being obtained on the refrigerant side, that is, where the small hydraulic diameter passages are found.

It is the applicants' position that the advantages shown by the comparison demonstrate completely unexpected, improved results over the Cat Folded Front condenser which overcome any prima facie case of obviousness.

Having thus compared the claimed condenser with three different types of prior art condensers including a serpentine condenser not unlike the evaporator of Oohara and the Cat Folded Front condenser of Exhibits A-G, and having shown unexpected improved results by those comparisons, it is believed that the claims are clearly allowable.

With regard to certain comments made by the examiner, the fact that a Cat Folded Front condenser may have had one or more passages with hydraulic diameters of less than 0.040 is not dispositive since the overall hydraulic diameter was 0.049 inches. Given the manner in which the Cat Folded Front condenser was formed (see the Amendment filed on March 23, 1987 in parent application Serial No. 902,697, beginning at page 8 thereof) it is readily apparent that the actual hydraulic diameter of any individual flow path is a matter of happenstance, depending upon where the insert is lying with respect



to one or the other of the ends of tube at the time it is copper brazed in place. It is, of course, conceivable that some insert location might be found wherein none of the flow paths have hydraulic diameters less than 0.040 inches and since the overall hydraulic diameter is 25% above the top end of the range claimed, that should be the one that is accorded anticipatory effect if any, particularly since improved results with the PF condenser are demonstrated at hydraulic diameters of 0.035 inches and 0.039 inches (the latter being almost right at the top end of the claimed range) over the Cat Folded Front having an overall hydraulic diameter of 0.049 inches.

Furthermore, it is again noted that the Cat Folded Front condenser is assembled using a copper brazing process, not one that would leave a brazing residue of the sort giving rise to the microcracks specifically required to be present in claims 16-18 and 20-24. Nor does the prior art referred to by the examiner suggest the use of such cracks as the examiner erroneously assumes. The '497 German patent as well as Sonoda are not suggestive of the claimed structure. Any cracked film that exists in the German patent has the cracks filled with epoxy resin so that there are no microcracks in the inner surface as is claimed. In fact, the German patent thus teaches away from the invention because it teaches that such cracks should be filled, not left open. [Emphasis added]

(ALJ Ex. 4 at 105 to 109). Showa Ex. 5 at 364, relied on in the 4/14/92 ID at 88, is the Amendment in Serial No. 141,628 filed October 6, 1988, which reads in relevant part:

hydraulic diameter of any individual flow path [in the Cat condenser] is a matter of happenstance, depending upon where the insert is lying with respect to one or the other of the ends of tube at the time it is copper brazed in place. It is, of course, conceivable that some insert location might be found wherein non of the flow paths have hydraulic diameters less than 0.040 inches and since the overall hydraulic diameter is 25% above the top end of the range claimed, that should be the one that is accorded anticipatory effect if any. . . .

(ALJ Ex. 4 at 109).

28. On October 20, 1988, Modine filed a "Transmittal Letter and Correction Of The Response Of October 4, 1988" which read in part:

Attached hereto is a Declaration of Leon Guntly . . . which affirms the accuracy of the data appearing on page 4 of the Amendment filed October 4, 1988 . . . [sic]"

29. The inventor Leon A. Guntly's "Declaration Under 37 C.F.R. 1.132," dated October 12, 1988 and referred to in the October 20, 1988 transmittal letter stated in part:

3 - I have read the Amendment dated October 4, 1988 which, on information and belief, was filed in the above-identified application and confirm the accuracy of the data found on page 4 of the remarks of such Amendment as well as the fact that the data for the Cat Folded Front Radiator and the Data for the PF condenser for equal pressure drops is actual test data. I further confirm that the data listed for the PF condenser for equal heat transfer was derived using a computer model that has reliably predicted matters of this sort.

4 - I have also reviewed the graph attached to the Amendment comparing the difference in heat transfer between the Cat Folded Front and the PF condenser for common air side pressure drops, affirm its accuracy and state that the information indicates that the improvement in heat transfer is being obtained on the refrigerant side of the heat exchanger.

(ALJ Ex. 4 at 139, 140).

30. On January 12, 1989, the Examiner again rejected all of Modine's original claims in the Child Application. The Examiner, in the rejection which was dated "12/30/88," stated in part:

Claim 1-7, 9, 11, and 19 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of the condenser of Exhibits A-G [the prior art Cat condenser] of the amendment filed 3/23/87, paper no. 7, of the parent application S.N. - 06/902,697 and further in view of Asselman et al. Yoko shows a heat exchanger with an undulating insert (9) in contact with the tube walls and external serpentine fins (6) biased to the tubes (5). The condenser of exhibits A-G includes inlet and outlet headers, plural parallel straight condenser tubes, each tube having a plurality of discrete flow paths defined by an undulating inert biased, at least partially, to the inner surfaces of tube (see applicant's discussion on page 9-11 of the paper no. 7). On page 11 paper no. 7 the applicant discusses flow path hydraulic diameters to be 0.0382-0.0448 and 0.0496 for the known condenser. Since both Yoko and the condenser of Exhibits A-G are similar, in that they have plural parallel tubes with undulating inserts wherein the tubes are connected on the exterior by fins, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the heat exchange core of Yoko with headers and to use the device as a condenser, per se. Also to particularly modify the flow paths of Yoko to operate effectively as condenser by choosing a hydraulic

diameter between 0.015 and 0.040 inches would have been obvious to one of ordinary skill in the view of the known range of 0.038 to 0.0448 discussed by applicant's Exhibits A-G (i.e. 0.04 falling within these known valves for condenser flow paths). Additionally, Asselman et al teaches and therefore recognizes hydraulic diameter reduction in heat exchangers in order to save weight in materials which also increase efficiency. Indeed, Asselman et al saves material cost and increases heat transfer capacity by reducing the hydraulic diameter of a flow passage to 0.85mm (0.03 inch) which falls within the claimed range desired by the applicant. Therefore, to achieve increased heat transfer and to save on material consumption it would have been obvious to one of ordinary skill in the art of heat exchange to reduce a hydraulic diameter of a flow passage to within the claimed range of 0.015 to 0.04 as taught by Asselman et al.

Claims 8 and 10 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of Exhibits A-G [the prior art Cat condenser] and Asselman et al as applied to claim 5 above, and further in view of Mosier et al. Mosier et al teaches shaping headers to be slotted and tubular (Figure 2) for an array of plural straight flattened tubes (13). Since Yoko is clearly intended to be use with a header and indeed shows a header wall portion (7) with slots, it would have been obvious to one of ordinary skill in the art to provide Yoko particularly with slotted "tubular" shaped headers to convey fluid to and from the exchanger core.

Claims 12-15 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of Exhibits A-G [the prior art Cat condenser] and Asselman et al as applied to claim 11 above, and further in view of Oohara. Oohara expressly teaches bonding both sides of an undulating fin (8) to the interior of a flat straight tube of a heat exchanger. Both Yoko and Oohara pass fluid through the plural paths from by the respective inserts. Therefore, in regard to claim 12, and view of the Oohara teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to bond each crest of the Yoko insert to the inner tube wall to create discrete flow paths. In regards to claims 13-15, the device as modified above would operate as claimed. The undulating passage shown by Yoko are deemed the structural equivalent to applicant's "nominally triangular cross section".

Applicant's arguments with respect to claims 1-24 have been considered but are deemed to be moot in view of the new grounds of rejection. The following comments are deemed necessary. Applicants Declaration under 37 C.F.R. 1.132 has been received and considered. The apparent increase in heat transfer has been noted. Applicant's attention however is directed to the newly cited reference of Asselman et al which provide a teaching that the alleged unexpected results obtained by the applicant would have been obvious to one

of ordinary skill in the heat exchanger art. In particularly Asselman et al tubes between headers and serpentine fins separating the tubes.

Claims 16, 17, 18, and 20 and 22 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of Exhibits A-G [the prior art Cat condenser] or Yoko in view of Exhibits A-G and Oohara as applied to claims 19 and 15, respectively above, and further in view of Sonoda. Sonoda teaches that it is known to coat undulating fluid flow passages in heat exchangers with a brazing wherein the residue (8) protects the flow path from corrosion. In regard to the claims, it would have therefore been obvious to one of ordinary skill in the art at the time the invention was made to coat the inner surface of any or all of the fluid flow paths defined by undulating inserts of Yoko with a brazing flux residue which is taught by Sonoda to inherently form a protective surface. It is noted that the brazing material used by Sonoda is the same as the disclosed by the applicant. Additionally it is noted that micro pack formation would therefore be inherent in the use of the known brazing material explicitly recognizes a hydraulic diameter reduction to 0.03 inches (0.85 mm) results in increase heat transfer and materials savings.

Applicant's arguments filed 10/6/84 [sic] have been fully considered but they are not deemed to be persuasive.

The comments concerning the cited German patent are noted and claims 16 and 21-22 previously rejected thereon are now rejected in view of Sonoda.

Applicant further contents [sic] that Yoko does not disclose the use of heat exchanger as a condenser. Applicant's attention is directed to the rejection on the reference of Exhibits A-G [the prior art Cat condenser] which indicates that one of ordinary skill in the art would have known to use the Yoko type exchanger as a condenser in view of the Exhibit A-G condenser because of their similar construction.

The Declaration under 37 CFR 1.132 filed 10/20/88 is insufficient to overcome the rejection of claims 1-24 based upon Yoko in view of Exhibits A-G as set forth in the last Office action because the apparent superior results achieved would have been obvious to one of ordinary skill in view of the teaching of newly cited Asselman et al.

(ALJ Ex. 4 at 142 to 148).

31. Paper No. 7 of the parent application S.N. 06/902,697, referred to by the Examiner in his January 12, 1989 rejection in the Child Application, stated in part (ALJ Ex. 3 at 318):

The hydraulic diameter of the cavities on the brazed side of the insert, that is, the cavities between the side of the tube that was lowermost during the brazing process and spaced portions of the insert, have been calculated to be in the range of .0382 - .0448 inches respectively while the overall hydraulic diameter has been calculated to be .0496 inches.

Because the opposite or unbrazed side of the insert has a larger hydraulic diameter and thus is less resistant to flow, it would be expected that the majority of coolant flow and condensation would occur on such side of the insert. Thus, the efficiencies obtainable with the small hydraulic diameters taught by the applicants would not be fully recognized in a structure made according to the method described above and shown in Exhibits A-G.

It is considered that all claims herein clearly patentably delineate over the above described prior art method in resulting product. In particular, the condensers claimed here provide full realization of efficiencies obtainable through the use of small hydraulic diameters because there is complete bonding of the insert to both sides of the tube walls, a fact reflected in all claims in that they require discrete flow paths.

32. On July 17, 1989, Modine filed an amendment to the Child Application, in response to the Examiner's rejection of January 12, 1989, adding claims 25 through 28, none of which included an express numerical range of hydraulic diameters as an element. Claim 27 was dependent on independent claim 25 and claim 28 was dependent on claim 27. The remarks accompanying the amendment states in part:

By the foregoing amendment, minor changes have been made to a number of the independent claims in the case to make it clear that the invention is not restricted to a condenser wherein one of the headers contains a vapor inlet and the other one contains a condensate outlet. As pointed out near the end of page 5 of the application as originally filed ". . . In some cases, the inlet and outlet may be in the same header . . ."

In addition the passing reference to R-12 has been deleted from Claim 10 to avoid any question that the structure is limited to use only with R-12 as a refrigerant. In addition, new Claims 25-28 have been added. New Claim 25 is somewhat like original Claim 10 although it is broader in some respects and narrower in others. Claims 1-28 are in the application and in issue.

As the outset, counsel wishes to call to the Examiner's attention that certain of the entries on the table appearing on page 4 of the last amendment are in error. For example, the entry for "fin equivalent diameter" is purportedly shown in feet but should be shown in inches.

That is to say, the Cat folded front fin equivalent diameter was 0.0318567 inches rather than feet. Similarly, for the condenser of the present invention, for equal pressure drop and equal Q respectively, the fin equivalent diameter should be 0.047792 inches and 0.062859 inches, respectively.

Further, at least the number for the Cat folded front is in error and should be about 0.041, thus 0.041 inches. We are reviewing the entire table and expect to provide correct values within the next two to three weeks.

\* \* \*

Moreover, as to the rejection of Claims 1-7, 9, 11 and 19 as unpatentable over Yoko, the Cat folded front, and Asselman, the same is in further error because it is abundantly apparent that the Examiner is indulging in a hindsight reconstruction utilizing the Yoko reference. The Yoko reference does not relate to a condenser, although, admittedly, it utilizes serpentine fins in contrast to the plate fin construction of the Cat folded front. Yoko does not clearly disclose whether the inserts are bonded to both sides of the interior of the tubes or merely to one side as is the case with the Cat folded front.

Condensers are always utilized on the high pressure side of a compressor in a refrigeration system and thus are subjected to substantially the highest pressures in a refrigerant system.

As is apparent from the specification as filed (first paragraph on page 7) serpentine fins are incapable of supporting tubes against substantial and internal pressure. Thus, the plate fin construction of the Cat folded front was necessary or considered necessary) to allow the same to serve as a condenser and there is nothing to indicate that one skilled in the art would think that a serpentine fin construction such as that shown by Yoko would be capable of serving as a condenser because of the high internal pressure requirements of such. Therefore, the basic combination of Yoko and the remaining references is hindsight based and does not support a proper rejection.

This distinction should not be passed off lightly. The evidence of record clearly establishes a weight reduction of substantial moment for equal heat transfer in going to a serpentine fin construction away from the plate fin construction of the Cat folded front; and there is nothing of record to indicate that such an advantage would be expected. [Emphasis added]

(ALJ Ex. 4 at 156, 157, 164 to 165).

33. New claim 25 of the amendment filed July 17, 1989 read:

25. A condenser for a refrigerant in a cooling system comprising:

a pair of spaced, generally parallel, elongated cylindrical tubes defining headers;

a vapor inlet in one of said tubes;

a condensate outlet from one of said tubes;

said header tubes each having a series of elongated generally parallel slots with the slots in the series on one header tube aligned with and facing the slots in the series on the other header tube;

a tube row defined by a plurality of straight, tubes of flat cross-section and with flat side walls and having opposed ends extending in parallel between said header tubes, the ends of said flat cross section tubes being disposed in corresponding aligned ones of said slots and in fluid communication with the interiors of said header tubes, at least some of said tubes being in hydraulic parallel with each other;

web means within said flat cross-section tubes and extending between and joined to the flat side walls at spaced intervals to (a) define a plurality of discrete, hydraulically parallel flow paths within each flat cross-section tube that extend between said header tubes; to (b) absorb forces resulting from internal pressure within said condenser and tending to expand the flat cross-section tubes; and to (c) conduct heat between both said flat sides and fluid in said flow paths, said flow paths being of relatively small hydraulic diameter (defined as the cross-sectional area of the corresponding flow path multiplied by four (4) and divided by the wetted perimeter of the corresponding flow path); and

serpentine fins incapable of supporting said flat cross-section tubes against substantial internal pressure extending between facing flat side walls of adjacent flat cross-section tubes.

(ALJ Ex. 4 at 154, 155).

34. New claim 27 of the amendment filed July 17, 1989 read:

27. The condenser of claim 25 wherein each of said flow paths includes at least one elongated crevice extending generally along the length of the associated flow path.

(ALJ Ex. 4 at 156).

35. New claim 28 of the amendment filed July 17, 1989 read:

28. The condenser of claim 27 wherein each flow path has a plurality of said crevices.

(ALJ Ex. 4 at 156).

36. On August 31, 1989, Modine filed a letter supplementing its response dated July 17, 1989 and which included a table (table 1) correcting errors that Modine found in the table in the October 6, 1988 amendment. The letter stated in pertinent part:

As alluded to on page 4 of that response, the applicant has discovered errors appearing in the table on page 4 of the Amendment dated October 4, 1988 and evidently filed on October 6, 1988. The discovery of the errors identified in the July 17, 1989 response has caused applicants' assignee to review that table in its entirety for accuracy. Additional errors have been found and attached hereto is a paper identified as "Table 1" which repeats the information contained in the submission of October, 1988 (OLD) and indicates any change (NEW) in the values as a result of the review mentioned above.

Counsel is endeavoring to obtain a declaration attesting to the correctness of Table 1 and will make the same of record within the next few weeks. However, given the fact that the Examiner is likely to act upon the case shortly, it was determined not to delay the submission of the correct information until the declaration could be obtained, but rather, submit it as promptly as possible.

Most, if not all, of the changes are not believed to be a great consequence to the issues presented during the examination of this application. Indeed, the weight saving on an all-aluminum basis in the correct data is to the applicant's advantage. Conversely, relative internal volume figures, while continuing to



show at least a 50% reduction in internal volume and thus a reduction in total system chloro fluoro carbon requirements, is not as favorable as originally mentioned.

In addition, it should be also noted that the hydraulic diameter of the condenser, as made according to the invention and shown in the table, is more on the order of 0.025 inches, rather than 0.035 to 0.039 inches as the original table indicated.

Lastly, it will be observed that the fin equivalent diameter is again represented in feet rather than in inches, and that the numbers therefor are in fact in feet.

(ALJ Ex. 4 at 185, 186).

37. Table 1 in the August 31, 1989 supplemental letter showed the revised (new) hydraulic diameter for the Cat Condenser as 0.04822 inch not 0.049 inch. Moreover, the Table 1 showed that the "PF" condenser, according to the invention in issue, had an equal air side pressure drop (Equal dp) of "0.0231" not the "0.035," as reported on October 6, 1988, and a equal heat transfer (Equal Q) of "0.0238" not the "0.039" as reported on October 6, 1988. (ALJ Ex. 4 at 105, 106, 188).

38. On September 18, 1989, Modine filed another letter supplementing the August 31, 1989 letter and attaching a September 1989 "Second Declaration of Leon A. Guntly" with Table 1 "referred to in the letter of August 31, 1989." The second declaration read in pertinent part:

Declarant, Leon A. Guntly, states that:

1. I am one of the named inventors in the above-identified application and the declarant of a "Declaration Under 37 CFR 1.132" earlier filed in this case.
2. In my earlier declaration referred to above, I stated my belief that the data found on page 4 of an amendment dated October 4, 1988 was accurate; and that was my belief at the time I executed my earlier declaration.

3. More recently, I have come to learn that certain of the data contained on page 4 of the amendment dated October 4, 1988 is inaccurate causing the assignee of the application, Modine Manufacturing Company, to recheck this submitted data.

4. Table 1 attached hereto reflects the result of that check. The columns labeled "OLD" illustrate the same data originally submitted on page 4 of the amendment dated October 4, 1988, while the columns labeled "NEW" list changed values where the original data was inaccurately presented.

5. On information and belief, the data contained in the "OLD" column where there is no new value indicated in the "NEW" column is accurate and the new data presented in the "NEW" column is likewise believed to be accurate.

(ALJ Ex. 4 at 190, 191).

39. On November 7, 1989, the Examiner responded to Modine's July 17, 1989 amendment by reaffirming the rejections made on May 4, 1988 and December 30, 1988.

Thus, the Examiner stated:

Claim 1-7, 9, 11, 19-25 and 26 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of the condenser of exhibits A-G [the prior art Cat condenser] of the amendment filed March 23, 1987, paper no. 7, of the parent application S.N. - 06/902,697 and further in view of Asselman et al. Yoko shows a heat exchanger with an undulating insert (9) in contact with the tube walls and external serpentine fins (6) biased to the tubes (5). The condenser of exhibits A-G includes inlet and outlet headers, plural parallel straight condenser tubes, each tube having a plurality of discrete flow paths defined by an undulating insert biased, at least partially, to the inner surfaces of tube (see applicant's discussion on page 9-11 of paper no. 7). On page 11 paper no. 7 the applicant discusses flow path hydraulic diameters to be 0.0382-0.0448 and 0.0496 for the known condenser. Since both Yoko and the condenser of Exhibits a-G are similar, in that they have plural parallel tubes with undulating insets wherein the tubes are connected on the exterior by fins, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the heat exchange core of Yoko with headers and to use the device as a condenser, per se. Also to particularly modify the flow paths of Yoko to operate effectively as condenser by choosing a hydraulic diameter between 0.015 to 0.040 inches would have been obvious to one of ordinary skill in the view of the known range of 0.038 to 0.0448 discussed by applicant's Exhibits A-G (i.e. 0.04 falling within these known

valves for condenser flow paths). Additionally, Asselman et al teaches and therefore recognizes hydraulic diameter reduction in heat exchangers in order to save weight in materials which also increase efficiency. Indeed, Asselman et al saves material cost and increases heat transfer capacity by reducing the hydraulic diameter of a flow passage to 0.85 mm (0.03 inch) which falls within the claimed range desired by the applicant. Therefore, to achieve increased heat transfer to save on material consumption it would have been obvious to one of ordinary skill in the art of heat exchange to reduce a hydraulic diameter of a flow passage to within the claimed range of 0.015 to 0.04 as taught by Asselman et al.

Claims 8 and 10 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of Exhibits A-G and Asselman et al as applied to claim 5 above and further in view of Mosier et al. Mosier et al teaches shaping headers to be slotted and tubular (Figure 2) for an array of plural straight flattened tubes (13). Since Yoko is clearly intended to be use with a header and indeed shows a header wall portion (7) with slots, it would have been obvious to one of ordinary skill in the art to provide Yoko particularly with slotted "tubular" shaped headers to convey fluid to and from the exchanger core.

Claims 12-15 are rejected under 35 U.S.C. 103 as being unpatentable over Yoko in view of Exhibits A-G and Asselman et al as applied to claim 11 above, and further in view of Oohara. Oohara expressly teaches bonding both sides of an undulating fin (8) to the interior of a flat straight tube of a heat exchanger. Both Yoko and Oohara pass fluid through the plural paths from by the respective inserts. Therefore, in regard to claim 12, and view of the Oohara teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to bond each crest of the Yoko insert to the inner tube wall to create discrete flow paths. In regards to claims 13-15, the device as modified above would operate as claimed. The undulating passage shown by Yoko are deemed the structural equivalent to applicant's "nominally triangular cross section".

Applicant's arguments filed July 17, 1989 have been fully considered but they are not deemed to be persuasive. Applicant points out that Yoko is not a "condenser" and this is disqualified as a reference since two-phase condensers such as Yoko. Applicant has not however supplied a full translation of Yoko to support the statement that it is and would not be used as a condenser. Applicant also Figure 3 Oohara which discusses this type of bonding to be well known. Applicant, once again, asserts that Oohara does not relate to a condenser. It is not clear to the examiner how such a conclusion is being drawn without a translation of the document. Additionally, Oohara is being relied upon to it's teaching of bonding a wave fin to the interior of a flat tube Yoko already shows the overall structure with the wave type bin.

Applicant appears to ignore the Examiner's statement in the rejection of the claims as to the similarities between the "condenser of Exhibits A-G and Yoko. The Examiner maintains the position that the use of Yoko as a condenser would have been taught and suggested by the condenser of Exhibits A-G. The only possible difference between the condenser of Exhibits A-G and Yoko is the "use" of Yoko as a condenser and headers. Applicant further contends that Yoko "does not clearly disclose whether the inserts are bonded to both sides of the interior of the tubes . . ." Applicant's arguments concerning the flux coating or the interior of the passages, in light of the Japanese document and translation filed in paper no. 12, these arguments have been found to be persuasive. Therefore, claims 16, 17, 18, 20-24, 27 and 28, are believed to contain allowable subject matter.

Also, applicant argues that hydraulic diameters falling in the claimed ranges would have not been obvious at the time the invention was made. The Examiner maintains the position that both Asselman and the condenser or Exhibits A-G both provide a proper teaching. Applicant appears to ignore the portion of the rejection which highlights the range taught by the Exhibits. Applicant attacks the Asselman reference because the hydraulic diameters taught are for an air passage. This reference however is relied upon to teach the reduction of a heat exchanger flow passage to applicant's claimed range for the purpose of material reduction for weight savings. Thus for this reason alone an application of this teach to Yoko would have been obvious to a person having ordinary skill in the art of heat exchanges.

For the reasons stated above and for the reasons stated in the rejection of the claims the claimed invention in claims 1-15, 19, 21, 25 and 26 is thought to be unpatentable over the prior art of record.

Applicant's declarations directed to errors in the Table 1 previous submitted have been noted and fully considered.

Claims 6-18, 20, 27 and 28 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112 and to include all of the limitations of the base claim and any intervening claims.

(ALJ Ex. 4 at 194 to 198) (Emphasis added). The substance of the November 7, 1989 rejection is identical to the May 4, 1988 and December 30, 1988 rejection.

40. In an amendment filed on February 20, 1990, Modine canceled claims 1 to 15, 19, 25 and 26 and rewrote claims 16, 20, 21 and 27. It was argued that:

Regarding the claims herein, it is considered that all are allowable. In particular, the Examiner has already allowed Claims 22-24 outright and has indicated at the top of page six of the outstanding Office Action that Claims 16-18, 20, 21, 27 and 28 are "believed to contain allowable subject matter". This takes care of all the claims remaining in the application.

However, in all candor, it should be pointed out that further down on the same page, the Examiner states that Claim 21 is thought to be unpatentable over the prior art of record so we have conflicting indications as to its allowability in the Office Action.

It is applicant's belief that the first statement of the Examiner, namely, that it is believed to contain allowable subject matter, is the correct one. Claim 21 specifies the presence of microcracks or channels in the surfaces of the fluid flow paths. As pointed out in the preceding Amendment, none of the prior art shows these means and the Examiner has already found the previous remarks to that effect "persuasive". See the sentence spanning pages 5 and 6 of the outstanding Office Action.

It is accordingly believed that the inclusion of Claim 21 in the list of claims as thought to be unpatentable over the prior art by the Examiner was inadvertent and that the application is in allowable form.

(ALJ Ex. 4 at 201 to 205).

41. Rewritten claim 27 in the amendment filed on February 20, 1990 was in independent form and contained the language "said flow paths being of relatively small hydraulic diameter (defined as the cross-sectional area of the corresponding flow path multiplied by four (4) and divided by the wetted perimeter of the corresponding flow paths."

(ALJ Ex. 4 at 204).

42. In an Office Action dated May 23, 1990, the Examiner stated:

While all of claims 16-18, 20-24 and 27-28 were indicated, previously, as containing allowable subject matter, the claims on final review have been found to contain informalities under 35 U.S.C. 112, second paragraph. Consequently, the claims continue to contain allowable subject matter and would be allowable over the prior art of record if rewritten to overcome the rejection made under 35 U.S.C. 122 second paragraph. [sic It is apparent that the Examiner intended "35 U.S.C. 112" in view of the substance of the

Examiner's rejection on November 7, 1989 and the fact that there is no second paragraph to 35 U.S.C. 122].

In line 19 of claim 1 [application claim 16], for example, the phrase "about 0.015 to 0.040 inches" is vague and indefinite since the claimed range has no definite limits.

(ALJ Ex. 4 at 208, 209).

43. In an amendment filed on August 6, 1990, Claim 27 was rewritten. The rewritten claim is claim 9 in issue. Claim 28, referred to in the Patent Office Action of March 23, 1990, is dependent claim 10 in issue, (ALJ Ex. 4 at 151, 212, 213).

44. With respect to the Examiner's statement in his May 23, 1990 rejection relating to "about 0.015 to 0.040 inches," Modine argued:

The Examiner is quite in error in finding the use of the term "about" objectionable and rendering the claims indefinite. . . . [Modine cites a case in point here.] In this case, the Board found that the term "about" merely indicates that exactitude is not claimed and that possible variations are contemplated. . . . [Another case is cited here.]

\* \* \*

The very same considerations found in these cases apply here. While the particular numbers given are the desirable limits of the range, they are not claimed with complete exactitude for the reason that some deviation is permissible. That should be the case becomes abundantly apparent when one considers the fact that there are many types of different refrigerants available which exhibit slightly different characteristics. Since we are here claiming a condenser [sic] which may be used with any of a large variety of the refrigerants, exactitude on dimensional limits should not be required because of the fact that some variation due to differing characteristics of differing refrigerants should be allowed at the very least.

Thereafter the Examiner issued a notice of allowance, (ALJ Ex. 4 at 212, 213, 214, 215, 225).

**E. Accused Condensers**

45. The parties have agreed that the twelve condensers accused of infringing the claims in issue in the original investigation, with the condenser names, dealerships from which Modine purchased each condenser, and hydraulic diameter ranges of each condenser, are as follows:

Name	Dealership	H.D. Range (inches)
Mitsubishi Diamante "3360"	Steve Foley Mitsubishi	0.0492-0.0519
Mitsubishi Diamante "3491"	Steve Foley Mitsubishi	0.0482-0.0496
Mitsubishi 3000GT "3491"	Steve Foley Mitsubishi	0.0475-0.0495
Mitsubishi 3000GT "3361"	Steve Foley Mitsubishi	0.0498-0.0520
1992 Mazda 929	Racine VW/Mazda	0.0453-0.0477
Mitsubishi Diamante	Mauro Mitsubishi	0.0577-0.0606
Mitsubishi 3000GT	Mauro Mitsubishi	0.0482-0.0497
1992 Honda Civic	Gentile Oldsmobile/Honda	0.061-0.065
1993 Audi 90	Semersky Enterprises	0.0445-0.0682
1993 Mercedes Benz 400/500 SEL	Mauro Auto Mall	0.0424-0.0573
1993 Mitsubishi Mirage "3493"	Mauro Auto Mall	0.0513-0.0521
1993 Mitsubishi Mirage "3499"	Mauro Auto Mall	0.0529-0.0547

(Tr. at 196, 210).

46. The hydraulic diameter range of each of the twelve condensers in the table of the previous finding is based on the individual measurements of each of the twelve condensers identified in CX57 and CX58.

47. Referring to CX57 and CX58, only the following originally accused condensers have at least two tubes with hydraulic diameters less than 0.0496 inch: condenser nos. 2, 4, 5, 6 and 11.

48. For condenser no. 2 (Mitsubishi 3000GT), the stated hydraulic diameters are 0.0495, 0.0475, 0.0495 and 0.0491 (CX57, CX58).

49. For condenser no. 4 (Mitsubishi Diamante), the stated hydraulic diameters are 0.0496, 0.0493 and 0.0482 (CX57, CX58).

50. For condenser no. 5 (1992 Mazda 929), the stated hydraulic diameters are 0.0471, 0.0476, 0.0477, 0.0453 and 0.0466 (CX57, CX58).

51. For condenser no. 6 (Mitsubishi 3000GT), the stated hydraulic diameters are 0.0490, 0.0482 and 0.0486 (CX57, CX58).

52. For condenser no. 11 (1993 Audi 90), the stated hydraulic diameters are:

0.0499	0.0631	0.0499	0.0484	0.0490
0.0495	0.0622	0.0445	0.0469	0.0480
0.0481	0.0682	0.0598	0.0490	0.0510
0.0507	0.0495	0.0506	0.0450	0.0492
0.0496	0.0483	0.0658	0.0477	0.0489
0.0465	0.0484	0.0492	0.0506	

(CX57, CX58). The average of the above Audi 90 hydraulic diameter measurements is 0.0513 inch.

53. Complainant used two different methods to measure the hydraulic diameter of the accused condensers. Complainant's Saperstein testified as follows describing that testing procedure resulting in the measurements listed in CX-57 and 58:

Q. Who was it that measured these hydraulic diameters



- A. We had three different methods -- well, I should say two different methods and two different people within Modine and one outside firm that was involved in some of the measurements.
- Q. Is that the reference to Briggs and Stratton for example?
- A. Yes. When we first were measuring hydraulic diameter, we wanted to be certain that measurement method that we employed and one that would be considered to be ultra precise would coincide and Briggs and Stratton had a digitizing instrument that would automatically via the computer integration measure the hydraulic diameter. That is, the free flow area and the perimeter from which you can calculate the hydraulic diameter.
- When we did some of that work early in the program, we were convinced that the measurements that would be obtained by Briggs and Stratton technique which was fairly expensive, and that obtained by Modine essentially coincided. The difference was less than a thousandth of an inch in hydraulic diameter typically.
- Q. Now, to further check on method of hydraulic diameter calculation, did you sometimes have a particular section measured twice?
- A. Yes, sometimes twice and sometimes more.
- Q. How can we tell from this Exhibit 48 [CX-57, 58] those occasions where you had the same section at the same cross section?
- A. Well, sometimes it's a little bit confusing. But, for example, on the 6/91 Mitsubishi 3000 GT, there are --
- Q. On Page 1 of the Exhibit [CX-57, 58]? You're on Page 1 of the Exhibit?
- A. Yes, Page 1 of the Exhibit [CX-57-58]. Under mount number, if you go down about two thirds of the way you'll see a mount number called 3491-M7.
- Q. That's two thirds of the way in that particular 3000 GT section?
- A. That's correct.
- Q. Alright.

A. These two -- this one mount was measured by two people and you can see that the difference is 1. -- two thousandths difference between the two people using the same measuring method.

\* \* \*

A. We would report that as an average of .0485 taking the average obviously between those two for that mount.

Q. Over at the bottom of Page 2, we have tubes received from Showa during discovery on or about December 11, 1992 and then that carries over to the top of Page 3 and there seems to be several calculations that were done with respect to the mount number 3486-S20A. What's that about?

\* \* \*

Q. So, Mr. Saperstein, we were at the top of page 3 of Exhibit 48.

A. Yes. And you were referring to 3486-S20A.

Q. Yes. That number seems to be repeated about six times. What does that indicate?

A. And the purpose was to see the error that would be realized in measuring that same cross-section, in this particular case six times. As you can see, it varies by approximately -- the maximum is 1.3 thousandths of an inch.

Q. Is that the same as three ten-thousandths of an inch?

A. No. 1.3. The lowest value is .0600 --

Q. Yes.

A. -- and the highest value was .0613, so that's 1.3 thousandths difference in 60 parts. That's less than a 2 percent difference.

(Saperstein, CX-1 at 271-275). Saperstein did not relate said measurement techniques to any measurement techniques used by those skilled in the art at the time the patent application for the '580 patent was filed.

54. Complainant's Saperstein testified that, in preparing CX-59, if a single tube was sectioned more than one time over its length, the mean value was shown. Saperstein, not in reference to any claim in issue, used the term "about" to refer to a situation where a hydraulic diameter of "about .045" would be a value of .0448 rounded to .045. Thus, he testified:

Q. Now let's turn first to the first part of Exhibit 49 [CX-59], which is pages 1 through 9. Before we get into the details, though, just tell us in general what these bar graphs are, what they mean, and how they were prepared.

A. Well, they were prepared from the actual data that's tabulated in Exhibit 48 [CX-57, CX-58], and so every data point that represented a separate tube section was plotted. Where we had the same measurement five times, we took the mean.

Q. In a particular tube section?

A. In a particular tube. If we had a single tube that was supplied by Showa and we sectioned it more than one time over that length of tube, we also used the mean. We didn't show that as a separate measurement, even though it might be considered as such, because a tube could be cut at different locations and used differently in a particular application, but we did not do that. We took it as a mean.

So we have 70 individual points that truly represent different sections from different condensers and different -- in this case different condensers that were purchased by us, by Modine, and we plotted a distribution. This is a distribution histogram that gives some indication of the spread in the range of hydraulic diameter and in the concentration or mean tendency for the sample that we examined.

And what is shown on the horizontal axis is the hydraulic diameter, so that for instance, "under 45," that means .045 of an inch. There are two F's. That means there were two condenser tubes sectioned and examined that gave a hydraulic diameter of about .045. We rounded here, so if it happened to be .0458, you would round off, it would have been .046. But if it was .0448, it would have been .045, and so on.

In any case, the F represents a 1990 Audi 90 that was purchased on January 15, 1993, and examined. What you can see from this overall distribution, that includes a Diamante acquired on 6/91; a Diamante acquired on 11/27/91; a 3000GT acquired 6/91; a 3000GT acquired 11/27/91; a Honda Civic acquired 2/7/92; an Audi 90, 1/15/93; and a Mercedes Benz of 1/21/93 [emphasis added].

(Saperstein, CX-1 at 276-278).

55. The specification of the '580 patent, in Table 1, states under "Hydraulic Diameter (in.), for "Current Production 1E2803" a value of ".07871," and for "Present Invention" a value of ".0302" is listed (CX-42, col. 9, lns 11-40).

## VII. Initial Determination and Order

Pursuant to the ORDER of the Commission and based on the foregoing findings of fact, the opinion and the record as a whole, and having considered all of the arguments presented orally and in briefs, as well as the proposed findings of fact presented in this remand, it is the administrative law judge's determination that there is a violation of section 337 in the importation into the United States and sale for importation, or the sale within the United States after importation of certain condensers, parts thereof and products containing same, including air conditioner for automobiles.

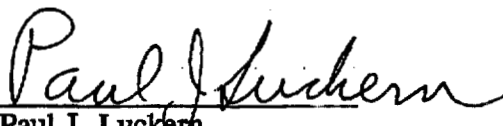
The administrative law judge hereby CERTIFIES to the Commission this initial determination, including ALJ Ex. 1 (Complainant's Supplement To Its Response To Order No. 1, dated July 2, 1996), ALJ Ex. 2 (File wrapper of Ser. No. 783,087), ALJ Ex. 3 (File Wrapper of Ser. No. 902,697) and ALJ Ex. 4 (File Wrapper of Ser. No. 141,628). The submissions of the parties filed with the Secretary in response to Order No. 1 are not certified, nor is the transcript of the closing arguments, since they are already in the Commission's possession in accordance with Commission Rules and Practice and Procedure.

Further it is ordered that:

1. In accordance with Commission rule 210.39, all material heretofore marked in camera because of business, financial and marketing data found by the administrative law judge to be cognizable as confidential business information under Commission rule 201.6(a) is to be given in camera treatment continuing after the date this investigation is terminated.

2. Counsel for the parties shall have in the hands of the administrative law judge a copy of this initial determination with those portions containing confidential business information designated in brackets, no later than Friday, December 12, 1996. Any such bracketed version shall not be served by telecopy on the administrative law judge. If no such version is received from a party, it will mean that the party has no objection to removing the confidential status, in its entirety, from this final initial determination.

3. Pursuant to the ORDER, this initial determination will be processed by the Commission in accordance with the Commission rules governing IDs on issues concerning violation of section 337.

  
Paul J. Luckern  
Administrative Law Judge

Issued: December 2, 1996