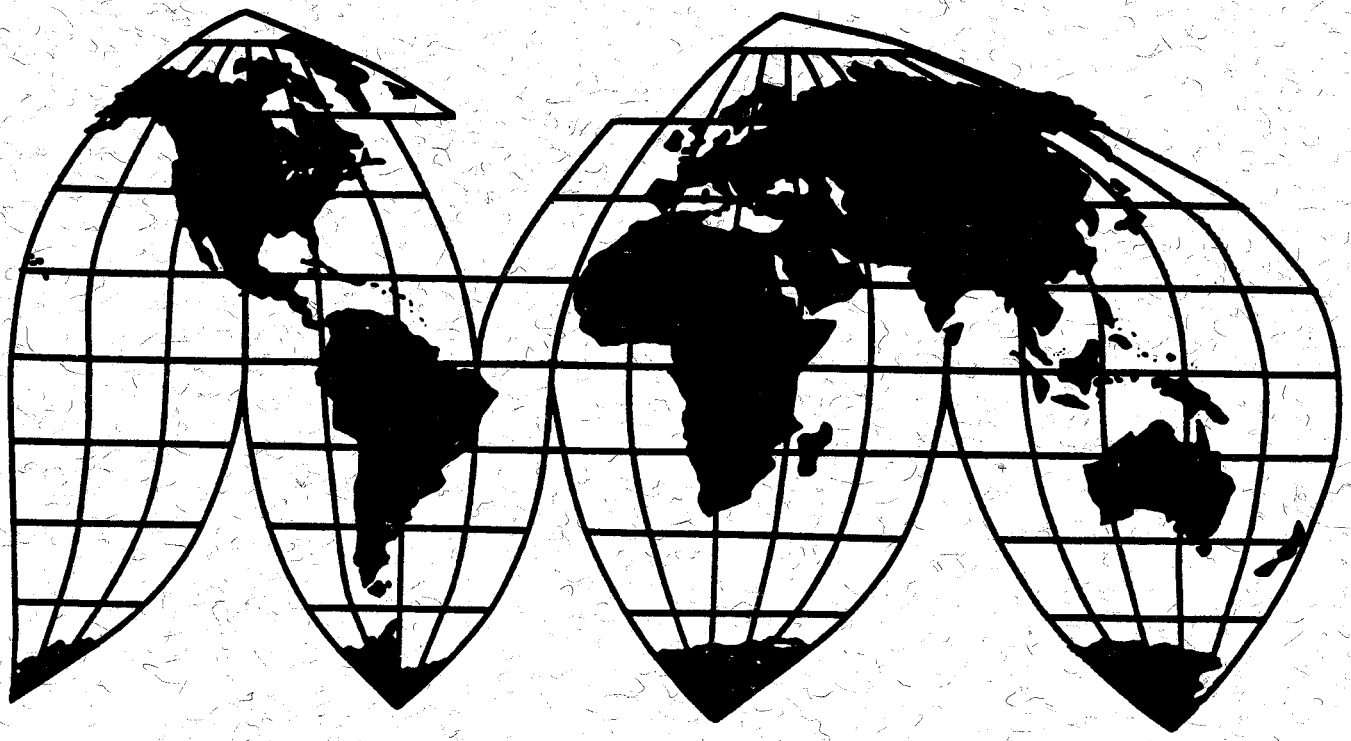
In the Matter of

Certain Neodymium-Iron-Boron Magnets, Magnet Alloys, and Articles Containing Same

Investigation No. 337-TA-372

Publication 2964 **May 1996**

U.S. International Trade Commission



Washington, DC 20436

U.S. International Trade Commission

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In the Matter of

Certain Neodymium-Iron-Boron Magnets, Magnet Alloys, and Articles Containing Same

Publication 2964

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC 20436

In the Matter of	
CERTAIN NEODYMIUM-IRON-BORON MAGNETS, MAGNET ALLOYS, AND ARTICLES CONTAINING SAME	Investigation No. 337-TA-372

NOTICE OF ISSUANCE OF GENERAL EXCLUSION ORDER AND CEASE AND DESIST ORDER AND TERMINATION OF INVESTIGATION

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has issued a general exclusion order and a cease and desist order to domestic respondent Hennaco Excell, Inc. in the above-captioned investigation and terminated the investigation.

FOR FURTHER INFORMATION CONTACT: Lyle B. Vander Schaaf, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone 202-205-3107.

SUPPLEMENTARY INFORMATION: This investigation was initiated by the Commission on March 3, 1995, based on a complaint filed by Crucible Materials Corp. On December 11, 1995, the presiding administrative law judge (ALJ) issued his final initial determination (ID) on the merits in the investigation. The ALJ found a violation of section 337 of the Tariff Act of 1930, as amended, based on his findings that (1) claims 1-3 of the patent in controversy, U.S. Letters Patent 4,588,439 (the '439 patent), are valid and enforceable; (2) there is a domestic industry manufacturing and selling products covered by the patent claims in issue; (3) respondents Novel Hightech, Ltd., Hennaco Industrial Enterprises, Inc., Hennaco Excell, Inc., Sino American Products, Ltd., and Injohnson Precision Industrial Co. infringe claims 1-3 of the '439 patent. The ALJ specifically found that the Novel, Injohnson, Sino American, and Hennaco respondents literally infringe each of the claims in issue and found that the Hennaco respondents and respondent Injohnson infringe the claims in issue under the doctrine of equivalents.

On February 14, 1996, the Commission issued notice of its determination not to review the final ID, and requested written submissions on the issues of

remedy, the public interest, and bonding. 61 Fed. Reg. 6863 (Feb. 22, 1996). Submissions were received from complainant Crucible, the Commission investigative attorney, and respondents San Huan New Materials, Ningbo Konit, and Tridus International. Complainant and the Commission investigative attorney also filed reply submissions on those issues.

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 general exclusion order prohibiting the unlicensed importation of infringing neodymium-iron-boron magnets and magnet alloys. In addition, the Commission issued a cease and desist order directed to domestic respondent Hennaco Excell, Inc. requiring that firm to cease and desist from the following activities in the United States: importing, selling, marketing, distributing, offering for sale, or otherwise transferring (except for exportation) in the United States infringing imported neodymium-iron-boron magnets or magnet alloys.

The Commission also determined that the public interest factors enumerated in 19 U.S.C. § 1337(d) and (f) do not preclude the issuance of the general exclusion order and cease and desist order, and that the bond during the Presidential review period shall be in the amount of 100 percent of the entered value of the articles in question.

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 210.50 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.50).

Copies of the Commission's remedial orders, 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: March 29, 1996

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC 20436

In the Matter of	)	
CERTAIN NEODYMIUM-IRON-BORON MAGNETS, MAGNET ALLOYS, AND ARTICLES CONTAINING SAME	)	Investigation No. 337-TA-372

ORDER

The Commission has previously 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 neodymium-iron-boron magnets, magnet alloys, and articles containing same that infringe U.S. Letters Patent 4,588,439.

Having reviewed the record in this investigation, including the written submissions of the parties, the Commission has made its determinations on the issues of remedy, the public interest, and bonding. The Commission has determined that a general exclusion from entry for consumption of articles, other than downstream products, is necessary to prevent circumvention of an exclusion order limited to products of named persons because there is a pattern of violation of section 337 and it is difficult to identify the source of infringing products. Accordingly, the Commission has determined to issue a general exclusion order prohibiting the unlicensed importation of infringing neodymium-iron-boron magnets and magnet alloys. In addition, the Commission has issued a cease and desist order to domestic respondent Hennaco Excell, Inc. requiring it to cease and desist from the following activities in the United States: importing, selling, marketing, distributing, offering for sale, or otherwise transferring (except for exportation) in the United States

infringing imported neodymium-iron-boron magnets or magnet alloys.

The Commission has also determined that the public interest factors enumerated in 19 U.S.C. §§ 1337(d) and (f) do not preclude the issuance of the general exclusion order and the cease and desist order, and that the bond during the Presidential review period shall be in the amount of 100 percent of the entered value of the articles in question.

Accordingly, the Commission hereby **ORDERS** that:

1. Neodymium-iron-boron magnets and magnet alloys covered by claims 1, 2, or 3 of U.S. Letters Patent 4,588,439, 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. Notwithstanding paragraph 1 of this Order, nothing in this Order shall apply to San Huan New Materials High Tech, Inc., Ningbo Konit Industries, Inc., or Tridus International, Inc. pursuant to paragraph 7 of the Consent Order issued by the Commission on October 11 and 12, 1995.

3. Notwithstanding paragraph 1 of this Order, the aforesaid neodymium-iron-boron magnets and magnet alloys are entitled to entry for consumption into the United States under bond in the amount of 100 percent of the entered value of such articles, from the day after this Order is received by the President, pursuant to subsection (j) of section 337 of the Tariff Act of 1930, as amended, until such time as the President notifies the Commission that he approves or disapproves this action, but no later than 60 days after the date of receipt of this Order by the President.

4. In accordance with 19 U.S.C. § 1337(l), the provisions of this Order shall not apply to neodymium-iron-boron magnets or magnet alloys 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.

5. The Commission may modify this Order in accordance with the procedure described in section 210.76 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.76).

6. The Secretary shall serve copies of this Order upon each party of record in this investigation, upon San Huan New Materials High Tech, Inc., Ningbo Konit Industries, Inc., and Tridus International, Inc., and upon the Department of Health and Human

Services, the Department of Justice, the Federal Trade Commission, and the U.S. Customs Service.

7. Notice of this Order shall be published in the Federal Register.

By order of the Commission.

Donna R. Koehnke
Secretary

Issued: March 29, 1996

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC 20436

In the Matter of CERTAIN NEODYMIUM-IRON-BORON MAGNETS, MAGNET ALLOYS, AND ARTICLES CONTAINING SAME	)	Investigation No. 337-TA-372

ORDER TO CEASE AND DESIST

IT IS HEREBY ORDERED THAT Hennaco Excell, Inc., 39-01 Main Street, Suite 210, Flushing, N.Y., 113544, cease and desist from conducting any of the following activities in the United States: importing, selling, marketing, advertising, distributing, offering for sale, transferring (except for exportation), or soliciting U.S. agents or distributors for neodymium-iron-boron magnets or magnet alloys covered by claims 1, 2, or 3 of U.S. Letters Patent 4,588,439 in violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337.

I.

(Definitions)

As used in this Order:

(A) "Commission" shall mean the United States International Trade Commission.

(B) "Complainant" shall mean Crucible Materials Corporation.

(C) "Respondent" shall mean Hennaco Excell, Inc., 39-01 Main Street, Suite 210, Flushing, N.Y., 113544.

(D) "Person" shall mean an individual, or non-governmental partnership, firm, association, corporation, or other legal or business entity other than

the above Respondent or its majority owned and/or controlled subsidiaries, their successors, or assigns.

(E) "United States" shall mean the fifty States, the District of Columbia, and Puerto Rico.

(F) "Covered product" shall mean neodymium-iron-boron magnets or magnet alloys covered by claims 1, 2, or 3 of U.S. Letters Patent 4,588,439.

(G) The terms "import" and "importation" refer to importation for entry for consumption under the Customs laws of the United States.

II.

(Applicability)

The provisions of this Cease and Desist Order shall apply to Respondent and to its principals, stockholders, officers, directors, employees, agents, licensees, distributors, controlled (whether by stock ownership or otherwise) and/or majority owned business entities, successors, and assigns, and to each of them, insofar as they are engaging in conduct in the United States prohibited by Section III, infra, for, with, or otherwise on behalf of Respondent.

III.

(Conduct Prohibited)

The following conduct of Respondent in the United States is prohibited by this Order. Respondent shall not:

(A) import into the United States neodymium-iron-boron magnets or magnet alloys covered by claims 1, 2, or 3 of U.S. Letters Patent 4,588,439 for the remaining term of the patent;

(B) sell, market, distribute, offer for sale, or otherwise transfer (except for exportation) in the United States imported neodymium-iron-

boron magnets or magnet alloys covered by claims 1, 2, or 3 of U.S. Letters Patent 4,588,439 for the remaining term of the patent; (C) advertise imported neodymium-iron-boron magnets or magnet alloys covered by claims 1, 2, or 3 of U.S. Letters Patent 4,588,439 for the remaining term of the patent; or (D) solicit U.S. agents or distributors for imported neodymium-iron-boron magnets or magnet alloys covered by claims 1, 2, or 3 of U.S. Letters Patent 4,588,439 for the remaining term of the patent.

IV.

(Conduct Permitted)

Notwithstanding any other provision of this Order, specific conduct otherwise prohibited by the terms of this Order shall be permitted if, in a written instrument, the owner of the U.S. Letters Patent 4,588,439 licenses or authorizes such specific conduct, or such specific conduct is related to the importation or sale of covered products by or for the United States.

V.

(Reporting)

For purposes of this reporting requirement, the reporting periods shall commence on January 1 and July 1 of each year, and shall end on the subsequent June 30 and December 31, respectively. However, the first report required under this section shall cover the period March 29, 1996 through June 30, 1996. This reporting requirement shall continue in force until the expiration of U.S. Letters Patent 4,588,439, unless pursuant to subsection (j)(3) of section 337 of the Tariff Act of 1930, the President notifies the Commission within 60 days after the date he receives this Order, that he disapproves this Order; provided, however, that Respondent's reporting requirement hereunder

shall cease if, in a timely filed report, Respondent shall report no sales of imported covered product during two (2) successive reporting periods and no remaining inventory of imported covered product.

Within thirty (30) days of the last day of each reporting period, Respondent shall report to the Commission the following the quantity in pounds and value in dollars of foreign-made covered product that Respondents has imported or sold in the United States during the reporting period and the quantity and value of reported, imported covered product that remains in inventory at the end of the reporting period.

Any failure to report shall constitute a violation of this Order.

VI.

(Recordkeeping and Inspection)

(A) For the purpose of securing compliance with this Order, Respondent shall retain any and all records relating to the importation, sale, marketing, advertisement, distribution, offering for sale, transferring in the United States, or solicitation of imported covered products, made and received in the usual and ordinary course of business, whether in detail or in summary form, for a period of two (2) years from the close of the fiscal year to which they pertain.

(B) For the purposes 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, duly authorized representatives of the Commission, upon reasonable written notice by the Commission or its staff, shall be permitted access and the right to inspect and copy in the offices of Respondent during office hours, and in the presence of counsel or other representatives if Respondent so chooses, all books, ledgers, accounts,

correspondence, memoranda, financial reports, and other records and documents, both in detail and in summary form, for the purpose of verifying any matter or statement contained in the reports required to be retained under subparagraph VI(A) of this Order.

VII.

(Service of Cease and Desist Order)

Respondent is ordered and directed to:

(A) Serve, within fifteen (15) days after the effective date of this Order, a copy of this Order upon each of its officers, directors, managing agents, agents, and employees who have any responsibility for the importation, sale, marketing, or distribution of imported covered products in the United States;

(B) Serve, within fifteen (15) days after the succession of any persons referred to in subparagraph VII(A) of this Order, a copy of the Order upon each successor; and

(C) Maintain such records as will show the name, title, and address of each person upon whom the Order has been served, as described in subparagraphs VII(A) and VII(B) of this Order, together with the date on which service was made.

The obligations set forth in subparagraphs VII(B) and VII(C) of this Order shall remain in effect until the expiration of U.S. Letters Patent 4,588,439.

VIII.

(Confidentiality)

Any request for confidential treatment of information obtained by the Commission pursuant to Sections V and VI of the Order should be in accordance

with Commission Rule 201.6, 19 C.F.R. § 201.6. For all reports for which confidential treatment is sought, Respondent must provide a public version of such report with confidential information redacted.

IX.

(Enforcement)

Violation of this Order may result in any of the actions specified in section 210.75 of the Commission's Rules of Practice and Procedure, 19 C.F.R. § 210.75, including an action for civil penalties in accordance with section 337(f) of the Tariff Act of 1930, 19 U.S.C. § 1337(f), and any other action as the Commission may deem appropriate. In determining whether Respondent is in violation of this Order, the Commission may infer facts adverse to Respondent if Respondent fails to provide adequate or timely information.

X.

(Modification)

The Commission may amend this Order on its own motion or in accordance with the procedure described in section 210.76 of the Commission's Rules of Practice and Procedure, 19 C.F.R. § 210.76.

XI.

(Bonding)

The conduct prohibited by Section III of this Order may be continued during the period which this Order is under review by the President pursuant to section 337(j) of the Tariff Act of 1930 (19 U.S.C. § 1337(j)), subject to Respondent posting of bond in the amount of one hundred (100) percent of the entered value of the imported covered products. This bond provision does not apply to conduct that is otherwise permitted by Section IV of this Order. Covered products imported on or after March 29, 1996, are subject to the entry

bond as set forth in the general exclusion order issued by the Commission on March 29, 1996, and are not subject to this bond provision.

This bond is to be posted in accordance with the procedures established by the Commission for the posting of bonds by complainants in connection with the issuance of temporary exclusion orders. See Commission Rule 210.68, 19 C.F.R. § 210.68. The bond and any accompanying documentation is to be provided to and approved by the Commission prior to the commencement of conduct which is otherwise prohibited by Section III of this Order.

The bond is to be forfeited in the event that the President approves, or does not disapprove within the Presidential review period, the Commission's Orders of March 29, 1996, or any subsequent final order issued after the completion of Investigation No. 337-TA-372, unless the U.S. Court of Appeals for the Federal Circuit, in a final judgment, reverses any Commission final determination and order as to Respondent on appeal, or unless the products subject to this bond are exported or destroyed by Respondent, and Respondent provides certification to that effect satisfactory to the Commission.

The bond is to be released in the event the President disapproves this Order and no subsequent order is issued by the Commission and approved, or not disapproved, by the President, upon service on Respondent of an Order issued by the Commission based upon application therefor made to the Commission.

By order of the Commission.

Donna R. Koehnke
Secretary

Issued: March 29, 1996

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

In the Matter of

CERTAIN NEODYMIUM-IRON-BORON MAGNETS, MAGNET ALLOYS, AND ARTICLES CONTAINING SAME

Investigation No. 337-TA-372

COMMISSION OPINION ON REMEDY, THE PUBLIC INTEREST, AND BONDING

I. INTRODUCTION

This investigation is before us for final disposition of certain issues relating to remedy, the public interest, and bonding. After review of those issues, we determine that the appropriate remedy is a general exclusion order, and a cease and desist order directed to domestic respondent Hennaco Excell, Inc., a U.S. importer of the infringing products. We also determine that the public interest does not preclude the issuance of that remedy, and that the amount of the bond during the 60-day Presidential review period shall be 100 percent of the entered value of neodymium-iron-boron (NdFeB) magnets and magnet alloys that infringe claims 1,2, or 3 of the patent at issue, U.S. Letters Patent 4,588,439 ('439 patent).[1]

II. PROCEDURAL HISTORY

On March 3, 1995, we voted to institute this investigation based upon a complaint filed by Crucible Materials Corporation ("Crucible") alleging violations of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the importation, sale for importation, and sale within the United States

[1] The '439 patent originally would have expired on May 13, 2003 (17 years from the date of issuance), but in accordance with the patent term extension amendments of the URAA, will now expire on May 20, 2005 (20 years from the filing date of the patent application). See Complaint at 16.

after importation of certain neodymium-iron-boron magnets, magnet alloys, and articles containing the same by reason of infringement of claims 1, 2, or 3 of the '439 patent.[2] The Commission published notice of the investigation in the Federal Register on March 9, 1995, naming the following firms as respondents: San Huan New Materials Corporation of Beijing, China;[3] Ningbo Konit Industries, Inc. of Zhejiang Province, China; San Huan/Tridus International, Inc. of Paramount, CA; Novel Hightech, Ltd. of Hong Kong; Hennaco Industrial Enterprises, Inc. of Parsippany, NJ; Hennaco Excell, Inc. of Flushing, NY; Sino American Products, Ltd. of New York, NY; and Injohnson Precision Industrial Co., Ltd of Taipei, Taiwan.[4]

On August 4, 1995, the presiding administrative law judge (ALJ) (Judge Luckern) issued an initial determination (ID) (Order No. 19) finding respondents Sino American Products, Ltd. (Sino American) and Injohnson Precision Industrial Co., Ltd. (Injohnson) in default, and that those respondents had waived their rights to appear, to be served with documents, and to contest the allegations at issue in the investigation. On September 14, 1995, we issued a notice of our determination not to review Order No. 19.

On September 14, 1995, the ALJ issued an ID (Order No. 29) terminating the investigation as

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[2] Neodymium-iron-boron (NdFeB) magnets comprise a permanent magnet alloy consisting essentially of certain weight percentages of neodymium (and possibly other rare earth elements), iron, a certain amount of oxygen, and the balance boron. See Final Initial Determination (ID) at 6. The great magnetic strength of the magnets permits them to be used to reduce the size of many articles which require permanent magnets. See Findings of Fact in ID (FF) 228; Complaint at 3. The NdFeB magnets are also resistant to heat and humidity and therefore resist disintegration or decomposition. See ID at 39. NdFeB magnets are used in a wide variety of applications, such as electric motors, alternators, generators, line printers, computer disk drive actuators and drivers, torque couples and eddy current brakes, magnetrons, medical and dental applications, magnetic holding and pickup devices, metallic separators, aerospace electric actuators for ailerons and rudders, and in speakers, headphones, microphones, and tape drives. See Complaint at 3.

[3] The name of this respondent was subsequently determined to be San Huan New Materials High Tech, Inc.

[4] 60 Fed. Reg. 12971 (Mar. 9, 1995).

to three respondents -- San Huan New Materials High Tech, Inc., Ningbo Konit Industries, Inc., and Tridus International, Inc. (the "San Huan respondents") -- on the basis of a consent order. On October 10, 1995, we issued a notice of our determination not to review Order No. 29.

On December 11, 1995, the ALJ issued his final ID, finding a violation of section 337 based upon his findings that (1) the patent claims at issue are valid and enforceable; (2) there is a domestic industry manufacturing and selling products protected by those claims; and (3) the remaining respondents in the investigation (Novel, Hennaco Industrial, Hennaco Excell, Sino American, and InJohnson) infringe those claims.[5] Based upon these findings, the ALJ concluded that there was a violation of section 337.

On February 14, 1996, we determined not to review the ALJ's final ID, thereby finding a violation of section 337 to exist; issued a notice of our determination not to review the ID; and requested written submissions on the issues of remedy, the public interest, and bonding.[6] Comments were received from complainant Crucible, the Commission investigative attorney (IA), and the San Huan respondents that were previously terminated from the investigation on the basis of a consent order.

This opinion explains the basis for the following determinations:

(1) Our decision to issue a general exclusion order.

(2) Our decision to issue a cease and desist order directed to domestic respondent Hennaco Excell, Inc.

(3) Our conclusion that the public interest considerations enumerated in section 337(d) do not preclude the issuance of such relief in this

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[5] The ALJ specifically found that respondents Injohnson, Sino American, and Hennaco literally infringe each of the claims in issue and found that the Hennaco respondents and respondent Injohnson infringe the claims in issue under the doctrine of equivalents. ID at 13, 17.

[6] The notice announcing our determination and requesting written submissions on the issues of remedy, the public interest, and bonding appeared in the Federal Register on February 22, 1996 (61 Fed. Reg. 6863).

investigation.

(4) Our decision that the bond during the Presidential review period shall be in the amount of 100 percent of the entered value of imported articles covered by the claims in issue of the '439 patent.

III. REMEDY

The Commission has broad discretion in selecting the form, scope, and extent of the remedy in a section 337 proceeding.[7] Under subsections 337(d) and (f), the Commission may issue an exclusion order, a cease and desist order, or both, depending on the circumstances.[8]

In his recommended determination (RD) on remedy and bonding, the ALJ recommended issuance of a general exclusion order directed to magnets and magnet alloys within the scope of claims at issue and a cease and a desist order against domestic respondent Hennaco Excell, Inc.[9] We agree with the ALJ, and have determined to issue both a general exclusion order directed to the infringing products and a cease and desist order against Hennaco Excell, Inc.[10]

A. General Exclusion Order

In 1994, Congress enacted statutory standards for the issuance of general exclusion orders by adding section 337(d)(2) to section 337 via the Uruguay Round Agreements Act (URAA).[11] This new

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[7] Viscofan, S.A. v. United States International Trade Commission, 787 F.2d 544, 548 (Fed. Cir. 1986) (affirming Commission remedy determination in Certain Processes for the Manufacture of Skinless Sausage Casings and Resulting Products, Inv. Nos. 337-TA-148 and 169, USITC Pub. 1624 (December 1984)); Hyundai Electronics Industries Col, Ltd. v. United States International Trade Commission, 899 F.2d 1204 (Fed. Cir. 1990) (affirming Commission remedy determination in Certain Erasable Programmable Read-Only Memories, Components Thereof, Products Containing Such Memories, and Processes for Making Such Memories, Inv. No. 337-TA-276, USITC Pub. 2196 (May 1989)).

[8] 19 U.S.C. § 1337(d)-(f).

[9] RD at 22.

[10] Consistent with the representations of complainant Crucible, the general exclusion order is directed only to entries for consumption.

[11] Pub. L. 103-465, Title III, § 321(a)(5), 108 Stat. 4943 (Dec. 8, 1994).

section states:

> (2) The authority of the Commission to order an exclusion from entry of articles shall be limited to persons determined by the Commission to be violating this section unless the Commission determines that –
>
> > (A) a general exclusion from entry of articles is necessary to prevent circumvention of an exclusion order limited to products of named persons; or
> >
> > (B) there is a pattern of violation of this section and it is difficult to identify the source of infringing products.[12]

The legislative history of the URAA and the Commission comments on rule 210.50 indicate that the URAA standards for issuing general exclusion orders "do not differ significantly" from the Commission's past practice, as articulated in Certain Airless Paint Spray Pumps and Components Thereof, Inv. No. 337-TA-90, USITC Pub. 1199 at 18-19(Nov. 1981), 216 USPQ 465 (ITC 1981) (Spray Pumps), and the cases following it.[13] In Spray Pumps, the Commission first articulated the two-prong test that must be satisfied for issuance of a general exclusion order, i.e., there must be (1) "a widespread pattern of unauthorized use of [the] patented invention" and (2) "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." 216 USPQ at 473.

The first new statutory factor of section 337(d)(2), i.e., prevention of circumvention, is

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[12] 19 U.S.C. § 1337(d)(2) (emphasis added). Commission rule 210.50 was amended to implement this statutory standard. 19 C.F.R. § 210.50(c).

[13] Statement of Administrative Action ("SAA"), House Doc. 103-316, Vol. 1, 103rd Cong., 2d Sess. at 706 (Sept. 27, 1994); H.R. Rep. No. 826, 103rd Cong., 2d Sess., pt. 1 at 141 (1994); S. Rep. No. 412, 103rd Cong., 2d Sess. at 120 (1994); 59 Fed. Reg. 67622, 67625 (Dec. 30, 1994).

Even before these statutory provisions were enacted, the Commission had exercised caution in issuing general exclusion orders and required that certain conditions be met before one would be issued, because the impact of a general exclusion order on international trade could potentially extend beyond the parties and articles involved in an investigation. See, e.g., Certain Audible Devices for Divers, Inv. No. 337-TA-365, USITC Pub. 2903 at 4 (Aug. 1995); Certain Tape Dispensers, Inv. No. 337-TA-354, USITC Pub. 2786 at 3 (June 1994); Certain Dynamic Random Access Memories, Inv. No. 337-TA-242, USITC Pub. 2034 at 84 (Nov. 1987).

congruous with the second prong of the test established by the Commission in Spray Pumps, i.e., "business conditions" from which one could reasonably infer that non-respondents may attempt to enter the U.S. market. The Commission in Spray Pumps enumerated five factors that are relevant to whether such "business conditions" exist:

> (1) the existence of an established demand for the article in the U.S. market and conditions of the world market;
>
> (2) the availability to foreign manufacturers of U.S. marketing and distribution networks;
>
> (3) the cost for foreign entrepreneurs to build a facility that can produce the patented articles;
>
> (4) the number of foreign manufacturers whose facilities could be converted to manufacture the patented article; and
>
> (5) the foreign manufacturers' cost to convert a facility to produce the patented articles.

We find this five-factor analysis equally relevant to determining whether the first statutory factor above, preventing circumvention, has been met.

The second new statutory factor of section 337(d)(2), i.e., a pattern of violation of section 337, is consonant with the first prong of the test established by the Commission in Spray Pumps, i.e., a widespread pattern of unauthorized use. In Spray Pumps, the Commission found that a "widespread pattern" of unauthorized use may be demonstrated by any of the following factors:

> (1) a Commission determination of unauthorized importation of the infringing article into the United States by numerous foreign manufacturers; or
>
> (2) the pendency of foreign infringement suits based on foreign patents corresponding to the U.S. patent; [or]
>
> (3) other evidence which demonstrates a history of unauthorized foreign use of the patented invention.

We find this three-factor analysis equally relevant to determining whether the second statutory factor above, a pattern of violation of section 337 and difficulty in identifying the source of infringing

products, has been met.

In his RD, the ALJ recommended issuance of a general exclusion order directed to magnets and magnet alloys within the scope of claims at issue.[14] We agree with the ALJ, and have determined to issue a general exclusion order both because it is necessary to prevent circumvention and because there is a pattern of violation of section 337 and it is difficult to identify the source of infringing products.[15]

In his RD, the ALJ recognized that a general exclusion order was necessary to prevent circumvention, relying on record evidence demonstrating that numerous entities either manufacture and import, or are capable of manufacturing or importing, NdFeB magnets that are covered by the patent claims in issue.[16] Evidence also shows that there is an established demand for the patented NdFeB magnets, and that large and small, established and unestablished, marketing organizations and distribution networks exist in the United States for use by foreign manufacturers.[17]

The record evidence supports the ALJ's conclusion that even if the named respondents stop manufacturing and importing infringing magnets, non-respondents are likely either to begin production of infringing magnets, or to purchase those infringing magnets and import them in the absence of a general exclusion order.[18] As recognized by the ALJ, there is sufficient evidence to show that it is difficult to trace the origin of imported NdFeB magnets because they have no identifying marks and the manufacturer cannot be identified through visual inspection of the

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[14] RD at 22.

[15] See FF 83, 87, 100-113, 207, 214. Although the statute clearly authorizes the Commission to issue a general exclusion order when either one of the statutory provisions is satisfied, both provisions are satisfied in this investigation.

[16] RD at 21 (citing FF 83, 87, 100-113, 207, 214).

[17] Complainant's Brief at 18.

[18] RD at 22; see also FF 199-201, 214-222, 236.

magnets.[19] Moreover, no Chinese manufacturer is licensed under the '439 patent and there are a large number of Chinese manufacturers with substantial production capacity, and even if they are not currently producing magnets within the scope of claims in issue, they could easily begin producing such magnets.[20] Finally, as the ALJ pointed out, * * * .[21] For these reasons, we find that a general exclusion order is necessary to prevent circumvention that would occur if we were to issue a limited exclusion order.

The evidence also supports the ALJ's conclusion with respect to the second prong of the new statutory provision concerning general exclusion orders, a pattern of violation of section 337 and difficulty in identifying the source of infringing products. The evidence on which the ALJ relied shows that each of the original eight respondents manufacture, import, or sell magnets within the scope of the claims in issue; that two other magnet distributors -- H.T.I.E., Inc. and American Sunyouth -- purported to sell the Chinese-made imported NdFeB magnets in issue;[22] and that products sold by Wal-Mart and Wearnes Technology contain the infringing magnets.[23]

As noted above, the evidence on which the ALJ relied shows that it also is difficult to identify the source of infringing magnets because the magnets have no identifying marks and the manufacturer cannot be identified through visual inspection of the magnets.[24] The source of infringing magnets is

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[19] See FF 206, 217, 233.

[20] See FF 199-201, 214-222, 229, 236. Evidence suggests that it is relatively easy and inexpensive to convert a magnet-producing facility to one capable of producing magnets that infringe the '439 patent. Complainant's Brief at 18-19.

[21] See FF 234.

[22] See FF 104, 105, 108, 231.

[23] ID at 21-22 & n.19 (relying on FF 104, 105, 108, 231). Moreover, random tests conducted by complainant Crucible on magnets from China show that such magnets routinely infringe the '439 patent claims at issue. See Complainant's Brief at 27.

[24] See FF 206, 217, 233.

also difficult to ascertain because there are numerous Chinese manufacturers producing, or capable of producing, magnets covered by the claims in issue and the * * * .[25]

For these reasons, we find that there is a pattern of violation of section 337, and it is difficult to identify the source of infringing NdFeB magnets. Based on this finding, we determine that a general exclusion order is appropriate in this case.[26] The general exclusion order references the pertinent portion of the consent order entered into between complainant and the San Huan respondents to make clear that the general exclusion order does not apply to those respondents under the terms of that consent order.

It is not possible to determine visually whether a NdFeB magnet infringes the '439 patent, but testing will disclose with virtual certainty whether a foreign magnet infringes.[27] The IA argued that testing incoming magnets could be burdensome on Customs and, at the very least, would require Customs to purchase or lease additional testing equipment.[28] The IA, therefore, recommended that a

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[25] See FF 100-118, 199-201, 214-222, 234, 236. The named respondents represent several distinct routes of distribution and the Chinese source of the magnets distributed by H.T.I.E. is not clear. See Complainant's Brief at 9. There are many other sources of NdFeB magnets that may be exporting/importing infringing magnets into the United States, although the sources cannot be identified with certainty. Complainant identifies 52 distributors, importers, and exporters that deal in rare earth magnets, many of which are thought to infringe the '439 patent and some of which complainant has specifically identified as infringing the '439 patent (i.e., Novel, Hennaco Excell, and H.T.I.E.). Id. at 12-16. It is difficult, if not impossible, to know which factory in China is shipping at any one time through which distributors. Id. at 16. There is evidence showing that, in some cases, the distributors print up their own data sheets for the product to further mask the sources of the magnets. Id. at 16-17.

[26] Consistent with the representations of complainant Crucible, the general exclusion order is directed only to entries for consumption.

[27] RD at 24 (relying on FF 83-99, 208).

[28] Absent a provision allowing a certification procedure, it is our understanding that Customs would test incoming magnet shipments, or perform some other comparable procedure, to determine whether incoming magnets infringe the patent claims at issue.

certification provision be included in our general exclusion order.[29] Complainant opposed inclusion of such a provision in the exclusion order, and the ALJ recommended against inclusion of such a provision.

The Federal Circuit has indicated that the decision whether to allow certification involves an objective analysis "represent[ing] a careful and common-sense balancing of the parties' conflicting interests as well as other relevant factors [that are] . . . based solidly . . . on the evidence of record."[30] The Commission has allowed certification as a means for Customs to deal with potentially infringing products in situations where testing for infringement was not possible or it was otherwise difficult for Customs to determine readily whether incoming products are infringing.[31] Cases in which the Commission allowed certification in the past have been dissimilar to the present investigation.[32]

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[29] When Commission remedial orders involve products for which it is difficult for Customs officials to determine infringement upon visual inspection, the Commission has sometimes made provision for certification by importers for the purpose of facilitating Customs' administration of exclusion orders. Pursuant to such provisions, importers of a potentially infringing product may certify that the product does not infringe the patent at issue.

[30] Hyundai Electronics Industries Co., Ltd. v U.S. Int'l Trade Comm'n, 899 F.2d 1204, 1209 (Fed. Cir. 1990).

[31] See Hyundai Electronics Industries Co., Ltd. v U.S. Int'l Trade Comm'n, 899 F.2d 1204, 1209, 1210 (Fed. Cir. 1990) (finding that the inclusion of a certification provision was "both reasonable and well within [the Commission's] authority").

[32] Such cases have involved downstream products that were difficult for Customs to disassemble to determine whether the infringing article was incorporated in the downstream product, the products of process patents where it was impossible for Customs to determine by examination of the products whether they were made by the infringing process, or instances where all parties agreed that certification should be allowed and it was not possible to determine readily whether incoming products were infringing. See Certain Integrated Circuit Telecommunication Chips and Products Containing Same, Inv. No. 337-TA-337, USITC Pub. 2670, Commission Opinion on the Issues under Review and on Remedy, the Public Interest, and Bonding at 33-34 (Aug. 1993) (noting that "[e]ase of administration by Customs is . . . one factor to be considered in determining whether downstream products . . . should be excluded"); EPROMs, USITC Pub. 2196 Order at 8 (allowing certification for incoming downstream products that may contain EPROMs), aff'd, Hyundai Electronics Industries Co., Ltd. v U.S. Int'l Trade Comm'n, 899 F.2d 1204, 1209, 1210 (Fed. Cir. 1990) (finding that allowing certification was "both reasonable and well within [the Commission's] authority"); Certain Acid-Washed Denim Garments and Accessories, Including Jeans, Jackets, Bags and Skirts, Inv. No.

In his RD, the ALJ indicated that a certification provision in the general exclusion order would be inappropriate in this case because magnet importers have been willing to misdescribe or mislabel goods to avoid problems with Customs[33] and infringing magnets can be identified by testing.[34] The ALJ found that testing was preferred to certification because the latter would be ineffective at halting the importation of infringing magnets.[35]

We agree with the ALJ. The willingness on the part of importers to misdescribe or mislabel goods to Customs suggests that they would be equally willing to falsify a certification to Customs. Thus, a general exclusion order which allowed certification would be ineffective at barring the entry of infringing NdFeB magnets and, thus, ineffective at affording complainant complete relief.[36] The

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337-TA-324 USITC Pub. 2576 Opinion at 24 (Nov. 1992) (allowing certification to "facilitate Customs' administration of the order by eliminating the often difficult task of determining how a product was made simply by examining its appearance"); Certain Amorphous Metal Alloys and Amorphous Metal Articles, Inv. No. 337-TA-143, Commission Action and Order, Views of the Commission at 4, 7-8 (June 17, 1987) (noting that because there was no way to distinguish products made from an infringing process from those made from a non-infringing process, certification was allowed as the "only feasible means by which Customs can enforce a general exclusion order"); Certain Curable Fluoroelastomer Compositions and Precursors Thereof, Inv. No. 337-TA-364, USITC Pub. 2890, Commission Opinion at 4-5 & n.9 (May 1995) (noting that Customs was "capable" of determining by chemical analysis whether a given shipment was covered by the claims in issue, but that it was "not possible to determine readily" whether incoming products were covered by the claims in issue, the parties agreed upon the allowance of certification, and certification clearly facilitated Customs administration of the remedial order).

[33] RD at 23-24 (relying on FF 209, 210).

[34] Id. at 24 (relying on FF 83-99, 208). The ALJ also found it inappropriate to grant complainant's request that any general exclusion order cover downstream products (ID at 25-29). Because complainant later dropped this request (see Brief of Complainant on Remedy, Public Interest, and Bonding at 1 n.2), the issue of extending any general exclusion order to downstream products is no longer before us. Complainant also is not seeking an exclusion of articles from entry into the United States for purposes other than entry for consumption. Complainant's Brief at 1 n.2, 4 n.6.

[35] RD at 22, 24-25 (relying on FF 83-99, 208).

[36] RD at 23-24 (relying on FF 209, 210). This past practice of mislabeling and misdescription demonstrates that a detailed certification procedure that included more documentation than a mere statement of non-infringement and involved documentation of test results on incoming products also would not provide complainant full relief or sufficiently protect complainant's rights.

ability readily to test incoming magnets for infringement distinguishes this case from past cases in which the Commission has included a certification provision in exclusion orders. Because there is no clear showing in the record what the volume of imported infringing magnets is likely to be,[37] it is uncertain to what extent a certification procedure would be less burdensome for Customs than performing tests on incoming magnets. Moreover, because our order covers only magnets and magnet alloys, and not downstream products in which the infringing magnets could be included, the testing burden on Customs will be considerably less onerous than if our order covered downstream products.

In light of the evidence that it is possible to test for infringement and the evidence of the potential for circumvention of a general exclusion order containing a certification provision, we have therefore decided against including a certification provision in our general exclusion order.

We also determine that requiring certification for magnets imported by complainant's own licensee, Sumitomo Special Metals Co., * * * , which complainant requested, is not appropriate.[38] Because complainant has entered into a licensing agreement with Sumitomo, that firm's magnets are outside the coverage of the general exclusion order. Complainant has offered no evidence that its licensee Sumitomo * * * have ever facilitated the importation of unlicensed magnets, or that they would have any reason to want to facilitate the importation of unlicensed magnets manufactured by

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[37] The issuance of this general exclusion order is likely to reduce the volume of infringing magnets sought to be imported into the United States, thereby reducing the burden on Customs to test incoming NdFeB magnets. Moreover, our issuance of a cease and desist order against Hennaco Excell, Inc., discussed below, will also likely reduce the level of imports directed to this domestic firm, which will also reduce the flow of infringing magnets and, thus, reduce the burden on Customs to test incoming magnets.

[38] Out of concern that foreign manufacturers, exporters, and importers may attempt to use its licensees (in particular, Sumitomo Special Metals Co, Ltd.) * * * as conduits to circumvent a general exclusion order, complainant requested that the general exclusion order contain a requirement that Sumitomo * * * self-certify, as a condition of entry, that their incoming magnets were directly manufactured by a licensee * * * of complainant. Complainant's Brief at 30. The IA opposed such certification as unnecessary and burdensome on Commerce.

their competitors. In the absence of any such evidence and in view of the fact that the license between complainant and Sumitomo is a private contract that can be policed by complainant in court, we decline to adopt the * * * certification procedure proposed by complainant.[39]

B. Cease and Desist Order

Complainant and the IA agree that a cease and desist order should be issued to Hennaco Excell on the basis that there is evidence that Hennaco Excell has inventories in the United States.[40] In addition to recommending issuance of a general exclusion order, the ALJ recommended issuance of a cease and desist order to domestic respondent Hennaco Excell, Inc.

We have determined to adopt the recommendation of the ALJ and issue a cease and desist order to Hennaco Excell, Inc. We have directed Hennaco Excell to cease and desist from any unlicensed importing, selling for importation, marketing, distributing, offering for sale, selling, or otherwise transferring (except for exportation) in the United States imported NdFeB magnets or magnet alloys which have been determined to be infringing.

We concur in the ALJ's reliance on evidence of record indicating that Hennaco Excell maintains some inventory in the United States (FF 239). Moreover, the ALJ's reliance on Hennaco Excell's nonparticipation in the investigation, which prevented the parties from discovering Hennaco Excell's actual inventory levels,[41] is consistent with the statute and the Commission's past practice. See Certain Crystalline Cefadroxil Monohydrate, Inv. No. 337-TA-293, Commission Opinion on Remedy, the Public Interest and Bonding at 41-42 (Mar. 15, 1990) (the existence of "commercially

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[39] Another problem with the * * * certification procedure is that * * * is confidential business information, thus necessitating a separate exclusion order for * * * , the public version of which would have to * * * .

[40] Complainant's Brief at 30-31; IA's Brief at 17-18.

[41] Because Hennaco did not participate in the investigation, the parties have been unable to gather information concerning Hennaco Excell's actual inventory levels.

significant" domestic inventories can be inferred when a party has failed to provide evidence to the contrary concerning its inventories). For these reasons, we find that there is sufficient evidence to infer that respondent Hennaco Excell maintains a "commercially significant" amount of infringing imported NdFeB magnets the sale of which would undercut the effect of the general exclusion order. In our view, this evidence warrants issuance of a cease and desist order against Hennaco Excell.

IV. THE PUBLIC INTEREST

Section 337 instructs the Commission to consider the effect of any remedy "upon the public health and welfare, competitive conditions in the United States economy, the production of like or directly competitive articles in the United States, and United States consumers."[42] The legislative history of this provision, added to section 337 by the Trade Act of 1974, indicates that the Commission should decline to issue relief when the adverse effect on the public interest would be greater than the interest in protecting the patent holder.[43]

Complainant and the IA argued that the issuance of relief would have no adverse impact on the public interest in this case. We agree. NdFeB magnets are not the type of product that have in the past raised public interest concerns (such as, for example, drugs or medical devices), and the public interest favors the protection of U.S. intellectual property rights.[44]

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[42] 19 U.S.C. § 1337(d) and (f).

[43] See S. Rep. 1298, 93rd Cong., 2d Sess. 197 (1974).

[44] We note that the Commission has declined to grant relief on public interest grounds in only three cases. In Certain Automatic Crankpin Grinders, Inv. No. 337-TA-60, U.S.P.Q. 71 (ITC 1979), the Commission denied relief because of an overriding national policy interest in maintaining and increasing the supply of fuel efficient automobiles, coupled with the domestic industry's inability to supply domestic demand. In Certain Inclined Field Acceleration Tubes, Inv. No. 337-TA-67, USITC Pub. 1119 (1980), the Commission denied relief because there was an overriding public interest in continuing basic atomic research using the imported acceleration tubes, which were of a higher quality than the domestic product. Finally, in Certain Fluidized Supporting Apparatus, Inv. No. 337-TA-182/188, USITC Pub. No. 1667 (1984), the Commission denied relief because the domestic producer could not supply demand for hospital beds for burn patients within a commercially reasonable time, and no therapeutically comparable substitute for care of burn patients was available.

The evidence also indicates that complainant Crucible can supply enough NdFeB magnets to serve the U.S. market. In any event, an adequate supply of NdFeB magnets is not necessary to ensure public health, safety, or welfare in the United States. Finally, the patented magnets compete with other magnets that perform a similar function. Consequently, we conclude that the public interest does not preclude issuance of a general exclusion order.

V. BONDING

Section 337(j)(3) provides for the entry of infringing articles upon the payment of a bond during the 60-day Presidential review period.[45] The bond is to be set at a level sufficient to "protect complainant from any injury."[46]

The ALJ found no reliable price evidence on the record from which to determine what level of bond was necessary to protect complainant from injury and, thus, recommended a bond of 100 percent of entered value as appropriate.[47] Complainant and the IA both urge that the bond during the 60-day Presidential review period be set at 100 percent of the entered value of the products at issue. They argue that a 100 percent bond is appropriate because there is insufficient price information on the record to make a price comparison between the imported goods and those of the domestic industry.

In cases such as this one, in which it is impossible for the Commission to calculate what level of bond based on price differentials will protect a complainant from any injury, it is appropriate to issue a bond of 100 percent of entered value. We have therefore determined to set the bond during Presidential review at 100 percent of the entered value of the goods in question.

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[45] 19 U.S.C. § 1337(e); 19 C.F.R. § 210.50(a)(3).

[46] 19 U.S.C. § 1337(e); 19 C.F.R. § 210.50(a)(3).

[47] ID at 30 (relying on complainant's testimony at the hearing, Tr. at 292, and the IA's Posthearing Submission at 36).

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	
CERTAIN NEODYMIUM-IRON-BORON MAGNETS, MAGNET ALLOYS, AND ARTICLES CONTAINING THE SAME	Investigation No. 337-TA-372

Final Initial And Recommended Determinations

Paul J. Luckern, Administrative Law Judge

Pursuant to the Notice of Investigation (60 Fed. Reg. 12971 (March 9, 1995)), this is the administrative law judge's final initial determination under Commission rule 210.42. The administrative law judge determines that there is a violation of subsection (a)(1)(B)(I) of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), in the importation into the United States, the sale for importation, or the sale within the United States after importation, of certain neodymium-iron-boron magnets and magnet alloys. In addition, this is the administrative law judge's recommended determination under Commission rule 210.42(a)(1)(ii) in which he recommends a general exclusion order not limited by any certification requirement, but excluding any downstream products. He also recommends a cease and desist order against respondent Hennaco Excell, Inc. He further recommends a bond of 100 percent of entered value.

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ABBREVIATIONS

CPost	-	Complainant's Posthearing Brief
CPostR	-	Complainant's Posthearing Reply Brief
CX	-	Complainant's Documentary Exhibit
CPF	-	Complainant's Proposed Finding of Fact
CPX	-	Complainant's Physical Exhibit
FF	-	Findings of Fact
SPF	-	Staff's Proposed Finding of Fact
SPost	-	Staff's Posthearing Brief
SPostR	-	Staff Posthearing Reply Brief
SX	-	Staff's Documentary Exhibit
Tr.	-	Transcript from Closing Argument
11/17/95 Tr.	-	Transcript from 11/17/95 Telephone Conference

I. Procedural History

On February 1, 1995, complainant Crucible Materials Corporation (Crucible), pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337 (section 337), filed a complaint with the Commission.[1] This complaint was supplemented on February 23, 1995. This investigation was instituted by the Commission by notice dated March 3, 1995 and served on March 6, 1995. The notice of investigation was published in the Federal Register on March 9, 1955 at 60 Fed. Reg. 129771-72.

The notice of investigation named as respondents San Huan New Material Research and Development, Inc. (San Huan), Ningbo Konit Industries, Inc. (Ningbo), San Huan Tridus International Inc. (Tridus), Novel Hightech, Limited (Novel), Hennaco Industrial Enterprises, Inc. (Hennaco Industrial), Hennaco Excell, Inc. (Hennaco Excell), Sino American Products, Ltd. (Sino American), and Injohnson Precision Industrial Co., Ltd. (Injohnson).[2] As set out in that notice, the purpose of the investigation is to determine whether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain neodymium-iron-boron magnets, magnet alloys and articles containing the same, by reason of infringement of claims 1, 2, or 3 of U.S. Letters Patent 4,588,439 (the '439 patent) and whether an industry exists as required by subsection (a)(2) of section 337.

While the notice of investigation named eight respondents, Order No. 29, which issued on September 14, 1995, terminated the investigation as to respondents San Huan, Ningbo and Tridus, in view of a proposed Consent Order (as supplemented). On October 10, 1995 the Commission determined not to review Order No. 29 and on October 11, 1995 entered the proposed Consent

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[1] In effect for this investigation are the Commission's Final Rules of Practice and Procedure, 59 Fed. Reg. 38920, 39045 (August 1, 1994) and the Commission's interim rules, 59 Fed. Reg. 67,622 (December 30, 1994). Those Commission final rules, as ammended by the Dec. 30, 1994 Commission interim rules, will be referred to as Commission rules.

Order. Thus, only Novel, Hennaco Industrial, Hennaco Excell, Sino American and Injohnson[3] remain as respondents in this investigation.

Unlike investigations under the former Commission rules, the Commission rules now provide that the administrative law judge should accept evidence and argument on the issues of remedy and bonding. Under the rules in effect he should also make findings of fact and recommendations on those issues.[4]

Pursuant to Order No. 30, on September 21, 1995, a prehearing statement was filed by complainant. On September 27, 1995, pursuant to Order No. 32, the staff filed its prehearing

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[3] Order No. 19, which issued on August 4, 1995, was an initial determination that found respondents Sino American and Injohnson in default pursuant to Commission rule 210.16 and hence to have waived their rights to appear, to be served with documents and to contest the allegations at issue in this investigation. By notice dated September 14, 1995 the Commission determined not to review that initial determination.

[4] Commission rule 210.42(a)(1)(ii) provides, in pertinent 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 containing findings of fact and recommendations concerning--
>
> (A) The appropriate remedy in the event that the Commission finds a violation of section 337, and
>
> (B) The amount of the bond to be posted by the respondents during Presidential review of Commission action under section 337(j) of the Tariff Act.

Commission rule 210.36(a) provides that:

> An opportunity for a hearing shall be provided in each investigation under this part, in accordance with the Administrative Procedure Act. At the hearing, the presiding administrative law judge will take evidence and hear argument for the purpose of determining whether there is violation of section 337 of the Tariff Act of 1930, and for the purpose of making findings and recommendations, as described in § 210.42(a)(1)(ii), concerning the appropriate remedy and the amount of the bond to be posted by respondents during Presidential review of the Commission's action, under section 337(j) of the Tariff Act.

statement. No other party filed any prehearing statements or submitted any proposed evidentary exhibits. Order No. 33 admitted into evidence certain exhibits of the complainant and the staff. Also, based on (1) the statements of the complainant and the staff as to the lack of any need for an evidentiary hearing, (2) the prehearing statements, and (3) the evidence admitted into the record, Order No. 33 found an evidentiary hearing unnecessary. Order No. 33 also set dates for filing of post hearing briefs and proposed findings of fact and conclusions of law as well as for closing arguments. Complainant and the staff filed post hearing submissions and participated in closing arguments. No other party filed any post hearing submissions or participated in closing arguments.

The matter is ready for a final initial determination.

II. Parties

Complainant Crucible is a Delaware corporation having its principal place of business at State Fair Blvd., P.O. Box 977, Syracuse, New York 13201-0977 (FF 1). Crucible's business includes the manufacture of high alloy and corrosion resistant metals, such as automotive valve steel, tool steel, alloy and stainless steel pipes, permanent magnets, and compacted powder metal parts. Crucible has three subsidiaries: Crusteel Ltd., Sheffield, United Kingdom (100 percent owned), Crusteel Magnetics, Ltd., Sheffield, United Kingdom (100 percent owned), and Crucible Composites, Inc., Wisconsin (80 percent owned) (FF 2 to 4).

Complainant's Crucible Magnetics Division (Crucible Magnetics) is responsible for Crucible's commercial activities relating to permanent magnets, including the NdFeB magnets at issue (FF 5). The headquarters and manufacturing facility for Crucible Magnetics is located at 101 Magnet Drive, Elizabethtown, Kentucky 42701 (FF 6). Crucible maintains a research and development facility, Crucible Research Center, at Pittsburgh, Pennsylvania (FF 11). Crucible Magnets also has a facility at 103 Commerce Parkway, Hodgenville, Kentucky 42748, known as the Engineered Products Department (FF 7). At the present time, complainant, through its Crucible Magnetics Division,

makes and sells several kinds of permanent magnets, including neodymium-iron-boron (NdFeB) magnets (FF 8). Crucible Magnetics' NdFeB magnets are sold under the name Crumax (FF 9). In addition, Crucible's Crusteel Magnetics, Ltd. subsidiary, located at 7 Rutland Way, Sheffield 5380G, South Yorkshire, England, acts as a distributor of magnetic products (FF 12).

Respondent Sino American Products, Ltd. (Sino American) is a corporation of New York and has a business address at 358 Fifth Avenue, New York, New York 10001 (FF 28). Sino American offers NdFeB magnets for sale in the United States which it obtains from Chinese sources (FF 29).

Respondent Injohnson Precision Industrial Co., Ltd. (Injohnson) is believed to be a legal entity of Taiwan and has a business address at 3rd Floor, No. 166, Fu-Ho Rd., Yung-Ho, Taipei, Taiwan (FF 30). Injohnson also has an office in Shanghai, China (FF 31). Injohnson sells NdFeB magnets to customers in the United States which it obtains from respondent Ningbo (FF 32).

Respondent Novel is a legal entity of Hong Kong with a business address of Room 404, 3rd Floor, 18 Cheung Lee St., Chai Wan, Hong Kong (FF 13). A Dun and Bradstreet report states that Novel Hightech manufactures NdFeB permanent magnets at its affiliated factory in Shenzen, China (FF 14). A flier identifies respondent Hennaco Industrial, as Novel's U.S.A. sole agent for the sale of "Henneo" NdFeB magnets (FF 15, 17, 18).

Respondent Hennaco Industrial has had business addresses at 39 Alba Place, Parsippany, New Jersey 07054 and 5 Highview Ct., Montville, New Jersey 07045. In a flyer it is indicated Hennaco Industrial is affiliated with respondent Hennaco Excell, Inc. (FF 17, 18).

Respondent Hennaco Excell is listed in Dun and Bradstreet report as a corporation of New Jersey (FF 21). Hennaco Excell is also incorporated in the State of New York, and has an address of 39-01 Main St., Suite 210, Flushing, New York 11354 (FF 21). Hennaco Excell offers and sells Chinese-made NdFeB magnets in the United States under the name "Henneo" (FF 23). Hennaco Excell obtains its Chinese-made NdFeB magnets from respondent Novel (FF 24).

III. Jurisdiction

The Commission has in rem and subject matter jurisdiction under section 337, because the alleged unfair methods of competition and unfair acts involve the importation into the United States of certain neodymium-iron-boron magnets, magnet alloys, and articles containing the same, that are alleged to infringe claims 1, 2, and 3 of the '439 patent.

It is not necessary for the Commission to find in personam jurisdiction to issue any exclusion order, as "an exclusion order operates against goods, not parties." Sealed Air Corp. v. U.S. Int'l Trade Comm'n, 645 F.2d 976 (CCPA 1981); see also SSIH Equipment S.A. v. U.S. Int'l Trade Comm'n, 718 F.2d 365, 370 (Fed. Cir. 1983) ("a §337 investigation, which results in an order operative against goods . . . is equally effective against those who participate as those who do not"). However, the Commission will require a finding of in personam jurisdiction to enforce any cease and desist order under section 337(f)(2). Certain Large Video Matrix Display Systems, Inv. No. 337-TA-75, 213 USPQ 475, Commission Opinion (June 19, 1981) (Video Matrix).[5] In this investigation, Crucible is seeking a cease and desist order only against Hennaco Excell.[6]

At closing arguments, the administrative law judge inquired into the status of Hennaco Excell. Complainant and the staff argued that the Commission had personal jurisdiction over Hennaco Excell (CPost at 7, 12; Tr. at 30), and counsel for complainant argued that "all the Commission has to do is to send the complaint and notice of investigation to the proper address" for personal jurisdiction (Tr. at 7).

Hennaco Excell is a Corporation of the State of New York, and the address given for service

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[5] A finding of personal jurisdiction is unnecessary for the issuance of a cease and desist order "directed solely at importation or for the enforcement of any cease and desist order by means of exclusion of articles." Video Matrix Comm'n Op. at fn 10.

[6] Hennaco Excell and Hennaco Industrial are alter egos of the same company (FF 22). Thus, any cease and desist order issued against Hennaco Excell would also reach Hennaco Industrial.

of process in the Certificate of Incorporation is 39-01 Main Street, Suite 210, Flushing, NY 11354 (FF 22).[7] All documents in this investigation, including the notice of investigation and complaint, were sent by mail to Hennaco Excell at this address, pursuant to Commission rules 210.11, 210.7, and 201.16.[8] In addition, Crucible attempted personal service of the complaint and notice of investigation on Hennaco Excell (FF 22).[9] Signficantly, Hennaco Excell has attempted to evade service of most documents in this investigation, including the complaint and Notice of Investigation (FF 21, 22). Based on the foregoing, the administrative law judge finds that the Commission has in personam jurisdiction over Hennaco Excell.

IV. Importation

Section 337(a)(1)(B) prohibits, inter alia, "importation into the United States, the sale for importation, or the sale within the United States after importation" of articles that infringe a U. S. Patent. Id. The evidence in the record is sufficient to establish that remaining respondents Novel, Hennaco Industrial, Hennaco Excell, Sino American, and Injohnson have sold for importation, imported, or sold after importation accused magnets (FF 14 to 16, 18, 19, 23-25, 27, 29, 32, 33, 58, 59, 61, 62).

V. The Products at Issue

The products at issue comprise a permanent magnet alloy consisting essentially of certain weight percentages of at least one rare earth element and of iron, a certain amount of oxygen and the balance boron and articles containing same (FF 64).

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[7] Evidence of record indicates that Hennaco Excell continues to do business at that address (FF 22).

[8] Commission rule 201.16 provides that service may be effected by "mailing . . . a copy of the document to the [party] to be served. . . ." This rule further provides that "[w]hen service is by mail, it is complete upon mailing of the document." Id.

[9] Commission rule 210.11(b) allows the complainant, with leave of the administrative law judge, to attempt to effect personal service of the complaint and notice of investigation upon a respondent.

VI. Violation of Section 337

The '439 patent at issue, entitled "Oxygen Containing Permanent Magnet Alloy," issued on May 13, 1986. It is based on patent application Serial No. 736,017 which was filed on May 20, 1985. The named inventors are Kalathur S.V.L. Narasimhan, Carol J. Willman, and Edward J. Dulis who assigned the '439 patent to Crucible (FF 63). The '439 patent contain six claims. Three claims are in issue, viz. independent claim 1, claim 2 which is dependent on claim 1 and claim 3 which is dependent on claim 2 (FF 63, 64). Independent claim 1 reads:

> 1. A permanent magnet alloy consisting essentially of, in weight percent, 30 to 36 of at least one rare earth element, 60 to 66 iron, 6,000 to 35,000 ppm oxygen and balance boron. [FF 64]

The '439 patent discloses that the rare earth element may include at least one rare earth element neodymium and dysprosium (FF 71). Claims 2 and 3 in issue, each of which is dependent on claim 1, recite as the rare earth element neodymium and dysprosium respectively (FF 64).

The staff has not challenged the validity or enforceability of the '439 patent. The staff further supports Crucible's position that there is a violation of section 337 by each of the five respondents, viz. Sino American, Injohnson, Novel, Hennaco Industrial and Hennaco Excell (Tr. at 72). The staff also supports complainant's contention that there is a domestic industry under the '439 patent (Tr. at 74).

A. Infringement

Complainant has the burden of proving infringement of the claims in issue by a preponderance of the evidence. Under Sea Industries, Inc. v. Dacor Corp., 833 F.2d 1551, 1557, 4 USPQ2d 1772, 1776 (Fed. Cir. 1987). Infringement is considered in a two step analysis. First, the scope of the claim is determined. Thereafter, the claim is applied to the accused compositions to determine whether literal infringement exists or whether the claim is infringed under the doctrine of equivalents. SRI Int'l. v. Matsushita Electric Corp. of America, 775 F.2d 1107, 1118-21, 227 USPQ2d 577, 583-

86 (Fed. Cir. 1985) (en banc).

1. Claim Construction

Claim construction is a matter of law, and "[t]o ascertain the meaning of claims, we consider three sources: the claims, the specification, and the prosecution history."[10] Markman v. Westview Instruments Inc., 52 F.3rd 967, 979, 34 USPQ2d 1321, 1329 (Fed. Cir. 1995) (en banc) petition for cert. filed, 64 USLW 3068 (July 3, 1995) (No. 95-26). The words of an asserted claim are given their ordinary and accustomed meaning unless it appears from the specification and prosecution history that the inventor intended differently. Smithkline Diagonistics, Inc. v. Helena Laboratories Corp., 859 F.2d 878, 882, 8 USPQ2d 1468, 1471 (Fed. Cir. 1988).

Neither Crucible nor the staff disputes the finding that independent claim 1 recites "6,000 to 35,000 ppm oxygen" and that the claim should be so construed (Tr. at 245, 246). Claim 1 also has the language "consisting essentially of" (FF 64). That language allows a claim to read on compositions which contain additional elements so long as such additional elements do not materially affect the basic and novel characteristics of the claimed invention. Water Technologies Corp. v. Calco, Ltd., 850 F.2d 660, 666, 7 USPQ2d 1097 (Fed. Cir.), cert. denied, 488 U.S. 968 (1988); Atlas Powder Co. v. E. I. DuPont De Nemours & Co., 750 F.2d 1569, 1573-74, 221 USPQ 426 (Fed. Cir. 1984); In re Janakirama-Rao, 317 F.2d 951, 954, (CCPA 1963).

2. Literal Infringement

Crucible has argued that its tests on a number of accused samples demonstrate that the five respondents literally infringe each of the claims in issue[11] (CPost at 18, 19).

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[10] Crucible has represented that there was never any amendment to the original claims during the prosecution of the '439 patent and no claim scope was surrendered, i.e. the claims of the '439 patent issued as they were filed (Tr. at 97). The file wrapper of the '439 patent confirms Crucible's representation (FF 67, 68).

[11] Complainant has put in issue, to support its allegation that there is a violation of section 337, a number of samples originating from non-party Tridus International, Inc. (Tridus) (FF 100, 102, 103, 106 and 107). The consent order entered by the Commission, which terminated the

The staff supports Crucible's contentions that there has been literal infringement of the '439 patent by each of the five respondents in that Crucible has shown magnets attributed to each of those entities to have between 30 to 36 weight percent neodymium (a rare earth), 60 to 65 weight percent iron, between 6,000 and 35,000 parts per million of oxygen and boron (Tr. at 72, 73). Crucible has argued that accused products showing an oxygen reading from 5,850 ppm to 6,000 ppm literaly infringe the claims in issue, because the reading of 5,850 ppm is within "the measurement error of the machine [for determining oxygen content]" (Tr. at 50). The staff argued that Crucible has not presented evidence that a person of ordinary skill in the art in 1985, when the application for the '439 patent was filed (FF 63), would have construed the oxygen level set forth in the '439 patent to mean anything but what is actually recited, viz. 6,000 to 35,000 ppm and that Crucible could have written the claims to take into effect measurement error by stating "about" or "approximately" (Tr. at 87). Accordingly, the staff's position is that certain of the accused samples do not literally infringe the '439 patent.

While the staff argued that a person of ordinary skill in the art in 1985 would construe the limitation "6,000" ppm oxygen to actually mean 6,000 ppm oxygen, it did argue that a reading of

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investigation as to Tridus, includes a statement that "[t]he signing of this Consent Order Stipulation does not constitute an admission by San Huan, Ningbo or Tridus that an unfair act has been committed" (C.O. ¶ 8) and further provides that "[n]othing in the Consent Order . . . shall be construed as precluding further remedial action by the Commission in this investigation, including the grant of a general exclusion order covering all magnets or products containing magnets which are not subject to the Consent Order" (C.O. ¶ 9.) (Emphasis added).

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There is nothing in the record, however, to establish that Hennaco was in any way involved with the specific Tridus samples identified in FF 100, 102, 103, 106 and 107. Accordingly, the administrative law judge, in considering whether there is a violation of section 377 by any of the five respondents, is restricting his consideration to only those samples identified with the respective respondent in FF 100 to 108 (collectively referred to as "respondents' samples").

5850 from a testing apparatus should not be automatically rejected as non relevant on the issue of literal infringement, and that "[o]ccasionally" there are values below 5800, 5900, accompanied by measurements above 6,000 and that "one can view those impaired [sic] measurements as being possibly relevant to the literal infringement issue and perhaps even indicative of little [sic] infringement" (Tr. at 88).[12]

In addition to the language of independent claim 1 in issue (FF 64) the '439 patent has the language:

> Broadly, in the practice of the invention, magnet alloy consisting of, in weight percent, 30 to 36 of at least one rare earth element, 60 to 66 iron, and balance iron [sic] has added thereto oxygen within the range of 6,000 to 35,000 ppm, preferably 9,000 to 30,000 ppm.

(FF 71). A reading of 6,000 ppm oxygen corresponds to .6 weight percent oxygen while 35,000 ppm corresponds to 3.5 weight percent oxygen (FF 65). There is no indication in the '439 patent as to what a person of ordinary skill in the art in 1985, when the application for the '439 patent was filed (FF 63), would use as a testing apparatus to determine the amount of oxygen present in a rare earth-iron-boron permanent magnet.

In the prosecution of the '439 patent the Examiner initially rejected original claims 1 to 6 under 35 U.S.C. §102(a) as being anticipated by or, in the alternative, under 35 U.S.C. §103 as

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[12] Illustrating, the staff made reference to CX-94, which is a Crucible testing report for CS-01-95 and involves magnets bought from H.T.I.E. A first magnet (#4-22783) showed oxygen at 7500 ppm and 7500 ppm, a second magnet (#4,22784) showed oxygen at 5900 ppm, 5200 ppm and 5800 ppm, a third magnet (#4-22785) showed oxygen at 6000 ppm and 5800 ppm and a fourth magnet (#4-22786) showed oxygen at 6700 ppm and 6600 ppm (FF 99). Relying on CX-94 the staff believed that there were sufficient values which are "indisputably" above 6000 ppm that literal infringement had been made out against H.T.I.E. (Tr. at 88, 164). The staff's position is that if there are four tests done on a single batch of magnets, then the staff prefers to look at all four and make its conclusions from the results as a whole and if there are enough reliable readings of magnets of a particular size above 6,000 ppm from a particular company, the staff would support a violation as to that company's sales of those size magnets irrespective of whether there are 100 percent magnets within the 6000 ppm range. (Tr. at 165, 168). Thus, the staff argued that although the second magnet (#4-22784) from the batch of H.T.I.E. magnets tests showed oxygen values of 5900 ppm, 5200 ppm and 5800 ppm, those readings particularly "in light of the readings from the other magnets" involved in the particular testing, "would lead the staff to believe that particular magnet [#4--22784] is likely to be within the claim limits." (Tr. at 173).

being obvious over certain art. The Examiner, however, withdrew that rejection when it was argued that "[n]one of the references disclose or suggest oxygen in permanent magnet alloys of the type within applicants' [sic] limit of 6,000 to 35,000 ppm" and that the 5,000 ppm oxygen taught by one of the references to be present in a rare earth-iron-boron permanent magnet was "less than the lower limit for oxygen set forth in applicants' claim 1" and did not give improved resistance to magnet disintegration as demonstrated by the '439 patent (FF 67). Following that argument the Examiner allowed the six claims as originally filed (FF 68). There is nothing in the prosecution history of the '439 patent that shows what testing apparatus the applicants for the '439 patent used to determine the amount of oxygen present in the claimed rare earth-iron-boron permanent magnet.

For determining the oxygen content of a rare earth-iron-boron permanent magnet alloy Crucible uses the LECO TC-436 instrument which since January 1993 has been the only instrument used by Crucible for so determining the oxygen content (FF 90, 91, 93). Prior to January 1993 Crucible used a LECO TC36 Nitrogen/Oxygen determinator for conducting an oxygen analysis of a rare earth-iron-boron permanent magnet (FF 91). There is unrefuted testimony by persons knowledgeable in the art (FF 80, 81) that the LECO-436 is more accurate than the LECO TC36 (FF 91, 94); that the testing procedures used by Crucible in the chemical analysis of rare earth-iron-boron permanent magnet alloys is thorough and accurate (FF 96, 96A) and that the LECO-436 used by Crucible to measure the amount of oxygen present in respondents' magnet alloys has a documented measurement error of $\pm$ 150 ppm (FF 92). Thus, taking into account the measurement error, when the LECO-436 gives a reading of at least 5900 ppm for oxygen in a sample (see FF 101, 105) the oxygen reading for that sample would encompass an actual oxygen content of up to 6050 ppm. An oxygen content of 6050 ppm for a rare element-earth-iron-boron permanent magnet is within the literal reading of the three claims in issue.

In E.I. DuPont De Nemours v. Phillips Pet. Co. 656 F. Supp. 1343, 2 USPQ2d 1545

(D.Del 1987), aff'd in part, rev'd in part on other grounds, vacated in part, and remanded, 7 USPQ2d 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 higher olefinic hydrocarbon . . . ." The district court, rejecting the infringer's methods used to avoid infringement, and referring to a showing of infringement by the patentee, found 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-1950's is taken into account, even the comonomer content data . . . [which the infringer] has presented at trial, whether by NMR or by correcting DuPont's infrared data, also prove literal 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) (Cosdon 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." The district court in 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 Cosen Oil." DuPont 656 F. Supp. at 1384, 2 USPQ2d at 1576.

In Therma-Tru Corp. v. Peachtree Doors Inc. Peachtree Doors Inc. 24 USPQ2d 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 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 that testimony provided the substantial evidence upon which a jury could find literal infringement of the 0.005 inch limitation. Id.

Infringement is determined based on the claims as construed by the methods generally used by those skilled in the art at the time the patent application was filed Cosden Oil F. Supp. at 530, 214 USPQ at 250.[13] The claims in issue recite an oxygen content of "6,000 to 35,000 ppm." The record shows that a determination of the oxygen content is obtained through the use of an instrument, viz. the LECO TC-436. That instrument has a measurement error of ± 150 ppm which instrument is more accurate than the instrument used when the application for the '439 patent was filed on May 20, 1985. Hence, in view of the margin of error in the measurement techniques for oxygen, with respect to the 6,000 ppm minimum of the claims in issue, the administrative law judge finds that those claims are literally infringed when there is a measurement reading of an accused sample for oxygen of at least 5,900ppm. See DuPont, Cosden and Therma supra. Accordingly, he finds that certain of the respondents' magent samples, identified in FF 100, 101,104, and 105, as qualified in "Accused Magnets Involved In Alleged Violation, Section VI A4" infra, literally infringe the claims in issue, (see FF 87, 100, 101, 104, 105) and thus that respondents Injohnson, Sino American and Hennaco literally infringe each of the claims in issue.

3. Doctrine of Equivalents

In issue is whether certain accused magnets infringe the claims in issue under the doctrine of equivalents. Crucible has argued that the administrative law judge should find that magnets having an oxygen content of 5,600 ppm (5,450 ppm in view of the measurement error of ± 150) or greater infringe the claims in issue of the '439 patent under the doctrine of equivalents (Tr. at 153). See FF 106, 108, Crucible argued that, under Hilton-Davis Chem. Co. v. Warner-Jenkinson Co., 35 USPQ2d 1641, 1648 (Fed. Cir. 1995) (en banc) (Hilton) in the absence of literal infringement, the

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[13] However, "using the existing state of the art to determine the scope of the claims ... [does not limit] proof of infringement to methods in existence on the date of invention." Cosden Oil 543 F. Supp at 530, 214 USPQ at 250. Hence, Crucible's use of the LECO TC-436 for determining the oxygen content of a rare earth-iron-boron permanent magnet alloy is found relevant.

doctrine of equivalents can be invoked "to protect the substance of a patentee's right to exclude . . . " and that the only relevant question is at what oxygen level should one find that the change from 6,000 ppm is no longer an insubstantial change (CPost at 31, CPostR at 8). Complainant further argued that its lack of corrosion resistance tests on the accused magnets, which complainant admits (CPostR at 2, 3), should be irrelevant because the claimed invention is to a chemical composition, and not the use of the chemical composition in a particular environment. Hence, complainant argued that it is sufficient to show that all of the accused magnets function as "permanent magnets" (CPost at 33, 34). Complainant also argued that while the typical measure of the insubstantiality of differences is through a three part inquiry wherein the claimed compositions and accused samples are compared to determine whether they (1) perform substantially the same function, (2) in substantially the same way, (3) so as to achieve the same result Hilton 35 USPQ2d at 1645, Graver Tank & Mfg. Co. Co. v. Linde Air Prods. Co. 339 U.S. 605, 608 (1950), the function-way-result test is not necessarily the test for equivalency, particularly when other than simple mechanical inventions are involved. Hilton 35 USPQ2d at 1645 (CPost at 32).

The staff argued that there is no evidence that the accused magnet alloys in issue that include oxygen levels below 6,000 ppm actually provide enhanced corrosion resistance, which would be a prerequisite to a showing that levels of oxygen below 6,000 ppm are an insubstantial change in the patented invention when compared to magnet alloys having the 6,000 ppm oxygen limit literally required by the claims in issue (SPost at 19). In addition, it argued that there is little evidence in the record on the mechanism through which a magnet alloy with a particular oxygen level achieves the desired result of enhanced resistance to corrosion in a hot and humid environment, as compared to a magnet alloy with a different oxygen level and that without such evidence it is difficult to measure the relative similarity or difference in the "way" the accused magnet alloys perform their "function" and achieve their "result," when compared to the patented magnet alloys (SPost at 20, 21).

In the prosecution of the '439 patent the cited prior art showed a maximum of 5,000 ppm of oxygen in alloys and the claims were never amended to avoid any prior art (FF 67, 68). Hence, the administrative law judge finds that complainant is not estopped from obtaining a range of equivalents where the change in a permanent magnet above 5,000 ppm oxygen is insubstantial when compared, for example, to an oxygen levels of 6,000 ppm or of 35,000 ppm which levels are within the literal reading of the claimed subject matter in issue. The claimed invention in issue is for a permanent magnet alloy, and not the use of that alloy in a particular environment, for example the use of a magnet alloy at high temperature and humidity (FF 64). [14] The staff has not disputed that the accused magnets in issue are permanent magnets.

The '439 patent does teach that permanent magnets produced from alloys containing iron in combination with at least one rare earth element and boron do not exhibit physical stability under heat and humidity; that where heat and humidity are present those magnets react with the hydrogen present, through absorption, in the humid atmosphere to result in disintegration of the magnets (FF 69); and that a primary object of the invention of the '439 patent is to provide a magnet alloy that may be used for the production of permanent magnets that will resist hydrogen absorption and decomposition when used in applications of humidity and heat (FF 70). While the staff argued that there is no evidence that the accused magnet alloys in issue that include oxygen levels below 6,000 ppm actually provide enhanced corrosion resistance, significantly the FIGURE of the '439 patent discloses that a permanent magnet alloy containing some 6,000 ppm oxygen after an autoclave test had about 78 percent non-disintegration, which the FIGURE of the '439 patent has characterized as "nearly disintegrated;" that a permanent magnet alloy containing some 5,900 ppm oxygen (which

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[14] The '439 patent discloses that permanent magnets produced from alloys containing iron in combination with at least one rare earth element and boron provide magnets having maximum energy product, which may be on the order of 45 MGOe, energy product being a measure of the usefulness of a magnet (FF 69).

reading is within the literal reading of the claimed subject matter considering the measurement error) has about 90 percent non-disintegration which the FIGURE of the '439 patent has characterized as "excellent resistance;" that a permanent magnet alloy with 5,500 ppm oxygen, which is outside the literal reading of the claims in issue, is shown by the FIGURE of the patent to have about 80% non-disintegration, characterized as "excellent resistance" while a permanent magnet alloy containing some 35,000 ppm, which is within the literal reading of the claims is show in the FIGURE to have about 73 percent non-disintegration which the FIGURE of the '439 patent has characterized as "nearly disintegrated" (FF 75).[15] Thus, the administrative law judge finds that the '439 patent teaches that even within the literal reading of the claims in issue, the claimed subject matter can include not only a permanent magnet alloy with excellent resistance to non-disintegration but also a permanent magnet alloy that is only not "nearly disintegrated" viz. a permanent magnet alloy containing 35,000 ppm oxygen with about 73 percent non-disintegration. Accordingly the administrative law judge finds that the FIGURE in the '439 patent discloses that rare rare earth element-iron-boron magnet alloys having 5,500 ppm oxygen perform interchangeably, with with respect to stability, with rare earth element-iron-boron magnet alloys having from 6,000 to 35,000 ppm oxygen.

While the '439 patent discloses that the claimed permanent magnet alloy will resist hydrogen absorption when used in the application of humidity and heat (FF 69), Crucible cannot explain how the presence of oxygen, whether at levels above or below 6,000 ppm oxygen, facilitates improved corrosion resistance at elevated temperatures and humidity (CPost at 39). However, the inclusion of a theory as to how a claimed invention works is unnecessary to meet the requirement of 35 U.S.C.

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[15] Complainant has also relied on a declaration of inventor Carol Willman and certain exhibits thereto (CX-356) to support its arguments regarding the doctring of equivalents. The administrative law judge finds the declaration and supporting documents ambiguous. Thus Willman refered to "test magnet T" shown in Exhibit V at page 189204 and in Exhibit W at page 189208 as having an oxygen content of 5,600 ppm and "excellent" stability. However other "test magnet" samples found in Exhibits V and W, for example "test magnet" F, is shown to have an oxygen content of 8,000 ppm and is listed as "totally disintegrated" in Exhibit V at page 189203, and in Exhibit W at 189207.

§112. Moreover, it is axiomatic that an inventor need not comprehend the scientific principles on which the practical effectiveness of his invention rests. See Fromson v. Advanced Offset Plate, 720 F.2d 1565, 1570, 218 USPQ 289 (Fed. Cir. 1983).

In summary, in view of the disclosure of the '439 patent that permanent rare earth element-iron-boron magent alloys which literally infringe the claimed subject matter in issue can experience the same non-disintegration, viz, about 73 percent, as do permanent rare earth element-iron-boron magnet alloys containing some 5,500 ppm oxygen, the administrative law judge finds that the patentees are entitled, under the doctrine of equivalents, to a finding that the respondents' accused permanent rare earth element-iron-boron magnet alloys identified in FF 106 and 108, as qualified in "Accused Magnets Involved In Alledged Infringment," Section VI A4 infra, infringe the claims in issue. Accordingly, he finds that the Hennaco respondents and respondent Injohnson infringe the claims in issue under the doctrine of equivalents.

4. Accused Magnets Involved In Alleged Violation

Complainant has argued that certain of respondents' magnets in FF 100, 104 had one or more oxygen readings of 6,000 to 35,000 ppm oxygen or in FF 101, 105 had one or more oxygen readings of 5,900 ppm or in FF 106, 108 had one or more readings between 5,450 and 6,000 ppm. Included among respondents' samples, however, are samples that have paired readings below even the lower limit of 5.450 ppm oxygen sought by Crucible under the doctrine of equivalnets. Among those samples are Hennaco CS-20-93-7, Hennaco CS-20-93-9, Hennaco CS-20-93-14 and Hennaco CS-20-93-16 (FF 100); Hennaco CS-20-93-15 (FF 101); and Hennaco CS-20-93-7, Hennaco CS-20-93-9, CS-20-93-15 and Hennaco CS-20-93-16 (FF 106). Those samples are reported in CX-65 (FF 97). The staff has argued that in CX-65, which involved twenty three tests on some sixty magnets for a particular size from Hennaco Excell, there were a couple that "maybe" approached an oxygen content of 6000 ppm but all the rest were really around 4,000, 5000, 5200 and 5300 ppm and hence the staff

was not prepared to conclude that "because that one reading out of 23 was above . . . [6000] that particular group is indicative of literal infringement on the part of Hennaco" (Tr. at 174, 178). For CX-20-93-9, CX-20-93-14, CS-20-93-15 and CS-20-93-16, which representes tweleve magnets, all of the oxygen reading for those magnets were above 5450 ppm (FF 97). Therefore the administrative law judge concludes that those samples infringe at least claim 1. The remaining sample CS-20-93-7, however, which represents three magnets, has a reading for oxygen of 3800 ppm, 7200 ppm, 5300 ppm and 5600 ppm. Riggs did testify that oxygen content of one CS-20-93-7 sample had an oxygen content more than 6000 ppm (CX-300 at 62). Riggs, however, did not make clear why one reading out of four readings would be indicative of infringement by each of the three separate magnets. Accordingly, the administrative law judge finds that the Hennaco sample CS-20-93-7 does not infringe the '439 patent. In addition, complainant has relied on Hennaco CS-21-93-1 (FF 106). That sample, which represented seven magnets, is reported in CX-61 (FF 140). While for that sample there were oxygen readings of 5800 ppm and 5580 ppm there were also oxygen readings of 5400 ppm, 5060 ppm and 5010 ppm (FF 140). There is no indication which of the seven magnets had readings of 5800 ppm and 5580 ppm. Hence, the administrative law judge finds that Hennaco CS-21-93-1 does not infringe the '439 patent.

Complainant has further relied on Hennaco CS-33-93-4 and recited an oxygen reading of 6200 ppm (FF 100) while the record shows oxygen readings of 5200 ppm as well as 6200 ppm for that sample (FF 110). In addition complainant has relied on Hennaco CS-08-95-2 and recited an oxygen reading of 5900 (FF 105) while the record shows oxygen readings of 5100 as well as 5900 (FF 113). Also complainant relies on Injohnson CS-26-93-4 and recited an oxygen readings of 5600 (FF 106) while the record shows oxygen readings of 5000 as well as 5600 (FF 114). In addition, complainant has relied on Hennaco CS-08-95(2) and recited an oxygen reading of 5900 (FF 108) while the record shows oxygen readings of 5100 as well as 5900 for that sample (FF 115). With respect to those

samples, and with the assumption that each sample represents a separate magnet,[16] the administrative law judge recognizes that because a permanent magnet alloy is not homogeneous, two alloys made from the same production run could have different oxygen contents and that if a permanent magnet alloy is not homogeneous, the amount of oxygen could vary at different points within the alloy (FF 120, 121). Accordingly he included those samples, identified in this paragraph, in his consideration, supra, of the infringement issues.

B. Domestic Industry

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] The staff has characterized that dispute as a "minor dispute" (Tr. at 74).

The administrative law judge finds that there is a domestic industry under the '439 patent, especially in view [ ] (See FF 162 to 195).

VII. Remedy And Bond Recommendations

A. General Exclusion Order

In this investigation, both Crucible and the staff have argued that the Commission should issue a general exclusion order directed to magnets that infringe the claims in issue, viz. claims 1-3 of the '439 patent. However, the staff would impose a certification requirement that Crucible maintains is inappropriate. Moreover, while Crucible argued that a general exclusion order should also cover

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[16] It is noted, for example, that for CS-33-93 four samples were tested and each sample represeted a separate magnet (FF 141).

certain downstream products, the staff has argued that it should not include any such downstream products (CPost at 54-78; SPost at 26-29).

In 1994, Congress enacted statutory standards on the availability of general exclusion orders by adding Section 337(d)(2) in the amendments to section 337 contained in the Uruguay Round Agreements Act (URAA). Pub.L. 103-465, Title III, § 321(a), 108 Stat. 4943 (Dec. 8, 1994). This subsection states:

> (2) The authority of the Commission to order an exclusion from entry of articles shall be limited to persons determined by the Commission to be violating this section unless the Commission determines that –
>
> > (A) a general exclusion from entry of articles is necessary to prevent circumvention of an exclusion order limited to products of named persons; or
> >
> > (B) there is a pattern of violation of this section and it is difficult to identify the source of infringing products.

19 U.S.C. § 1337(d)(2) (effective January 1, 1995); see also Commission rule 210.50(c), as amended (incorporating the statutory standard).[17] The pertinent legislative history, as well as Commission comments on Commission rule 210.50, indicate that those new statutory limitations and corresponding Commission rules "do not differ significantly" from the Commission's past practice, as articulated in Certain Airless Paint Spray Pumps and Components Thereof, Inv. No. 337-TA-90, USITC Pub. No. 1199, 216 USPQ 465 (1981) (Spray Pumps) and cases following it. See 59 Fed. Reg. at 67625; H.R. Rep. No. 826, 103rd Cong., 2d Sess., pt. 1, at 141 (1994); S. Rep. No. 412, 103rd Cong., 2d Sess. 120 (1994).

The Commission has issued general exclusion orders under section 337(d) when the

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[17] Section 337 and the Commission's rules further provide that the Commission may issue a general exclusion order, "regardless of the source or importer of the articles, if (A) no person appears to contest an investigation concerning a violation of [section 337], (B) such a violation is established by substantial, reliable, and probative evidence, and (C) the requirements of subsection (d)(2) . . . are met." 19 U.S.C. § 1337(g)(2), See also Commission rule 210.16(c)(2).

intellectual property right at issue is "of a sort which might readily be infringed by foreign manufacturers who are not parties to the Commission's investigation." Spray Pumps, Comm'n Op. at 17, 216 USPQ 465, at 472-73. In Spray Pumps, the Commission stated that it would balance the complainant's interest in obtaining complete protection against the "inherent potential of a general exclusion order to disrupt legitimate trade," and that a general exclusion would be appropriate when a complainant submits proof of:

> [B]oth 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. [Id.]

In this investigation, the administrative law judge finds that complainant has submitted evidence of a "widespread pattern of unauthorized use." Based on evidence submitted by complainant, the administrative law judge finds evidence of numerous entities either manufacturing and importing, or capable of manufacturing or importing neodymium-iron-boron (NdFeB) magnets that are covered by the claims in issue (FF 83, 87, 100-113, 207, 214). The administrative law judge also finds evidence that each of the original eight respondents manufacture, import or sell magnets within the scope of the claims in issue (FF 10-118, 232).[18] In addition, based on evidence provided by complainant, the administrative law judge also finds infringing imports by two other magnet

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[18] Cucible has presented evidence of the chemical composition of certain NdFeB magnets manufactured by Ningbo, imported by San Huan and sold by Tridus, and at least certain of those samples were tested and found to be within the scope of claims in issue (FF 100, 102, 103, 106, 107). On November 7, 1995 the administrative law judge initiated a telephone conference to determine the appropriateness of referring to Tridus samples in his recommendation under Commission rule 210.42(a)(1)(ii). Council for Crucible reaffirmed the position taken in their post hearing brief with respect to relying on evidence of Tridus samples for obtaining a general exclusion order. The staff argued that evidence of "the chemical composition of Tridus magnets is relevant in considering the appropriate remedy, and in this instance is appropriate to consider in connection with the general exclusion order. I think any entities' magnets, whether they are Respondents, Ex-Respondents, or . . . non-parties can be considered in connection with the remedy determination." (11/7/95 Tr. at 22).

While the administrative law judge did not consider any Tridus samples for his determination as to violation of section 337 the consent order makes clear that it does not "preclud[e] further remedial action" (C.O., ¶ 9). Accordingly, the administrative law judge will consider evidence relating to Tridus samples as relevant to the remedy issue.

distributors, H.T.I.E., Inc. and American Sunyouth (FF 104, 105, 108, 231)[19], who are purporting to sell Chinese-made imported NdFeB magnets.

The administrative law judge also finds that complainant has produced sufficient evidence that non-respondents may attempt to enter the U.S. market with infringing articles. Specifically, the evidence demonstrates that it is difficult to trace the origin of imported NdFeB magnets, as the magnets have no identifying marks and the manufacturer can not be identified through visual inspection of the magnets (FF 206, 217, 233). Complainant has submitted unrebutted evidence that no Chinese manufacturer is licensed under the '439 patent (FF 229); that there are currently Chinese manufacturers producing magnets covered by the claims in issue (FF 100-118); that there are a large number of additional Chinese manufacturers with large production capacity; and that, even if they are not currently producing magnets within the scope of claims in issue, they could easily begin producing infringing magnets (FF 199-201, 214-222, 236). In addition, complainant has submitted evidence that Chinese magnet manufacturers tend to use many export companies.[20] In light of this evidence, the administrative law judge finds that, even if the named respondents stop manufacturing and importing infringing magnets, non respondents are likely to either begin production of infringing magnets, or purchase those infringing magnets and import them, in the absence of a general exclusion order.

Based on the foregoing, the administrative law judge recommends that a general exclusion order, directed to magnets and magnet alloys within the scope of claims in issue is appropriate.

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[19] Crucible also submitted evidence that magnets contained in products sold by Walmart and Wearnes Technology infringe claims 1-3 in issue (FF 100, 101, 106).

[20] [

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1. Certification

Under Section 337(d)(2), and Spray Pumps, the administrative law judge must consider both the potential circumvention of a limited exclusion order, and the disruption of legitimate trade that a general exclusion order may cause. While the staff argued in support of a general exclusion order covering infringing magnets, the staff has recommended a certification provision for all magnets rather than full-scale testing (Tr. at 89). The staff argued that its position was consistent with the staff's prior remedy recommendations in cases involving chemical compositions, for example Certain Curable Fluoroelastomer Compositions and Precursors Thereof, Inv. No. 337-TA-364, USITC Pub. 2890 (May 8, 1995) (Fluoroelastomer), where a limited exclusion order was granted subject to a certification provision because it was undisputed that the respondents also had non-infringing products and that it would be burdensome for customs to have to discern which of the incoming products were infringing and which were not. The staff also relied on Certain Integrated Circuit Telecommunication Chips and Products Containing Same, Inv. No. 337-TA-337, Commission Opinion on the Issues under Review and on Remedy, the Public Interest, and Bonding (June 29, 1993) (Chips), and Certain Acid-Washed Denim Garments and Accessories, Including Jeans, Jackets, Bags and Skirts, Inv. No. 337-TA-324, (August 14, 1992) (Acid-Washed Denim) (Tr. at 89-90).[21]

The administrative law judge finds that a general exclusion order would be ineffective with a mere certification requirement based on the record in this investigation. Thus, there is evidence that magnet importers have been willing to mis-describe or mislabel goods to avoid problems with Customs (FF 209, 210). While the staff has relied on Fluoroelastomer, in that investigation the parties had agreed that the limited exclusion order should include a certification provision,

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[21] The staff further argued that customs has also been supportive of certification procedures in other cases, but that if Customs is not adverse to the type of testing suggested by the complainant, then staff would probably withdraw its support for certification (Tr. at 89-90). There is no evidence of Customs' position on this matter.

Fluoroelastomer Comm'n Op. at 4. Crucible, in this investigation, is resisting any certification provision for NdFeB magnets (Tr. at 53). Significantly, in Fluoroelastomer there was nothing in the record to show that importers had been willing to mis-describe or mislabel goods. Moreover, the Commission in Fluoroelastomer stated that it was "not possible to determine readily whether a . . . product is covered by the claims in issue. . . ." Id. In this investigation, complainant has submitted evidence, which the administrative law judge has found credible, of tests showing that it is possible to determine that an alloy is covered by the claims in issue (FF 83 to 99, 208). In the Chips case, also relied on by the staff, while the Commission included a certification requirement, that requirement was only for downstream products, Chips, Comm'n Op. at 33-35, which Crucible has agreed to in this investigation if the Commission includes downstream products in any general exclusion order. (Tr. at 51).[22]

Finally, regarding Acid-Washed Denim, also relied on by the staff, certification requirements have been imposed by the Commission in orders where a process patent was in issue, and where there was evidence that products made by a non-infringing process were indistinguishable from products made by the infringing process, see also Certain Amorphous Metal Alloys and Amorphous Metal Articles, Inv. No. 337-TA-143, Commission Action and Order, Views of the Commission at 4 (June 17, 1987) (Amorphous Metal). This investigation, however, does not involve a process patent. Moreover, the record demonstrates that tests can distinguish infringing products from non-infringing products (FF 83-99).

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[22] The Commission in Chips stated the "where there are two possible alternatives to effectuate exclusion, we believe it is appropriate to chose the one likely to be least burdensome on Customs." However, in Chips, the Commission noted that "Customs indicated that a certification provision would be far less burdensome than inspection of import entries." Id. at fn. 41. In this investigation, the staff admitted that it had "no basis to know what Customs' preference in this case would be because it simply hasn't discussed it with them." (Tr. at 90). Moreover, Crucible argued that "Customs would certainly be able to easily conduct the testing that might be appropriate here. And . . . Crucible would be happy to assist them in any way it could to achieve that result." (Tr. at 52).

In view of the foregoing, the administrative law judge finds that a certification requirement in any general exclusion order for the NdFeB magnets in issue would be inappropriate.

2. Downstream Products

Crucible seeks a general exclusion order directed not only to infringing NdFeB magnets, but to "products containing the same." During closing arguments, Crucible limited its request for relief against downstream products to an exclusion order covering computer disk drives and headphones containing Chinese magnets that infringe claims 1-3 of the '439 patent (Tr. at 274). [

] It also proposed that for any downstream products the exclusion order have a certification provision (CPost at 83). The staff opposes the inclusion of downstream products in any general exclusion order.

Before issuing an exclusion order covering downstream products, the Commission has balanced:

> the complainant's interest in obtaining complete protection from all infringing imports by means of exclusion of downstream products against the inherent potential of [an]. . . 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.

Certain 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, Commission Opinion at 125 (May 1989), (EPROMs) aff'd, Hyundai Electronics Industries Co. v. U.S. Int'l Trade Comm'n, 889 F.2d 1204, 14 USPQ2d 1396 (Fed. Cir. 1990). In EPROMs, the Commission enumerated factors to be considered before issuing an order covering downstream products. These factors include:

> [T]he 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, etc.

EPROMs Comm'n Op. at 125-126. Moreover, the above list of factors is not exclusive, as "the Commission may identify and take into account any other factors which it believes bear on the question of whether to extend remedial exclusion to downstream products, and if so to what specific products." Id.

Crucible has presented evidence that a large number of Chinese manufacturers produce NdFeB magnets (FF 196-204, 207, 235); that at least certain of these magnets are within the scope of the claims in issue, (FF 100-118); and that those Chinese manufacturers are not licensed under the '439 patent (FF 239) to prove that imported downstream products are likely to contain infringing articles. However, on the current record, Crucible has only produced evidence that one set of Walmart headphones, labeled "made in China," contained magnets that infringe the claims in issue (FF 100, 101, 224).[23] As the Commission stated in Chips, it will "decline to assume importation," and will require "evidence of importation of the infringing [articles]." Chips Comm'n Op. at 25.

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[23] Crucible has shown that disk drives purchased from Wearnes Technology, of San Jose, CA, the parent company of which is based in Singapore (FF 227), contained magnets within the claims in issue (FF 100). In their brief, Crucible argued that the "Wearnes Technology (Microscience) products are disk drives believed to be imported and to contain Chinese magnets" (emphasis added) and refers to competitor sample reports (CPost at 80). While Crucible's competitor sample reports list under competitor "Chinese" (FF 225), the chain of custody indicates that those disk drives were purchased from Wearnes Technology in California (FF 226). Crucible has pointed to nothing in the record that would indicate that those magnets were Chinese manufactured magnets, or that the manufacturer of those magnets was not licensed under the '439 patent.

]24 Moreover, Crucible has argued that changes in oxygen content would suffice to make non-infringing NdFeB magnets, and that samarium-cobalt and ferrite magnets also serve as substitutes (CPost at 83). Hence it is conceivable that certain, and perhaps even a great number of, imported disc drives and headphones would not actually contain infringing magnets. Thus, a general exclusion order directed to headphones and disk drives has the inherent potential to disrupt this legitimate commerce.

There is no evidence that any of the respondents, viz. Novel, Hennaco Industrial, Hennaco Excell, Sino American or Injohnson, have imported into the United States, sold for importation or sold after importation downstream products containing articles that infringe the claims in issue. Thus, on the present record, with the exception of the one Walmart headphone, all downstream products that Crucible seeks to exclude are manufactured by potential third parties, and not by parties found to have committed an unfair act in this investigation.

In considering the burden on third parties Crucible, relying on Chips, argued that an order covering downstream products that contained a certification provision would not place any undue burden on non-respondents (CPost at 83). The staff argued that this exclusion order would "disrupt large portion of [legitimate] commerce" (Tr. at 282, 290). The certification requirement of the exclusion order issued in Chips covered certain downstream products that contained chips manufactured by only one respondent Id. at 32. The products of that respondent were already covered by a limited exclusion order, and thus a certification requirement for products containing its chips was found to impose little additional burden to non-respondents. In this investigation, complainant seeks to exclude headphones and disk drives that contains NdFeB magnets, within the

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claims in issue, manufactured in China (Tr. at 274). This would encompass computer disc drives and headphones containing magnets made in China but which computer disc drives and headphones could be manufactured and imported by any party in the world. The administrative law judge finds that this burden on manufacturers and importers of any headphone or disk drive imported into the United States is in no way comparable to that imposed on non-parties in Chips.

Crucible, to support its argument that the relative value of NdFeB magnets was high compared to the value of certain downstream products, relied on the testimony of DuPlessis that the value of NdFeB magnets versus other types of magnet materials that might be used in a downstream product is that the product performance can be considerably enhanced with the neodymium-iron-boron magnets over what it would otherwise be with the other magnets and that in most instances the product can be made smaller and more compact, which is particularly important in devices like headphones, disk drives, and speaker assemblies (FF 228). However, that testimony only compares the value of the NdFeB magnets to other magnets, and does not compare that value to the value of the downstream products that Crucible seeks to exclude. Based on the present record, the administrative law judge finds that the price value of NdFeB magnets was shown to range from [ ] per magnet,[25] with the majority of the unit prices near the lower end of this range (FF 238). The staff argued that the price value of the products Crucible seeks to exclude from entry, i.e. computer disk drives and headphones, can be comparatively higher than the price value of NdFeB magnets (SPost at 33). Crucible presented evidence of one set of headphones, containing infringing magnets and labeled "made in China," which were purchased from Walmart for $4.94 (FF 224). Neither Crucible or the staff presented evidence of the relative prices of the infringing magnets versus the price of computer disk drives containing such magnets. Thus, based on the present record, at least the price value of

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[25] There is also an invoice showing a unit price of [ ] that Crucible describes as "anomalous." (CPostR at 11).

headphones appears to be significantly higher than the price value of the magnets contained therein.

The administrative law judge finds that proof of one instance of a downstream product containing an infringing magnet, in light of the other factors considered, is insufficient evidence to issue an order covering every disk drive and headphone containing Chinese manufactured NdFeB magnets. Accordingly, based on the present record, the administrative law judge recommends that the Commission issue a general exclusion order that does not cover any downstream products.

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B. Cease and Desist Order

Crucible has requested that the Commission issue a cease and desist order against Hennaco Excell (CPost at 86). The staff argued that a cease and desist order against Hennaco Excell is warranted (SPost at 35).[26]

The Commission is granted the authority to issue cease and desist orders under Section 337(f)(1). The Commission will issue a cease and desist order where a respondent has a sufficient inventory of infringing goods in the United States. See Certain Crystalline Cefadroxil Monohydrate, Inv. No. 337-TA-293, Commission Opinion on Remedy, the Public Interest and Bonding at 37-42 (March 15, 1990) (Cefadroxil), and Certain Plastic Encapsulated Integrated Circuits, Inv. No. 337-TA-315, USITC Pub. 2574, Commission Opinion at 37 (November, 1992). There is evidence of record to indicate that Hennaco maintains some inventory in the United States (FF 239). The Commission has inferred the existence of "commercially significant" domestic inventories where a respondent has failed to provide evidence to the contrary. See Cefadroxil Comm'n Op. at 41-42.

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[26] The staff and Crucible argued that Hennaco Industrial, as a closely related entity to Hennaco Excell, would also be covered by any cease and desist order (Tr. at 73, 74; SPost at fn. 37).

Hennaco has not participated in this investigation, and the parties have been unable to gather information concerning actual inventory levels. Thus, the administrative law judge finds that a cease and desist order should issue against Hennaco Excell.

C. Bond Recommendation

If the Commission enters an exclusion and/or cease and desist order, respondents may continue to import and sell their products during the pendency of Presidential review under a bond in an amount determined by the Commission to be "sufficient to protect the complainant from injury." 19 U.S.C. § 1337(e), Commission rule 210.50(a)(3). The staff believes that a bond of 100 percent would be appropriate "in light of the difficulties associated with obtaining information as to the pricing of respondents' imports" (SPost at 36). A bond of 100 percent would also be acceptable to Crucible (Tr. at 292). Because the administrative law judge finds no reliable price information on the present record, he recommends a bond of 100 percent as appropriate to protect the complainant from injury.

VIII. Findings of Fact

A. Parties

1. Complainant Crucible Materials Corporation (Crucible) is a Delaware corporation having its principal place of business at State Fair Blvd., P.O. Box 977, Syracuse, New York 13201-0977 (CX-1 at ¶ 3.1).

2. Crucible's business includes the manufacture of high alloy and corrosion resistant metals, such as automotive valve steel, tool steel, alloy and stainless steel and steel pipes, permanent magnets, and compacted powder metal parts. Crucible also distributes steel products (CX-1 at ¶ 3.1).

3. Crucible's business is conducted through six divisions: Crucible Specialty Metals Division, Crucible Magnetics Division, Crucible Compaction Metals Division, Trent Tube Division, Crucible Service Centers Division, and Crucible Research Center (CX-1 at ¶ 3.1).

4. Crucible has three subsidiaries: Crusteel Ltd., Sheffield, United Kingdom (100 percent owned), Crusteel Magnetics, Ltd., Sheffield, United Kingdom (100 percent owned), and Crucible Composites, Inc., Wisconsin (80 percent owned) (CX-1 at ¶ 3.1).

5. Complainant's Crucible Magnetics Division (Crucible Magnetics) is responsible for Crucible's commercial activities relating to permanent magnets, including NdFeB magnets (CX-1 at ¶ 3.2).

6. The headquarters and manufacturing facility for Crucible Magnetics is located at 101 Magnet Drive, Elizabethtown, Kentucky 42701 (CX-1 at ¶ 3.2).

7. Crucible Magnetics also has a facility at 103 Commerce Parkway, Hodgenville, Kentucky 42748, known as the Engineered Products Department (CX-1 at ¶ 3.2).

8. At the present time, complainant, through its Crucible Magnetics Division, makes and sells several kinds of permanent magnets, including NdFeB magnets (CX-1 at ¶ 3.3).

9. Crucible Magnetics' NdFeB magnets are sold under the name Crumax (CX-1 at ¶ 3.3; CX-2, Ex. 2).

10. The Engineered Products Department produces assemblies and sub-assemblies of magnetic materials and steel components that are ultimately installed in final products by customers. This department also cuts small individual magnets from bulk magnetic materials (CX-1 at ¶ 3.2).

11. Crucible maintains a research and development facility, Crucible Research Center, at Pittsburgh, Pennsylvania, that includes facilities for research on and development of permanent magnets (CX-1 at ¶ 3.2).

12. Crucible's Crusteel Magnetics, Ltd. subsidiary, located at 7 Rutland Way, Sheffield 5380G, South Yorkshire, England, acts as a distributor of magnetic products (CX-1 at ¶ 3.2).

13. Respondent Novel is a legal entity of Hong Kong with a business address of Room 404, 3rd Floor, 18 Cheung Lee St., Chai Wan, Hong Kong (CX-389).

14. A Dun and Bradstreet report states that Novel manufactures magnets at its affiliated factory in Shenzen, China (CX-389).

15. A flier identifies respondent Hennaco Industrial as Novel's "U.S.A. sole agent" for the sale of Novel's "Henneo" NdFeB magnets (CX-2, Exhibit 6, first page; DuPlessis, CX-141 at Q.504-505; CX-106).

16. Novel is one of the "exporters who illegally export unlicensed Chinese magnets to overseas from Taiwan/Hong Kong." (CX-126; Moon Dep. CX-362 at 213-14).

17. Respondent Hennaco Industrial has had business addresses at 39 Alba Place, Parsippany, New Jersey 07054 and 5 Highview Ct., Montville, New Jersey 07045 (CX-2, Exhibit 6).

18. Hennaco Industrial has been identified in a flier as the "USA Sole Agent" for respondent Novel for the sale of Novel's "Henneo" NdFeB magnets (CX-2, Exhibit 6, first page, DuPlessis CX-141 at Q.504-05; CX-106).

19. Fliers indicate that Hennaco Industrial is affiliated with respondent Hennaco Excell, Inc., in the sale of "Henneo" NdFeB magnets (CX-2, Exhibit 6).

20. Mail directed to Hennaco Industrial in this investigation was apparently forwarded for a time to Hennaco Excell at its Flushing, New York address. Hennaco Excell and Hennaco Industrial are alter egos of the same company (CX-2, Exhibit 6, SX-36 to 38).

21. Respondent Hennaco Excell is listed in a Dun and Bradstreet report as a corporation of New Jersey, with a date of incorporation of July 7, 1989. Hennaco Excell was also issued a Certificate of Incorporation by the State of New York on August 3, 1993, and was registered as a Corporation of the State of New York as of May 5, 1995 (CX-387; CX-388).

22. As indicated in a New York State Certificate of Incorporation, dated May 5, 1995, and as confirmed by Mr. Hauman, hired by Crucible to effect personal service, Hennaco Excell has an address of 39-01 Main St., Suite 210, Flushing, New York 11354 (CX-386 to CX-388). Mr. Hauman attempted to personally serve Lina C. Chuang as an officer of Hennaco Excell with the Notice of Investigation, Complaint, Exhibit to the Complaint, Declaration of John J. DuPlessis, as supplemented, and a copy of Commission rules at that address. He testified that he "believes that he will be unable to effect personal service upon [Hennaco Excell], although [he] made due and diligent effort to effect same." (CX-386). Mail sent to Hennaco Excell has been forwarded or returned. Hennaco Excell has evaded service (CX-2, Ex. 6; SX-36 to 38).

23. Hennaco Excell offers and sells Chinese-made NdFeB magnets in the United States under the name "Henneo." (CX-2, Exhibit 6).

24. Hennaco Excell obtains Chinese-made NdFeB magnets from respondent Novel. (DuPlessis, CX-141 at Q.504-05; CX-2, Exhibit 6).

25. Hennaco Excell is among the "importers who illegally import unlicensed Chinese magnets and distribute." (CX-126; Moon Dep. CX-362 at 207-09).

26. Hennaco Excell was also the recipient of a warning letter sent by Sumitomo concerning infringement of Sumitomo NdFeB magnet technology patents via importation, distribution and sale of Chinese magnets (CX-129).

27. [

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28. Respondent Sino American is a corporation of New York and has a business address at 358 Fifth Avenue, New York, New York 10001 (CX-1 at ¶ 3.20; CX-2, Exhibit 7).

29. Sino American offers NdFeB magnets for sale in the United States which it obtains from Chinese sources presently unknown to Crucible (CX-1 at ¶ 3.20; CX-2, Exhibit 7).

30. Respondent Injohnson is believed to be a legal entity of Taiwan and has a business address at 3rd Floor, No. 166, Fu-Ho Rd., Yung-Ho, Taipei, Taiwan (CX-1 at ¶ 3.21; CX-2, Exhibit 8).

31. Injohnson also has an office in Shanghai, China (CX-1 at ¶ 3.21; CX-2, Exhibit 8).

32. Injohnson sells NdFeB magnets to customers in the United States which it obtains from respondent Ningbo (CX-1 at ¶ 3.21; CX-2, Exhibit 8).

33. Letters to Crucible from Injohnson claim that Injohnson has manufacturing facilities in China and can supply magnets from those facilities. Injohnson also claims to represent a factory producing neodymium-iron-boron magnets it identifies as "Konit Co." A quotation from Injohnson indicates that delivery of NdFeB magnets will be from Shanghai, China (CX-2, Ex-8).

B. Non-Parties

34. San Huan New Material Research and Development, Inc. (San Huan) is a legal entity of the People's Republic of China (China) (CX-365, Response to Int. No. 1(d)).

35. San Huan is also known as Beijing San Huan New Materials High-Tech, Inc., San Huan New Materials Research and Development, Inc., or San Huan, Inc (CX-365, Responses to Int.

No. 1(b)-(c)).

36. San Huan is 100% owned by the Chinese Academy of Sciences (CX-365, Response to Int. No. 41(c)).

37. The Chinese Academy of Sciences is under the jurisdiction of the Central Government of the People's Republic of China (CX-365, Response to Int. No. 43).

38. San Huan has its headquarters in Beijing, China at the following address: 8 South 3rd Street, Zhong Guan Cun Road, Beijing 100080, Peoples Republic of China (CX-365, Response to Int. No. 1(e)).

39. San Huan owns interests in five manufacturing facilities for NdFeB magnets in China: respondent Ningbo Konit Industries, Inc., Xin Huan Technology Development Inc., Ltd., San Huan Sagami New Technology Co., Ltd., Guang Dong Jing Yue Magnet Factory, and San Huan Lucky New Materials, Inc (CX-351 at ¶ 11, admitting CX-1 at ¶ 3.7).

40. [

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41. In 1993, San Huan was licensed by General Motors and Sumitomo under their patents relating to NdFeB permanent magnets (CX-105 at 12; CX-383; CX-384).

42. The licenses between General Motors and Sumitomo with San Huan extend to all of the NdFeB magnet manufacturing facilities in which San Huan has an interest, except San Huan Sagami (CX-105 at 12; CX-383, Articles 2.1(I), 1.8; CX-384, Articles 2.1(a), 1.1).

43. Neither San Huan nor any of its five manufacturing facilities are licensed under Crucible's '439 patent (CX-1 at ¶ 3.9).

44. San Huan sells or transfers NdFeB magnets to Tridus (CX-365, Response to Int. No. 5(b)).

45. In 1993 San Huan appointed Tridus its exclusive representative in North America

(CX-351 at ¶ 15, admitting CX-1 at ¶ 3.11; CX-122).

46. Ningbo is a legal entity of China (CX-373, Response to Int. No. 1(d)).

47. Ningbo has its headquarters at Ningbo Economic and Technical Development Zone, Zhejiang, People's Republic of China (CX-373, Response to Int. No. 1(e)).

48. [

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49. The Vice-Chairman of Ningbo is an individual named Hang Up Moon (CX-373, Response to Int. No. 51(a)).

50. Ningbo manufactures NdFeB magnets for export to the United States (CX-373, Response to Int. No. 8).

51. Ningbo sells or transfers NdFeB magnets to Tridus (CX-373, Response to Int. No. 5(b)).

52. Tridus is a corporation of California and has its principal place of business at 8527 Alondra Boulevard, Suite 205, Paramount, California 90723 (CX-378, Response to Int. No. 1(b)-(e)).

53. The president of Tridus is an individual named Hang Up Moon. This is the same individual who is Vice-Chairman of respondent Ningbo (CX-378, Response to Int. Nos. 3 and 51(a)).

54. [ ]

55. Tridus obtains NdFeB magnets from San Huan and Ningbo and sells them in the United States (CX-351 at ¶ 1; CX-378, Response to Int. No. 5; CX-362 (Moon Dep.) at 39-43).

56. Tridus serves as San Huan's exclusive representative in North America for the sale of NdFeB permanent magnets (CX-122).

C. Importation

57. [There is no FF 57].

58. Hennaco Excell and Hennaco Industrial obtain Chinese-made NdFeB magnets from respondent Novel (CX-2, Exhibit 6; DuPlessis CX-141 at Q.504-05; CX-106).

59. Novel manufactures NdFeB permanent magnets in China (CX-389; CX-2, Ex. 6).

60. [There is no FF 60].

61. Sino American offers NdFeB magnets for sale in the United States which it obtains from Chinese sources presently unknown to Crucible (CX-1 at ¶ 3.20; CX-2, Exhibit 7; CX-141 (DuPlessis) at Q.512-513; CX-136).

62. Injohnson is a Taiwanese company which sells NdFeB magnets to customers in the U.S. that it obtains from respondent Ningbo (CX-1 at ¶ 3.21; CX-2, Exhibit 8; DuPlessis CX-141 at Q.506-07; CX-107).

D. The '439 Patent

63. The patent at issue is U.S. Letters Patent 4,588,439, (the '439 patent) entitled "Oxygen Containing Permanent Magnet Alloy," which issued on May 13, 1986 with six claims. The '439 patent is based on Application Serial No. 736,017 and was filed May 20, 1985. The named inventors, Kalathur S.V.L. Narashimhan, Carol J. Willman, and Edward J. Dulis assigned the application to Crucible on May 7, 1985 (CX-5, cover page).

64. The claims at issue are claims 1-3. Claim 1 is an independent claim, claim 2 is dependent on claim 1, and claim 3 is dependent on claim 2 (CX-56, col. 3, line 8 to col. 4, line 12). Claim 1 reads:

> 1. A permanent magnet alloy consisting essentially of, in weight percent, 30 to 36 of at least one rare earth element, 60 to 66 iron, 6,000 to 35,000 ppm oxygen and balance boron.

(CX-5, col. 3, lines 8-13).

Claim 2 reads:

> 2. The alloy of claim 1 wherein at least one of said rare earth elements is neodymium.

(CX-5, col. 4, lines 1-2).

Claim 3 reads:

> 3. The magnet alloy of claim 2 wherein at least one of said rare earth elements is dysprosium.

(CX-5, col. 4, lines 3-4).

65. A 6,000 ppm of oxygen in claim 1 corresponds to .6 wt. percent oxygen while 35,000 ppm oxygen corresponds to 3.5 wt. percent oxygen (CX-350, Amendment of December 18, 1985 at 2).

66. The '439 patent is assigned to Crucible Materials Corporation. The assignment to Crucible, dated May 7, 1985, was recorded in the U.S. Patent and Trademark Office (PTO) at Reel 4406, Frame 865, on May 20, 1985. Since the date of that assignment, there has been no transfer of any ownership interest in the '439 patent (CX-391).

67. Claims 1-3 of the '439 patent are original claims that were allowed by the Examiner during prosecution without amendment (CX-350). The Examiner had originally rejected claims 1-6 under 35 U.S.C. § 102(a) as being anticipated by or, in the alternative, under 35 U.S.C. § 103 as being obvious over Matsurra et al., EPO Appln. No.0126179, Crvat EPO Appln. No. 018474, or Sagawa et al. EPO Appln. No. 010648. The Examiner, however, removed this rejection when the applicants' attorney explained that "[n]one of the references disclose or suggest oxygen in permanent magnet alloys of the type within applciants' [sic] limit of 6,000 to 35,000 ppm which is equivalent to 0.6 to 3.5% by weight." It was argued that the 2 atomic percent oxygen disclosed in Matsurra et al., to be present in a rare earth iron-boron permanent magnet, as pointed out by the Examiner, is equivalent to 5000 ppm oxygen and consequently this is "less than the lower limit for oxygen set

forth in applicants' claim 1" and did not "give improved resistance to magnet disintegration as demonstrated by applicants' Figure." (CX-350, Amendment of December 18, 1985 at 3).

68. By notice of allowability dated December 23, 1985 and following receipt of the December 18, 1985 amendment, the Examiner stated that original claims 1 to 6 were allowed (CX-350).

69. Permanent magnets produced from alloys containing iron in combination with at least one rare earth element and boron provide magnets having maximum energy product, which may be on the order of 45 MGOe. Energy product is a measure of the usefulness of a magnet and therefore such magnets are of significant commercial value. Those iron-containing magnets, however, do not exhibit physical stability under heat and humidity, and in most commercial applications heat and humidity are present. Where heat and humidity are present iron containing permanent magnets react with the hydrogen present in the humid atmosphere and the hydrogen absorbed by the alloys of the magnet result in the disintegration of the magnet. Specifically, the reaction is initiated on the surface of the magnet with the surface thereof providing active sites for the catalytic decomposition of water and resultant absorption of hydrogen (CX-5, col. 1, lines 4-23).

70. A primary object of the '439 patent provides a magnet alloy that may be used for the production of permanent magnets that will resist hydrogen absorption and decomposition when used in applications of humidity and heat (CX-5, col. 1, lines 23 to 27).

71. Broadly, in the practice of the invention of the '439 patent, "magnet alloy consisting of, in weight percent, 30 to 36 of at least one rare earth element, 60 to 66 iron, and balance iron [sic] has added thereto oxygen within the range of 6,000 to 35,000 ppm, preferably 9,000 to 30,000 ppm. The rare earth element content may include at lease one rare earth element neodymium and dysprosium. The oxygen may be added to the alloy in any effective manner. However, by jet milling the alloy in an oxygen containing atmosphere the oxygen content of the alloy in powder form

may be effectively produced within the limits necessary for the invention of the '439 patent (CX-5, col. 1, lines 34 to 46).

72. Example 3 of the '439 patent states in part that having "determined that the variation of rare earth content does not improve the stability of these [iron containing-rare earth element-boron] magnets," a controlled amount of oxygen was added during processing to increase the oxygen content to 8,000 ppm from the previously used 2,000 ppm of oxygen for the specimens reported in a Table II of the '439 patent and magnets were made and subjected to the autoclave test. The properties of those magnets before and after the autoclave test were shown in Table III of the '439 patent. From this test it was said that it is "clear" that increasing the oxygen content improves the stability of the magnets under high-temperature, humid conditions (CX-5, col. 2, lines 31 to 57).

73. The composition of Table III of the '439 patent is substantially the same as the permanent magnet alloy composition of Table II of the '439 patent except that the oxygen content, has been increased to 8,000 ppm. Specifically, the results reported in Table III are for an alloy substantially the same as "Specimen No. C-5" of Table II (CX-350, Amendment of December 18, 1985 at 2).

74. In Example 4 of the '439 patent, in order to ascertain the lower and upper limits of oxygen, a series of magnets were prepared from the composition and processing conditions set forth in Example 1 of the '439 patent with varying oxygen content. Those magnets were then exposed to temperature and humidity in the autoclave test. The results of this experiment are shown graphically in the FIGURE of the '439 patent. The single FIGURE is a curve relating weight present oxygen in a magnet to the present of the magnet not disintegrated. For said FIGURE the grading for the magnets was given by visually inspecting those magnets. The proportion of the solid magnet remaining compared to the powder produced by the disintegration process was used as a measure of classifying into fully disintegrated (0-20% solid), partially disintegrated (20-80% solid), and excellent

resistance (80-100% solid) (CX-5, col. 1, lines 32-34, col. 2, lines 60 to 68, col. 3, lines 1-8).

75. Referring to the FIGURE in the '439 patent it shows that oxygen values at some 35,000 ppm in the FIGURE have about 73% non-disintegration after an autoclave test. This value of non-disintegration is the lowest for all oxygen levels within the claimed range of 6,000-35,000 ppm. Turning to the left side of the curve in the FIGURE, magnets having about 5,500 ppm oxygen exhibiting about 80% non-disintegration. The slope of the curve in the FIGURE is essentially vertical at about 5,000 ppm oxygen. The FIGURE shows an alloy sample containing some 6000 ppm oxygen in which there is about 78 percent non-disintegration of the alloy, and the alloy is characterized as "nearly disintegrated." It also shows an alloy sample with some 5900 ppm in which there is about 90 percent non-disintegration of the alloy and the alloy is characterized as having excellent resistance. The "nearly disintegrated" range extends from 30 percent to 80 percent of the alloy not disintegrated, and the "excellent resistance" zone extends from 80% to 100% non disintegration (CX-5). In her deposition, Willman-Painter testified, regarding the points on the graph at approximately 78 percent non-disintegration, and approximately 90 percent non disintegration:

Q: . . . . according to this graph they also have oxygen content in the range of 5,000 to 6,000 ppm, don't they?

* * * *

A. The data indicates that.

(CX-356, Ex. X at 267).

76. Example 1 of the '439 patent discloses that alloy's of composition in weight percent 33 neodymium, 66 iron, 1 boron with an oxygen content of 2,000 ppm as an integral part of the alloy, when exposed to a high temperature and humidity utilizing an autoclave, were totally disintegrated (CX-5, col. 1, lines 48 to 68, col. 2, lines 1-2).

E. Witnesses

77. John J. DuPlessis, in June 1958, was awarded a B.S. in Nuclear Engineering and a B.S. in Metallurgical Engineering. He finished a M.S. degree in Metallurgical Engineering with a minor in Ceramic Engineering in the fall of 1960. In 1960 he joined Allvac Metals, now called Teledyne Allvac, as a metallurgist. His duties involved general metallurgical activities in the production of high temperature alloys primarily for jet engines, laboratory operations and in the production of Alnico magnets. Allvac sold the Alnico magnet operation to Crucible in April 1963 and he joined Crucible at that time as a Plant Engineer and Metallurgist for an operation that was set up in Monroe, North Carolina. Following several promotions, in May 1985 DuPlessis was made president of the Crucible Magnets Division and remained in that position until he retired on November 30, 1991. From 1991 to the present he has been employed by Crucible and others in a consultant capacity (CX-141 at 1 to 3).

78. Angus Kingon has been a professor of materials science and engineering at North Carolina State University since 1987. He received a B.S. in 1974, an honors degree in the subject of chemistry in 1975, a M.S. in the field of physical chemistry, cum laude in 1977, and a Ph.D. in physical chemistry in 1981. His Ph.D. thesis specifically dealt with the processing and properties of ferroelectric materials. In post-doctorate work in 1981 to 1982, one of Kingon's students was undertaking research on ferroelectric materials which included analysis, in-direct gravimetric analyses, of the oxygen and lead content of ferroelectric materials by techniques which Kingon had developed during his Ph.D. thesis. From 1983 to 1987 Kingon was a research scientist at the National Lab in South Africa. During that time he ran a large number of analysis which included the use of a LECO instrument on at least one occasion (CX-200 at 1 to 16).

79. Kingon, as Professor of Materials Science at North Carolina State, has both teaching and research duties. The teaching duties involve teaching undergraduate and graduate classes in

material science as well as teaching graduate students to undertake research. The other component of Kingon's work has been research in the field of materials, which predominantly means studying materials and developing new materials, and determining processing structure property relationships. Kingon has also specialized in teaching the processing of materials. The materials on which he has taught and studied involve the full range of materials that we deal with, mainly metals, polymers and ceramics. Kingon's specialty has been ceramic materials and also thin films of these materials. At North Caroline State University Kingon would either run, supervise running, or have run many analyses which have included oxygen analyses. The techniques that Kingon typically uses include Rutherford back scattering, SIMS or secondary iron mass spectrometry, Auger analysis, scanning Auger or Esca analysis and iodometric wet chemical method for oxygen analysis done in conjunction with a group overseas. Oxygen analysis is also measured indirectly via properties. Kingon has also used infrared analysis of oxygen-containing materials (CX-200 at 1 to 16).

80. Kingon has consulted with Carborundum Corporation, American Research Corporation of Virginia, Texas Instruments, IBM, and L.G. Semicon. Kingon teaches in the general field of materials science. Specifically he teaches properties of ceramic materials, processing of ceramic materials, and properties of materials in general. Kingon belongs to a number of professional societies, has received honors and awards and has published (CX-200 at 1 to 16).

81. Martha Ann Riggs has been employed by Crucible for about twenty-five years and is currently a chemistry lab supervisor. She has been a chemistry lab supervisor at Crucible for eighteen years. Riggs' duties, as chemistry lab supervisor, are to direct the work of chemists and technicians, to provide service support to four product lines, to maintain operation of lab instruments, to insure calibration of lab instruments and to make sure that all work is done within guidelines of EPA and OSHA. Riggs' lab analyzes and process materials for four product lines, analyzes incoming raw materials, monitors the coolant system used in grinding and maintains the chlorine content of the

pond used for cooling the furnaces (CX-300 at 1-2).

82. Charles John Byrnes is a supervisor of chemistry at Crucible Research Center (CRC). He has been employed by Crucible for thirty eight years. In his present duties, he oversees the general operations of the chemistry lab. He considers himself knowledgeable concerning CRC's tests of neodymium-iron-boron magnets. CRC currently has a LECO TC 436 AR for performing oxygen testing on neodymium-iron-boron magnets. Byrnes has been involved either in a hands on or supervisory capacity with oxygen testing at CRC for thirty-eight years (CX-205 at 1 to 3).

F. Crucible's Testing

83. Crucible conducted a number of tests on a variety of its competitors' magnets over the last three years. These magnets include those made or sold by respondents Hennaco Excell, Hennaco Industrial, and/or Novel (collectively at times referred to as "Hennaco"), Injohnson, and Sino American, as well as those made or sold by San Huan, Ningbo, and Tridus. Crucible also conducted tests on magnets of other parties who are not, or have not been respondents in this investigation, such as H.T.I.E., Inc. and American Sunyouth, which are Chinese in origin. Tests were also performed on magnets found in products sold by Walmart and Wearnes Technology Corporation which are believed to be Chinese in origin (DuPlessis, CX-141 at Q.7, 124-499; CX-30, CX-22 to CX-104; CPX-1 to CPX-6).

84. The tests referred to in FF83 were generally conducted by Mrs. Riggs and her staff at Crucible Magnetics Division, and some additional tests on certain magnets were also conducted by Mr. Byrnes and his staff at the Crucible Research Center. The results of such tests formed the basis for Crucible's complaint in this investigation (CX-1; CX-3; DuPlessis CX-141 at Q.7, 124-399; CX-22 to CX-93; CPX-1 to CPX-3).

85. The pre-complaint testing was supplemented by some additional routine in-house testing which was done in 1995. (DuPlessis, CX-141 at Q.7, 400-499; CX-94 to CX-104; CPX-4 to

CPX-6).

86. Throughout the time period of Crucible's testing, there has been general agreement between the oxygen results obtained at Crucible Magnetics Division and those obtained at Crucible Research Center. (Riggs, CX-300 at Q.431).

87. Where a complete chemical analysis of a competitor's magnet was conducted by Crucible, magnets had, in weight percent, 30 and 36 total rare earth, 60 to 66 iron, and some quantity of boron. Moreover, in each such case the rare earth elements included at least neodymium (dependent claim 2) and dysprosium (dependent claim 3). (DuPlessis, CX-3, CX-141; Kingon, CX-200 at Q.275). See for example CX-68 for "Hennaco", CX-73 for Injohnson and CX-85 for Sino American.

88. Riggs also ran a series of tests on a number of Tridus magnets on August 12, 1995 under the supervision of Crucible's outside consultant Kingon. (Riggs, CX-300 at Q.168-178; Kingon, CX-200 at Q.95-96, 147-150).

89. Crucible has a standard procedure for determining the complete chemical composition of a permanent magnet alloy sent to its laboratory for an analysis listing the steps, beginning at picking up the samples to issuing the end analysis and reports, and also has a standard procedure defining the steps involved in analyzing rare earth-iron-boron samples. (Riggs, CX-300 at 5).

90. In the standard procedure for determining the chemical composition of a rare earth-iron-boron permanent magnet alloy at Crucible after the sample and submittal sheet are received, the sample is logged in on the Crumax log-in sheet. If the sample is a sintered part, neodymium is ran before the sample is crushed. Oxygen/nitrogen is done by LECO TC-436. A sample is then weighed for dissolution and subsequent analysis by Beckman Spectraspan 6 DCP. Iron is done by Brinkman Auto Titrator. The results are then copied to the submittal sheet. (Riggs, CX-300 at 6).

91. Prior to January of 1993, Crucible used the LECO TC36 Nitrogen/Oxygen

Determinator to conduct oxygen analyses of rare earth-iron-boron permanent magnet alloys. The LECO TC-436 Nitrogen/Oxygen Determinator now in use is more accurate. (Riggs, CX-300 at 15).

92. The LECO TC-436 instrument used by Crucible to measure the amount of oxygen present in magnet alloys has a documented measurement error of 150 $\pm$ ppm. (Kingon, CX-200 at Q.123, 251-252, 256).

93. Since January of 1993, Crucible has not used any instrument other than the LECO TC-436 Oxygen/Nitrogen Determinator to conduct oxygen analysis of rare earth-iron-boron permanent magnet alloys. (Riggs, CX-300 at 15).

94. The LECO TC-436 Oxygen/Nitrogen Determinator is more accurate than the LECO TC36 Oxygen/Nitrogen Determination because, with the built-in software, the instrument is more easily maintained. If there is a leak, one would know immediately and there's no trying to calibrate with an instrument that's not fully performing. Also, with the built-in balance there is no data entry error. (Riggs, CX-300 at 15).

95. In the spring of 1994, Riggs took a four-day course in Augusta, Georgia taught by LECO personnel with respect to the LECO TC 436 Oxygen/Nitrogen Determinator and the RH 404 Hydrogen Determinator. (Riggs, CX-300 at 15, 16).

96. CX-302 is a copy of the LECO instruction manual for Crucible's instruments. CX-303 is the written method used in the Crucible Magnetics chemistry lab for performing nitrogen/oxygen analysis. It accurately reflects the method used to operate the LECO TC436 Oxygen/Nitrogen Determinator since February 10, 1995. To the extent that CX-303 is silent as to any aspect concerning the operation of the LECO TC436 Oxygen/Nitrogen Determinator the instructions set forth in CX-302 are followed. Based on Riggs' use of LECO equipment for oxygen testing over the years, she considers this to be a reliable instrument for measuring oxygen content in metals. (Riggs, CX-300 at 16).

96A. Kingon visited the Crucible Magnetics Division and the Crucible Research Center to evaluate Crucible's testing. Kingon was impressed by the thoroughness of Crucible's testing and expressed a high degree of confidence in the results of Crucible's testing. (Kingon CX-200 at Q.66, 67, 242, 243, 251 to 256, 272, 274, 275).

97. CX-65 involved testing magnets with sample nos. CS-20-93 involving .375 inch diameter by .100 inch thickness magnets from Hennaco Excell (Bates C03011600). An invoice dated May 26, 1993 refers to "250 pcs." and "500 pcs." obtained from Hennaco Excell, Inc. Hence, it is assumed that when "pcs." is used in the phrase "60 pcs. (Group of 3) for Demag. curves" (CX-65 at C03011606), 60 pcs. refers to 60 magnets. Complainant's counsel also referred to 60 magnets with reference to this exhibit (Tr. at 181). In CX-65, sixty magnets were put in groups of three and tested (Bates C03011606). The oxygen values were 5000 and 5300 (CS-20-93-1), 5100 and 4800 (CS-20-93-2), 5000 and 4800 (CS-20-93-3), 5400 and 5200 (CS-20-93-4), 5400 and 5300 (CS-20-93-5), 5800 and 4900 (CS-20-93-6), 3800, 7200, 5300, 5600 (CS-20-93-7), 5000 and 5300 (CS-20-93-8), 5800 and 6200 (CS-20-93-9), 4600 and 5300 (CS-20-93-10), 5400 and 5400 (CS-20-93-11), 5300 and 5300 (CS-20-93-12), 5300 and 5300 (CS-20-93-13), 8600 and 9100 (CS-20-93-14), 5500 and 5900 (CS-20-93-15), 6000 and 5600 (CS-20-93-16), 5200 and 5100 (CS-20-93-17), 5100 and 5300 (CS-20-93-18), 5400 and 5400 (CX-20-93-19), 5300 and 5400 (CS-20-93-20) (CX-65; DuPlessis CX-141 at 57 to 61).

98. CX-64 reports further tests for sample no. CS-20-93 from Hennaco Excell. The oxygen results for CS-20-93-1 were 5100 and 5000, for CS-20-93-2 were 4180, 4810 and 5050 and for CS-20-93-3 were 5020 and 5250 (CX-64; DuPlessis, CX-141 at 61).

99. CX-94 is a copy of the competitive sample report file for CS-01-95, a purchase from H.T.I.E., Inc. involving .900 inch diameter by .100 inch thickness NdFeB magnets. Four tests were reported on Bates C0301220 of CX-94. The first magnet (#4-22783) showed oxygen at 7500 ppm

and 7500 ppm. The second magnet (#4-22784) showed oxygen at 5400 ppm, 5200 ppm and 5800 ppm, the third magnet (#4-22785) showed oxygen at 6000 ppm and 5800 ppm and the fourth magnet (#4-22786) showed oxygen at 6700 ppm and 6600 ppm. (DuPlessis, CX-94, CX-141 at 80, 81).

100. The Pre-Complaint in-house test results on magnets of Crucible's competitors revealed that the following magnet samples had one or more oxygen readings of 6,000 to 35,000 ppm (CPF 99):

Record Support		Mfg./Seller & Sample No.	Size or Model	Oxygen Reading	
CX 3	Ex. A, B/G	Tridus CS-15-93A(1)	0.875" x 1.00"	0.643/0.660	
CX 3	Ex. A	Tridus CS-15-93A(2)	"	0.63/0.63	
CX 3	Ex. A, B/G	Tridus CS-15-93A(3)	"	0.62/0.64	0.655/0.658
CX 3	Ex. A, B/G	Tridus CS-15-93C(1)	0.375" x 0.100"	0.604/0.626	
CX 3	Ex. A, B/G	Tridus CS-15-93C(2)	"	0.77/0.68	0.663/0.650
CX 3	Ex. A, B/G	Tridus CS-15-93C(3)	"	0.72/0.70	0.628/0.662
CX 3	Ex. A	Tridus CS-15-93C(4)	"	0.63/0.60	
CX 3	Ex. A	Tridus CS-15-93C(5)	"	0.78/0.75	
CX 3	Ex. A	Tridus CS-15-93C(6)	"	0.71/0.63	
CX 3	Ex. A	Tridus CS-15-93C(7)	"	0.70/0.70	
CX 3	Ex. A	Tridus CS-15-93C(8)	"	0.65/0.70	
CX 3	Ex. A	Tridus CS-15-93C(9)	"	0.70/0.68	
CX 3	Ex. A	Tridus CS-15-93C(10)	"	0.67/0.70	
CX 3	Ex. C	Tridus CS-53-93	0.200" x 0.250"	0.71/0.73	
CX 3	Ex. C	Tridus CS-54-93	"	0.82/0.72	
CX 3	Ex. D	Tridus CS-33-94	0.875" x 0.375"	0.60/0.66	
CX 3	Ex. D, E	Tridus CS-44-94A	"	0.65/0.75	0.69/0.69
CX 3	Ex. E	Tridus CS-44-94B	"	0.64/0.64	
CX 3	Ex. D, E	Tridus CS-44-94C	"	0.63/0.66	0.65/0.65
CX 3	Ex. F	Hennaco CS-14-93(1)	0.500" x 0.60"	0.86/0.81	
CX 3	Ex. F	Hennaco CS-14-93(2)	"	0.86/0.81	
CX 3	Ex. B/G	Hennaco CS-14-93(3)(CRC)	"	0.758/0.625/0.641/0.741/0.739	
CX 3	Ex. K	Hennaco CS-20-93-7	0.375" x 0.100"	0.72	
CX 3	Ex. K	Hennaco CS-20-93-9	"	0.62	
CX 3	Ex. K	Hennaco CS-20-93-14	"	0.86/0.91	
CX 3	Ex. J	Hennaco CS-20-93-16	"	0.60	
CX 3	Ex. K	Hennaco CS-33-93-3	1.00" x 0.500" x 0.316"	0.63	
CX 3	Ex. K	Hennaco CS-33-93-4	"	0.62	
CX 3	Ex. N	Injohnson CS-26-93-1	0.375" x 0.200"	0.65	
CX 3	Ex. N	Injohnson CS-26-93-5	"	0.61	

CX 3	Ex. O	Injohnson CS-27-93-3	0.375" x 0.100"	0.62
CX 3	Ex. O	Injohnson CS-27-93-4	" "	0.65/0.63
CX 3	Ex. O	Injohnson CS-27-93-6	" "	0.82/0.71
CX 3	Ex. P	Injohnson CS-36-93-A	0.875" x 0.394"	0.85/0.82
CX 3	Ex. P	Injohnson CS-36-93-B	" "	0.74/0.72
CX 3	Ex. P	Injohnson CS-36-93-C	" "	0.70/0.72
CX 3	Ex. P	Injohnson CS-36-93-D	" "	0.82/0.79
CX 3	Ex. P	Injohnson CS-36-93-E	" "	0.67/0.67
CX 3	Ex. P	Injohnson CS-36-93-F	" "	0.69/0.69
CX 3	Ex. P	Injohnson CS-36-93-G	" "	0.73/0.74
CX 3	Ex. P	Injohnson CS-36-93-H	" "	0.78/0.78
CX 3	Ex. Q	Injohnson CS-42-94A	0.875" x 0.394"	0.66/0.66
CX 3	Ex. Q	Injohnson CS-42-94B	" "	0.63
CX 3	Ex. Q	Injohnson CS-42-94C	" "	0.80/0.78
CX 3	Ex. R	Sino American CS-9-19-92	Plug	0.84/0.94
CX 3	Ex. R	Sino American CS-9-3-93	Plug	0.90/0.89
CX 3	Ex. S	Walmart CS-22-93	Deluxe Stereo Headphones	0.60
CX 3	Ex. T	Wearnes Technology CS-44-93	Microscience HDD 8040-58	0.68/0.67
CX 3	Ex. T	Wearnes Technology CS-45-93	Microscience HDD 8040-80	0.67/0.73

(CX 3; Kingon, CX 200 at Q.272-274; Riggs, CX 300 at Q.341-404).

101. The pre-complaint in-house test results on magnets of Crucible's competitors' magnets show that the following magnet samples had one or more oxygen readings of 5,900 ppm (CPF 100):

Record Support		Mfg./Seller & Sample No.	Size or Model	Oxygen Reading
CX 3	Ex. K	Hennaco CS-20-93-15	0.375" x 0.100"	0.59
CX 3	Ex. N	Injohnson CS-26-93-1	0.375" x 0.200"	0.59
CX 3	Ex. N	Injohnson CS-26-93-2	" "	0.59
CX 3	Ex. S	Walmart CS-22-93	Deluxe Stereo Headphones	0.59

102. Tridus magnets were tested on August 12, 1995 solely for oxygen content. The results of such tests revealed that the following Tridus magnet

samples had one or more oxygen readings of 6,000 to 35,000 ppm (CPF 106):

Record Support	Mfg./Seller & Sample No.	Size or Model	Oxygen Reading
CX 304 & CX 204	Tridus 27, 4-24000, run 289	0.375 dia. x 0.250	0.8918
CX 304 & CX 204	Tridus 27, 4-24000, run 290	" "	0.8792
CX 304 & CX 204	Tridus 27, 4-24000, run 293	" "	0.8940
CX 304 & CX 204	Tridus 27, 4-24000, run 294	" "	0.8127
CX 304 & CX 204	Tridus 27, 4-24001, run 295	0.375 dia. x 0.100	0.9169
CX 304 & CX 204	Tridus 27, 4-24001, run 296	" "	0.8879
CX 304 & CX 204	Tridus 27, 4-24001, run 297	" "	0.6398
CX 304 & CX 204	Tridus 27, 4-24001, run 299	" "	0.8546
CX 304 & CX 204	Tridus 27, 4-24001, run 300	" "	0.8753
CX 304 & CX 204	Tridus 27, 4-24001, run 304	" "	0.6368
CX 304 & CX 204	Tri-Neo 27, 4-24003, run 305	0.875 dia. x 0.375	0.6512
CX 304 & CX 204	Tri-Neo 27, 4-24003, run 306	" "	0.6490
CX 304 & CX 204	Tridus 4-24005, run 261	0.875 dia (CS-1593-A)	0.6339
CX 304 & CX 204	Tridus 4-24005, run 262	" "	0.6247
CX 304 & CX 204	Tridus 4-24005, run 264	" "	0.6113
CX 304 & CX 204	Tridus 4-24005, run 265	" "	0.6387
CX 304 & CX 204	Tridus 4-24005, run 267	" "	0.6230
CX 304 & CX 204	Tridus 4-24005, run 268	" "	0.6220
CX 304 & CX 204	Tridus 4-24005, run 270	" "	0.6205
CX 304 & CX 204	Tridus 4-24005, run 271	" "	0.6630
CX 304 & CX 204	Tridus 4-24005, run 272	" "	0.6536
CX 304 & CX 204	Tridus 4-24005, run 273	" "	0.6273
CX 304 & CX 204	Tridus 4-24005, run 274	" "	0.6054
CX 304 & CX 204	Tridus 4-24005, run 276	" "	0.6123
CX 304 & CX 204	Tridus 4-24005, run 277	" "	0.6716
CX 304 & CX 204	Tridus 4-24005, run 278	" "	0.7466
CX 304 & CX 204	Tridus 4-24005, run 279	" "	0.625
CX 304 & CX 204	Tridus 4-24005, run 280	" "	0.6120
CX 304 & CX 204	Tridus 4-24005, run 281	" "	0.6261
CX 304 & CX 204	Tridus 4-24005, run 282	" "	0.6168
CX 304 & CX 204	Tridus 4-24005, run 285	" "	0.6388
CX 304 & CX 204	Tridus 4-24005, run 286	" "	0.6430

CX 304 & CX 204	Tridus 4-24005, run 287	"	"	0.6409
CX 304 & CX 204	Tridus 4-24005, run 288	"	"	0.7022
CX 304 & CX 204	Tridus 4-24007, run 316	0.375 dia.		0.7990
CX 304 & CX 204	Tridus 4-24007, run 317	"	"	0.7878
CX 304 & CX 204	Tridus 4-24007, run 318	"	"	0.6717
CX 304 & CX 204	Tridus 4-24007, run 319	"	"	0.6583
CX 304 & CX 204	Tridus 4-24007, run 320	"	"	0.6857
CX 304 & CX 204	Tridus 4-24007, run 323	"	"	0.6725
CX 304 & CX 204	Tridus 4-24007, run 324	"	"	0.7053

(CX 304; CX 307; CX 204; Kingon CX 200 at Q.140-141, 207, 209-210, 217-222, 225-229, 232, 234, 257-259, 261-264, and 267; Riggs CX 300 at Q.73, 202-203, 288, 291, 297-298, and 315-321; CX 301; CX 306).

103. The August 12, 1995 test results on Tridus magnets also showed the following magnet sample which had an oxygen reading between 5,900 and 6,000 ppm (CPF 107):

Record Support	Mfg./Seller & Sample No.	Size or Model	Oxygen Reading
CX 304 & CX 204	Tri-Neo 27, 4-24002, run 311	0.875 dia. x 0.500	0.5990

(CX 304; CX 307; Kingon, CX 204; CX- 200 at Q.220-221, 265-266).

104. Other test results on magnets of Crucible's competitors revealed that the following magnet samples had one or more oxygen readings of 6,000 to 35,000 ppm (CPF 108):

Record Support	Mfg./Seller & Sample No.	Size or Model	Oxygen Reading
CX-97	Hennaco CS-03-95 (sample 2)	0.875" x 1.000"	0.61
CX-103	Hennaco CS-08-95 (sample 1)	0.375" x 0.100"	0.70/0.70
CX-103	Hennaco CS-08-95 (sample 3)	"	0.60/0.71
CX-103	Hennaco CS-08-95 (sample 4)	"	0.63

CX-103	Hennaco CS-08-95 (sample 5)	"	0.67/0.65
CX-104	Hennaco CS-09-95 (sample 1)	0.500" x 0.060"	0.93/0.82/0.70
CX-104	Hennaco CS-09-95 (sample 2)	"	0.98/0.86
CX-104	Hennaco CS-09-95 (sample 3)	"	0.82/0.82
CX-104	Hennaco CS-09-95 (sample 4)	"	0.83/0.82
CX-104	Hennaco CS-09-95 (sample 5)	"	0.82/0.80
CX-104	Hennaco CS-09-95 (sample 6)	"	0.82/0.79
CX-104	Hennaco CS-09-95 (sample 7)	"	0.78/0.81
CX-104	Hennaco CS-09-95 (sample 8)	"	0.78
CX-104	Hennaco CS-09-95 (sample 9)	"	0.70/0.71
CX-104	Hennaco CS-09-95 (sample 10	"	0.80/0.80
CX-104	Hennaco CS-09-95 (sample 11	"	0.81/0.83
CX-104	Hennaco CS-09-95 (sample 12)	"	0.87/0.83
CX-104	Hennaco CS-09-95 (sample 13)	"	0.66/0.68
CX-104	Hennaco CS-09-95 (sample 14)	"	0.81/0.92
CX-104	Hennaco CS-09-95 (sample 15)	"	0.74/0.67
CX-104	Hennaco CS-09-95 (sample 16)	"	0.85
CX-94	H.T.I.E. CS-01-95 (sample 1)	0.900" x 0.100"	0.75/0.75
CX-94	H.T.I.E. CS-01-95 (sample 3)	"	0.60
CX-94	H.T.I.E. CS-01-95 (sample 4)	"	0.67/0.66
CX-96	H.T.I.E. CS-02-95 (sample 1)	0.375" x 0.100"	0.64/0.61
CX-96	H.T.I.E. CS-02-95 (sample 3)	"	0.61/0.60
CX-96	H.T.I.E. CS-02-95 (sample 4)	"	0.60/0.65
CX-98	American Sunyouth CS-04-95	48mm x 48mm X 10mm	0.76/0.76
CX-101	American Sunyouth CS-06-95	29.2mm x 25.4 mm x 6.35mm	0.72/0.70

(CX 94; CX 96 through CX 98; CX 101; CX 103; CX 104; DuPlessis CX 141 at Q.400-446, 456-463, 473-494).

105. Other test results on magnets of Crucible's competitors show that the following magnet samples had one or more oxygen readings of 5,900 ppm (CPF 109):

Record Support	Mfg./Seller & Sample No.	Size or Model	Oxygen Reading
CX-97	Hennaco CS-03-95-1	0.875" x 1.000"	0.59
CX-103	Hennaco CS-08-95-2	0.375" x 0.100"	0.59

CX-94	H.T.I.E. CS-01-95-2	0.900" x 0.100"	0.59

(CX 94; CX 97; CX 103; DuPlessis CX 141 at Q.411, 435, and 482).

106. The Pre-Complaint in-house test results on Crucible's competitors magnets revealed that the following magnet samples had one or more oxygen readings between 5,450 and 6,000 ppm (CPF 120):

Record Support	Mfg./Seller & Sample No.	Size or Model	Oxygen Reading
CX 3 Ex. B/G	Tridus CS-15-93-A(2)(CRC)	0.875" x 1.00"	0.568/0.570
CX 3 Ex. B/G	Hennaco CS-14-93(1)(CRC)	0.500" x 0.60"	0.564/0.546
CX 3 Ex. K	Hennaco CS-20-93-7	0.375" x 0.100"	0.56
CX 3 Ex. K	Hennaco CS-20-93-9	" "	0.58
CX 3 Ex. K	Hennaco CS-20-93-15	" "	0.55/0.59
CX 3 Ex. J	Hennaco CS-20-93-16	" "	0.56
CX 3 Ex. K	Hennaco CS-33-93-2	1.00" x 0.500" x 0.316"	0.55
CX 3 Ex. K	Hennaco CS-33-93-3	"	0.55
CX 3 Ex. H, Exh.I	Hennaco CS-21-93-1	0.250" x 0.100"	0.58
CX 3 Ex. N	Injohnson CS-26-93-1	0.375" x 0.200"	0.59
CX 3 Ex. N	Injohnson CS-26-93-2	" "	0.59
CX 3 Ex. N	Injohnson CS-26-93-4	" "	0.56
CX 3 Ex. N	Injohnson CS-26-93-5	" "	0.58
CX 3 Ex. Q	Injohnson CS-42-94B	0.875" x 0.394"	0.57
CX 3 Ex. S	Walmart CS-22-93	Deluxe Stereo Headphones	0.59

(CX 3).

107. The August 12, 1995 test results on Tridus magnets revealed that the following magnet samples had one or more oxygen readings between 5,450 and 6,000 ppm (CPF 121):

Record Support	Mfg./Seller & Sample No.	Size or Model	Oxygen Reading

CX 204 & CX 304	Tridus 27, 4-24000, run 291	0.375 dia. x 0.250	0.5696
CX 204 & CX 304	Tridus 27, 4-24000, run 292	" "	0.5591
CX 204 & CX 304	Tri-Neo 27, 4-24002, run 308	0.875 dia. x 0.500	0.5729
CX 204 & CX 304	Tri-Neo 27, 4-24002, run 309	" "	0.5514
CX 304 & CX 204	Tri-Neo 27, 4-24002, run 311	0.875 dia. x 0.500	0.5990
CX 204 & CX 304	Tri-Neo 27, 4-24002, run 315	" "	0.5848
CX 204 & CX 304	Tri-Neo 27, 4-24003, run 303	0.875 dia. x 0.375	0.5475
CX 204 & CX 304	Tridus, 4-24006, run 321	0.250 dia.	0.5505
CX 204 & CX 304	Tridus, 4-24006, run 330	" "	0.5811
CX 204 & CX 304	Tridus, 4-24007, run 313	0.375 dia.	0.5746
CX 204 & CX 304	Tridus 4-24007, run 314	" "	0.5788

(CX 304; CX 307; CX 204; (Kingon) CX 200 at Q.217-222, 239, 261-269).

108. Other test results on magnets of Crucible's competitors revealed that the following magnet samples had one or more oxygen readings between 5,450 and 6,000 ppm (CPF 122):

Record Support	Mfg./Seller & Sample No.	Size or Model	Oxygen Reading
CX-97	Hennaco CS-03-95 (sample 1)	0.875" x 1.000"	0.58/0.56
CX-97	Hennaco CS-03-95 (sample 2)	" "	0.59
CX-103	Hennaco CS-08-95 (sample 2)	0.375" X 0.100"	0.59
CX-103	Hennaco CS-08-95 (sample 3)	" "	0.57
CX-104	Hennaco CS-09-95 (sample 8)	0.500" x 0.060"	0.55
CX-94	H.T.I.E. CS-01-95 (sample 2)	0.900" x 0.100"	0.59/0.58
CX-94	H.T.I.E. CS-01-95 (sample 3)	" "	0.58

(CX 94; CX 97; CX 103; DuPlessis CX 141 at Q.411, 434, 455, 472, 482, and 494).

109. With respect to the magnet samples reported in CPF99 (FF 100), DuPlessis testified (CX-3 at 2, 3):

> 6. I, and others acting at my request, have obtained neodymium-iron-boron ("NdFeB") magnets from proposed respondents Tridus International, Inc. ("Tridus"), Hennaco Excell, Inc. ("Hennaco Excell"), and Injohnson Precision Industrial Products, Ltd. ("Injohnson"), as well as articles containing NdFeB magnets from Wal-Mart and Wearnes Technology. On receipt of these magnets, I have had samples tested for chemical composition. Further details about these samples are found in the attached chart, which refers to the test results on these samples. The test results are attached as Exhibits A-B, D-Q, and S-T of this declaration.
>
> 7. In addition to the samples referred to above, I am familiar with certain magnet samples obtained by Crucible from The Magnet Co. which are believed to have originated with proposed respondent Sino American and which Crucible tested for composition. I am also familiar with certain magnet samples obtained by Crucible from Tridus in addition to those referred to in paragraph 6 which Crucible tested for composition. Further details about these samples are found in the attached chart, which refers to the test results on these samples. The test results are attached as Exhibit C and R of this declaration.

110. With respect to CPF 99 (FF 100), and the samples reported in CX-3 and the respective exhibits thereto, the following are the readings for the oxygen content:

Tridus CS-15-93A(1) - 6900 and 6800 (Ex. A), 6430 and 6600 (Ex. B), 6430 and 6600 (Ex. G).
Tridus CS-15-93A(2) - 6300 and 6300 (Ex. A), 5680 and 5700 (Ex. B), 5680 and 5700 (Ex. G)
Tridus CS-15-93A(3) - 6200 and 6400 (Ex. A), 6550 and 6580 (Ex. B), 6550 and 6580 (Ex. G).
Tridus CS-15-93C(1) - 7000 and 7000 (Ex. A), 6040 and 6260 (Ex. B), 6040 and 6260 (Ex. G)
Tridus CS-15-93C(2) - 7700 and 6800 (Ex. A), 6630 and 6500 (Ex. B), 6630 and 6500 (Ex. G)
Tridus CS-15-93C(3) - 7200 and 7000 (Ex. A), 6280 and 5520 (Ex. B), 6280 and 6620 (Ex. G)
Tridus CS-15-93C(4) - 6300 and 6000 (Ex. A)
Tridus CS-15-93C(5) - 7800 and 7500 (Ex. A)
Tridus CS-15-93C(6) - 7100 and 6300 (Ex. A)
Tridus CS-15-93C(7) - 7000 and 7000 (Ex. A)
Tridus CS-15-93C(8) - 6500 and 7000 (Ex. A)
Tridus CS-15-93C(9) - 7000 and 6800 (Ex. A)
Tridus CS-15-93C(10) - 6700 and 7000 (Ex. A)
Tridus CS-53-93 - 7100 and 7300 (Ex. C)
Tridus CS-54-93 - 8200 and 7200 (Ex. C)
Tridus CS-33-94 - 6000 and 6600 (Ex. D)
Tridus CS-44-94A - 6500 and 7500 (Ex. D), 6900 and 6900 (Ex. E)
Tridus CS-44-94B - 6400 and 6400

Tridus CS-94-94C - 6300 and 6600 (Ex. D), 6500 and 6500 (Ex. E)
Hennaco CS-14-93(1) - 8600 and 8100
Hennaco CS-14-93(2) - 8600 and 8100
Hennaco CS-14-93(3)(CRC) - 7580 and 6250 and 6410 and 7410 and 7390 (Ex. B), 7580 and 6250 and 6410 and 7410 and 7390 (Ex. G)
Hennaco CS-20-93-7 - 3800 and 5300 and 7200 and 5600 (Ex. K)
Hennaco CS-20-93-9 - 5800 and 6200 (Ex. K)
Hennaco CS-20-93-14 - 8600 and 9100 (Ex. K)
Hennaco CS-20-93-16 - 6000 and 5600 (Ex. J)
Hennaco CS-33-93-3 - 6300 and 5500 (Ex. K)
Hennaco CS-33-93-4 - 5200 and 6200 (Ex. K)
Injohnson CS-26-93-1 - 5900 and 6500 (Ex. N)
Injohnson CS-26-93-5 - 6100 and 5800 (Ex. N)
Injohnson CS-27-93-3 - 6200 and 5400 (Ex. O)
Injohnson CS-27-93-4 - 6500 and 6300 (Ex. O)
Injohnson CS-27-93-6 - 8200 and 7100 (Ex. O)
Injohnson CS-36-93-A - 8500 and 8200 (Ex. P)
Injohnson CS-36-93-B - 7400 and 7200 (Ex. P)
Injohnson CS-36-93-C - 7000 and 7200 (Ex. P)
Injohnson CS-36-93-D - 8200 and 7900 (Ex. P)
Injohnson CS-36-93-E - 6700 and 6700 (Ex. P)
Injohnson CS-36-93-F - 6900 and 6900 (Ex. P)
Injohnson CS-36-93-G - 7300 and 7400 (Ex. P)
Injohnson CS-36-93-H - 7800 and 7800 (Ex. P)
Injohnson CS-42-94A - 6600 and 6600 (Ex. Q)
Injohnson CS-42-94B - 5700 and 6300 (Ex. Q)
Injohnson CS-42-94C - 8000 and 7800 (Ex. Q)
Sino American CS-19-92 - 8400 and 8400 (Ex. R)
Sino American CS-3-93 - 9000 and 8900 (Ex. R)
Walmart CS-22-93 - 5900 and 6000 (Ex. S)
Wearnes Technology CS-44-93 - 6800 and 6700 (Ex. T)
Wearnes Technology CS-45-93 - 6700 and 7300

111. With respect to CPF 100 (FF 101) and the samples reported in CX-3 and respective exhibits thereto, following are the readings for the oxygen content:

Hennaco CS-20-93-15 - 5500 and 5900 (Ex. K)
Injohnson CS-26-93-1 - 5900 and 6500 (Ex. N)
Injohnson CS-26-93-2 - 5900 and 5200 (Ex. N)
Walmart CS-22-93 - 5900 and 6000 (Ex. S)

112. With respect to CPF 108 (FF 104) and the samples reported in CX-94, CX-96, CX-97, CX-98, CX-101, CX-103, and CX-104 the following are the readings for the oxygen content (where question mark appears in these findings, the question mark means that the portion of the

document involved is not readable):

Hennaco CS-03-95 (sample 2) 5900 and 6100 (CX 97)
Hennaco CS-08-95 (sample 1) 7000 and 7000 (CX 103)
Hennaco CS-08-95 (sample 3) 6000 and 5700 and 7100 (CX 103)
Hennaco CS-08-95 (sample 4) 5400 and 6300 (CX 103)
Hennaco CS-08-95 (sample 5) 6700 and 6500 (CX 103)
Hennaco CS-09-95 (sample 1) 9300, 8200 and 7000 (CX 104)
Hennaco CS-09-95 (sample 2) 9800 and 8600 (CX 104)
Hennaco CS-09-95 (sample 3) 8200 and 8200 (CX 104)
Hennaco CS-09-95 (sample 4) 8300 and 8200 (CX 104)
Hennaco CS-09-95 (sample 5) 8200 and 8000 (CX 104)
Hennaco CS-09-95 (sample 6) ? (CX 104)
Hennaco CS-09-95 (sample 7) ? (CX 104)
Hennaco CS-09-95 (sample 8) 5500 and ? (CX 104)
Hennaco CS-09-95 (sample 9) 7000 and 7100 (CX-104)
Hennaco CS-09-95 (sample 10) 8000 and 8000 (CX 104)
Hennaco CS-09-95 (sample 11) 8100 and 8300 (CX 194)
Hennaco CS-09-95 (sample 12) 8700 and 8300 (CX 104)
Hennaco CS-09-95 (sample 13) 6600 and 6800 (CX 104)
Hennaco CS-09-95 (sample 14) 8100 and 9200 (CX 104)
Hennaco CS-09-95 (sample 15) 7400 and 6700 (CX 104)
Hennaco CS-09-95 (sample 16) 8500 and 5200 (CX 104)
H.T.I.E. CS-01-95 (sample 1) 7500 and 7500 (CX 94)
H.T.I.E. CS-01-95 (sample 3) 6000 and 5800 (CX 94)
H.T.I.E. CS-01-95 (sample 4) 6700 and 6600 (CX 94)
H.T.I.E. CS-02-95 (sample 1) 6400 and 6100 (CX 96)
H.T.I.E. CS-02-95 (sample 3) 6100 and 6000 (CX 96)
H.T.I.E. CS-02-95 (sample 4) 6000 and 6500 (CX 96)
American Sunyouth CS-04-95 7600 and 7600 (CX-98)
American Sunyouth CS-06-95 7200 and 7000 (CX 101)

113. With respect to CPF 109 (FF 105) and the samples reported in CX 97, CX 103 and CX 94, the following are the oxygen readings:

Hennaco CS-03-95-1 5800 and 5600 (CX 97)
Hennaco CS-08-95-2 5100 and 5900 (CX 103)
H.T.I.E. CS-01-95-2 5900 and 5800 and 5200 (CX 94)

114. With respect to CPF 120 (FF 106) and the samples reported in CX 3 and the respective exhibit, the following are the oxygen readings:

Tridus CS-15-93-A(2)(CRC) 5680 an 5700 (Ex. B/G)
Hennaco CS-14-93(1)(CRC) 5640 and 5460 (Ex. B/G)
Hennaco CS-20-93-7 3800 and 5300 and 7200 and 5600 (Ex. K)
Hennaco CS-20-93-9 5800 and 6200 (Ex. K)

Hennaco CS-20-93-15	5500 and 5900 (Ex. K)
Hennaco CS-20-93-16	6000 and 5600 (Ex. J)
Hennaco CS-33-93-2	5500 and 4800 (Ex. K)
Hennaco CS-33-93-3	6300 and 5500 (Ex. K)
Hennaco CS-21-93-1	5800 and 5400 and 5580 and 5060 (Ex. H/I)
Injohnson CS-26-93-1	5900 and 6100 (Ex. N)
Injohnson CS-26-93-2	5900 and 5200 (Ex. N)
Injohnson CS-26-93-4	5600 and 5000 (Ex. N)
Injohnson CS-42-93-5	6100 and 5800 (Ex. N)
Injohnson CS-42-94B	5700 and 6300 (Ex. Q)
Walmart CS-22-93	5900 and 6000 (Ex. S)

115. With respect to CPF 122 (FF 108) and the samples reported in CX 94, CX 97, CX 103, CX 104, the following are the oxygen readings:

Hennaco CS-03-95 (sample 1) 5800 and 5600 (CX 97)
Hennaco CS-03-95 (sample 2) 5900 and 6100 (CX 97)
Hennaco CS-08-95 (sample 2) 5100 and 5900 (CX 103)
Hennaco CS-08-95 (sample 3) 6000, 7100 and 5700 (CX 103)
Hennaco CS-09-95 (sample 8) 5500, ? (CX 104)
H.T.I.E. CS-01-95 (sample 2) 5900, 5800, 5200 (CX 94)
H.T.I.E. CS-01-95 (sample 3) 6000, 5800 (CX 94)

116. The August 12, 1995 tests included complete chemical analysis on five different sample grades of Tridus magnets (4-24000, 4-24001, 4-24002, 4-24003, 4,24005) (CX-307; Riggs CX-300 at Q. 196-199, 201; CX-201; CX-301; CX-306; Kingon CX-200 at Q.150-153).

117. Where a complete chemical analysis of a Tridus magnet was conducted by Crucible on August 12, 1995, all such magnets contained, in weight percent, between 30 to 36 total rare earth elements, between 60 and 66 iron, and between 30 to 36 total rare earth elements, between 60 and 66 iron, and between 1.00 and 1.17 boron. The principal rare earth element for each magnet tested was neodymium, although an amount of dysprosium was also present in each magnet (CX-307; CX-351 at ¶ 58).

118. Samples 4-24000, 4-24001, and 4-24005 of the August 12, 1995 Crucible tests each had oxygen readings between 6,000 and 35,000 ppm. The remaining elements appeared in amounts of 0.27 or less each, most being less than 0.01 (CX-307).

119. Another purpose of the August 12, 1995 testing by Crucible was to confirm that the oxygen readings of magnets of competitors varied throughout the interior of the magnets because they were not homogeneous. A metal is not generally homogeneous in all locations of that metal (Kingon CX-200 at Q.111-114, 120). In Part D to Kingon's laboratory notebook (CX-204), he selected samples from nine discrete locations of the same Tridus magnet, sample 4-24005. His results showed consistent oxygen readings for each pair of samples taken from the same location of the magnet, but variations between the different locations (Kingon, CX-200 at Q.207, 213, 216, 259-260). As a result, it is apparent that magnets with selected oxygen readings below 6,000 ppm cannot be automatically dismissed as not infringing. (Kingon , CX-200 at Q.115-119, 121-122, 124).

120. Because a permanent magnet alloy is not homogeneous, two alloys made from the same production run could have different oxygen contents (Kingon, CX-200 at 1Q. 115).

121. If a permanent magnet alloy is not homogeneous, the amount of oxygen could vary at different points within the alloy (Kingon, CX-200 at Q.116).

122. The LECO oxygen analyzer analyzes the oxygen content of a given sample, that 0.1 gram or so of sample that one has selected. The distribution of the oxygen within that one sample will not affect the results of the oxygen analysis as long as the material is properly fluxed. If the variation of the oxygen content is varying over a range which is larger than that sample size, then care has to be taken in the interpretation of the results of an analysis (Kingon, CX-200 at Q. 117).

123. The possibility that the amount of oxygen might vary at different points in the claimed alloy is a factor that requires the testing of more than one sample from the alloy to properly determine the oxygen content of the sample (Kingon, CX-200 at Q. 118).

124. Because the possibility that the amount of oxygen might vary at different points in the claimed alloy it is advisable that the testing of samples be from specific locations in the claimed alloy to properly determine the oxygen content of the sample (Kingon , CX-200 at Q. 119).

125. If one is trying to determine if a rare earth-iron-boron permanent magnet alloy had an oxygen content in the range of 6,000 to 35,000 ppm, a sample reading that is less than 6,000 ppm would not necessarily mean that the tested alloy has a oxygen level below the range of 6,000 to 35,000 ppm. This deals with the homogeneity issue. The oxygen content value that one obtained was from a single sample taken from the magnet which may not be representative of the whole. For example, if a portion of the surface which might have high oxygen content on the surface, if that was a portion of the analyzed sample, then it might give a higher reading of oxygen content than the remainder of the magnet (Kingon, CX-200 at Q. 121, 122).

126. If the accuracy of the technique, i.e. the instrument measurement error, was for example plus or minus 150 ppm under particular conditions, then that would imply that a reading of 5,900 ppm could be considered within the range of 6,000 to 35,000 ppm (Kingon, CX-200 at Q. 123).

127. Insufficient sampling could be one reason why a reading below 6,000 ppm would not indicate that the tested alloy had an oxygen level in the range of 6,000 to 35,000 ppm. As soon as one is considering an nonhomogeneous oxygen content within the sample, then one needs to consider the number of samples tested in relation to the oxygen content of that particular magnet (Kingon, CX-200 at Q. 124).

128. CX-26 is a Crucible competitive sample report from the Elizabethtown lab on Tridus. The sample number is identified as CS-15-93 and concerns three magnets sizes i.e. A (.875 inch diameter), B (.250 inch diameter) and C (.375 inch diameter). The reported oxygen content is as follows: CS-15-93A(1) 6900 and 6800 ppm; CS-15-93A(2) 6200 and 6300; CS-15-93A(3) 6200 and 6400; CS-15-93B 4700 and 4400 (CX 26; CX 27; DuPlessis CX-141 at 33).

129. CX-28 is a Crucible competitive sample report on Tridus and gives the results of composition tests on the .375 by .100 inch Tridus magnets ordered by Crucible. It reports ten tests

for sample CS-15-93C. Thus for sample (1) there were 7000 and 7000, for sample (2) 7700 and 6800, for sample (3) 7200 and 7000, for sample (4) 6300 and 6000, for sample (5) 7800 and 7500, for sample (6) 7100 and 6300, for sample (7) 7000 and 7000, for sample (8) 6500 and 7000, for sample (9) 7000 and 6800 and for sample (10) 6700 and 7000 (CX- 28; DuPlessis CX-141 at 34, 35).

130. CX-29 gives the results of composition tests performed by Crucible Research Center on Tridus magnets ordered for Crucible [ ] Three samples of each size Tridus magnet were submitted with the designations CS-15-93A, CS-15-93B and CS-15-93C with the A samples corresponding to the .875 inch diameter magnets, the B samples to the .250 inch diameter magnets and the C samples to the .375 inch diameter magnets. With respect to CS 15-93A, the sample (1) gave oxygen readings of 6430 and 6600, the sample (2) gave 5680 and 5700, the sample (3) gave 6550 and 6580. For the first CS 15-93B the oxygen readings were 4760 and 4790, for sample (2) 4130 and 4000, for (3) the 4540 and 4540. For the first CS 15-93C sample the oxygen content readings were 6040 and 6760, for the sample (2) they were 6630 and 6500 and for the sample (3) they were 6280 and 6620 (CX-29, DuPlessis CX-141 at 36, 37).

131. CX-30 is a copy of a competitive sample report for a magnet reported to be from Tridus acquired through the normal course of business from a customer, Symbol Technology. The magnet appears to be a disk of .24375 inch in diameter with an ID of .058 in a thickness or length of .201 inch. One composition test is reported. The oxygen content readings are 7100 and 7300 (CX-30; DuPlessis CX-141 at 37, 38).

132. CX-31 is a copy of a competitive sample report for CS-54-39, a magnet reported to be from Tridus acquired for Crucible through the normal course of business from a customer Symbol Technology. One composition test is reported and the oxygen content readings are 8200 and 7200 (CX-31; DuPlessis CX-141 at 38, 39).

133. CX-34 is a competitive sample report for sample CS-33-94 performed by Crucible giving the results of one composition test on a Tridus magnet sample. The oxygen content readings are 6000 and 6600 (CX-34; DuPlessis CX-141 at 41, 42).

134. Additional samples from the CX-33 shipment were selected for testing and reported in CX-35 as CX-44-94A, CX-36 as CX-44-94B and CX-37 as CS-44-94C. CX-35 reports one test and the oxygen content readings are 8500 and 7500. CX-36 reports one test and the oxygen content readings are 4500 and 4400. CX-37 reports one test and the oxygen content readings are 6300 and 6600 (CX-35, 36 and 37; DuPlessis CX-141 at 43, 44).

135. CX-38 is an analytical chemistry report dated December 15, 1994 for NdFeB magnets submitted by Norman Leach from Elizabethtown and gives the results of composition tests performed by CRC on Tridus magnets. CX-38 reports on samples CS 44-94A, CX-44-94B, CS 44-94C. The oxygen readings for CS 44 94A were 6900 and 6900, for CS 44-94B were 6400 and 6400 and for CS 44-94C were 6500 and 6500 (CX-38; DuPlessis CX-141 at 44, 45).

136. CX-53 is a Elizabethtown laboratory report on samples received at Crucible from [ ] With respect to the oxygen readings the following were found: sample (4-24000 were 8900 and 8800; sample 4-24401 were 8500 and 8700; sample 4-24402 were 5500 and 5700; sample 4-24403 were 4300, 5300 and 5500; and sample 4-24405 were 6300 and 6200 (CX-53; DuPlessis CX-141 at 49, 50).

137. Hennaco Excell has sent Crucible letters and brochures of solicitation for purchase of neodymium-iron-boron magnets. DuPlessis has obtained or has had samples of magnets obtained from Hennaco Excell (DuPlessis, CX-141 at 50).

138. CX-57 is a copy of a competitive sample report for CS 14 93 which covers the Hennaco Excell .400 inch diameter by .060 inch long sample which were the subject of CX-56. Two tests are reported and the oxygen content readings are 8600 and 8100 for the first sample and 8600

and 8100 for the second sample (DuPlessis, CX-141 at 51 to 53).

139. CX-69 contains the analytical chemistry report from Crucible Research Center dated April 27, 1993 and the last three items on this report covers the three Hennaco samples that were submitted to CRC (Crucible Research Center) for analysis. Those samples were drawn from the same shipment from which those for CX-57 were drawn. CX-60 gives the results of the composition tests on those samples. Thus, it is reported that for CS-14-93 (1) the oxygen readings were 5640 and 5460; for CS-14-93(2) the oxygen readings were 5410 and 5350; and for CS-14-93(3) the oxygen readings were 7580, 6250, 6410, 7410 and 7390 (DuPlessis, CX-141 at 53, 54; CX-60).

140. CX-61 reports the results of the composition tests on Hennaco Excell magnets ordered by Crucible. Eight tests are reported for CS-21-93 for 56 magnets in groups of seven. Hence each sample represented seven magnets. Thus for sample (1) the oxygen readings were 5800 and 5400, for sample (2) 5000 and 5100, for sample (3) 5000 and 5100 for sample (4) 4200 and 5100, for sample (5) 4500 and 4900, for (6) 5100 and 5200, for sample (7) 5200 and 4300 and for sample (8) 4700 and 5100. CX-64 is the Crucible Research Center analytical chemistry report for those samples, i.e. results of composition tests performed by CRC on additional samples of the Hennaco .250 by .100 magnets which were the subject of CX-62. The sample number in CX-64 corresponds to CS-21-93, i.e., CX-61. In CX-64 for the first sample the oxygen readings were 5580, 5060 and 5010; for the second sample the readings were 4710, 5230 and 5170; and for the third sample the readings were 5240 and 5110 (DuPlessis, CX-141 at 56, 57).

141. CX-68 is a copy of the competitive sample report for CS-33-93, for four .1 inch by .5 inch by .316 Hennaco magnets. The sample is CS-33-93. For sample (1) the oxygen readings were 5000 and 5100; for sample (2) the oxygen readings were 5500 and 4800; for (3) sample the oxygen readings were 6300 and 5500; and for sample (4) the oxygen readings were 5200 and 6200 (DuPlessis, CX-141 at 63, 64; CX-68).

142. CX-69 is a competitive sample report for CS-34-93 which covers Hennaco 2.00 by 2.00 by 1.00 magnets. for (1) sample the oxygen readings were 3500 and 3300; for sample (2) the oxygen readings were 3300 and 3400; and for (3) the oxygen readings were 3600 and 3400 (DuPlessis, CX-141 at 64, 65).

143. CX-70 is an analytical chemistry report dated September 7, 1993 for the Hennaco neodymium-iron-boron 2.00 by 2.00 by 1.00 magnets. The sample is identified as CS-34-93. For sample (1) the oxygen readings were 3400 and 3350, for sample (2) the oxygen readings were 3530 and 3480 and for sample (3) the oxygen readings were 3530 and 3590 (DuPlessis, CX-141 at 65, 66).

144. CX-73 is a copy of a competitive sample report for CS-26-93 for the .375 inch diameter by .200 inch thick magnets obtained from Injohnson via CX-71. Six tests were preformed. For sample (1) the oxygen readings were 5900 and 6500; for sample (2) the oxygen readings were 5900 and 5200; for sample (3) the oxygen readings were 5100 and 5300; for sample (4) the oxygen readings were 5600 and 5000; for sample (5) the oxygen readings were 6100 and 5800; and for sample (6) the oxygen readings were 5300 and 5200 (DuPlessis, CX-141 at 67, 68).

145. CX-74 is a copy of a competitive sample report for CS-27-93 for the .375 inch diameter by .100 inch long magnets received from Injohnson via CX-71. Six tests are reported. For sample (1) the oxygen readings were 5400 and 5200; for sample (2) the oxygen readings were 4700 and 4800, for sample (3) the oxygen readings were 6200 and 5400; for sample (4) the oxygen readings were 6500 and 6300; for sample (5) the oxygen readings were 5400 and 5300; and for sample (6) the oxygen readings were 8200 and 7100 (DuPlessis, CX-141 at 69, 70).

146. CX-78 is a copy of a competitive sample report for CS-36-93 for the .875 inch diameter by .394 inch long magnets received from Injohnson via CX-76. Eight tests are reported. For sample (1) the oxygen readings were 8500 and 8200; for sample (2) 7400 and 7200; for sample

(3) 7000 and 7200; for sample (4) 8200 and 7900; for sample (5) 6700 and 6700; for sample (6) 6900 and 6900; for sample (7) 7300 and 7400; and for sample (8) 7800 and 7800 (DuPlessis, CX-141 at 71, 72).

147. CX-82, CX-83 and CX-84 are copies of competitive sample report for CS-42-94A-C for the .875 by .394 inch Injohnson magnets which were the subject of CX-80. For CS-42-94A the oxygen readings were 6600 and 6600. For CS-42-94B the oxygen readings were 5700 and 6300. For CS-42-94C the oxygen readings were 8000 and 7800 (DuPlessis, CX-141 at 72 to 74).

148. CX-85 is a copy of a competitive sample report filed for CS-19-92. It is a composition test for a Sino American magnet of .365 inch diameter by .057 inch long. The oxygen readings were 8400 and 9400 (DuPlessis, CX-141 at 74).

149. CX-86 is a competitive sample report filed for CS-3-93. The magnet in issue were sent to Crucible from the Magnet Company and contain a composition test for a Sino American magnet. The readings for the oxygen content are 9000 and 8900 (DuPlessis, CX-141 at 74,. 75).

150. CX-88 is a copy of a competitive sample report filed for the Wal-Mart headphones. Oxygen content readings were 5900 and 6000 (DuPlessis, CX-141 at 76, 77).

151. CX-91 is a copy of a competitive sample report for CS-45-93. It relates to a disk drive for a computer which contained two magnets. The oxygen readings from the tests were 6700 and 7100 (DuPlessis, CX-141 at 77, 78).

152. CX-92 is a copy of a competitive sample report file for CS-49-93 which related to magnets obtained from the Microscience model 8040-80 disk drive, [ ] The oxygen readings from testing were 6800 and 6700 (DuPlessis, CX-141 at 78, 79).

153. **[There is no FF 153].**

154. CX-96 is a copy of the competitive sample report file for CS-02-95, which are magnets purchased from H.T.I.E., Inc. of .375 diameter by .100 inch thick. The oxygen readings

reported were for sample (1) 6400 and 6710; for sample (3) 6000 and 6100; and for sample (4) 6000 and 6500 (DuPlessis, CX-141 at 81 to 83).

155. CX-97 contains a copy of a competitive sample report file for CS-03-95, a purchase from Hennaco Excell, concerning .875 diameter by 1 inch long NdFeB magnets. Two tests are reported. The oxygen readings were 5800 and 5600 for sample (1) and 5900 and 6100 for sample (2) (DuPlessis, CX-141 at 83. 84).

156. CX-98 is a copy of a Crucible competitive sample report for CS-04-94, a magnet from American Sunyouth relating to 1.8935 inch by length, 1.8935 inch by width, .396 inch in thickness. The oxygen readings were 7600 and 7600 (DuPlessis, CX-141 at 84 to 86).

157. CX-100 is a copy of a competitive sample report for CS-05-95 concerning a magnet sample received from "the solicitation by American Sunyouth to Crucible. The magnet was 1.892 in diameter with an ID whole of .710 inch and a thickness of .1190 inch. The oxygen measurements were 4700 and 5100 (DuPlessis CX-141 at 86, 87).

158. CX-101 is a copy of a competitive sample report for CS-06-95 which relates to a magnet received from American Sunyouth. The oxygen measurements are 7200 and 7000 (DuPlessis, CX-141 at 88).

159. CX-102 is a copy of a competitive sample report for CS-07-95 relating to another, magnet from American Sunyouth. The oxygen contents were 5200 and 5100 (DuPlessis, CX-141 at 89, 90).

160. CX-103 is a copy of Crucible's competitive sample report file for CS-08-95, a purchase from Hennaco Excell. Five tests are reported for the oxygen measurements. Thus for sample (1) there are 7000 and 7000; for sample (2) 5100 and 5900; for sample (3) 6000, 7100 and 5700; for sample (4) 6300 and 5400; and for sample (5) 6500 and 6700 (DuPlessis, CX-141 at 91, 92).

161. CX-104 is a competitive sample sheet and sixteen tests are reported for CS-09-95 that relate to Hennaco-Excell. With respect to oxygen measurements the readings are for sample (1) 9300, 8200 and 7000; for sample (2) 9800 and 8600; for sample (3) sample 8200 and 8200; for sample (4) 8300 and 8200; for sample (5) 8200 and 8000; for sample (6) 8200 and 7900; for sample (7) 7800 and 8100; for sample (8) 5500 and 7800; for sample (9) 700 and 7100; for sample (10) 8000 and 8000; for sample (11) 8100 and 8300; for sample (12) 8700 and 8300; for sample (13) 6600 and 6800; for sample (14) 8100 and 9200; for sample (15) 7400 and 6700; and for sample (16) 8500 and 5200 (DuPlessis, CX-141 at 93 to 95).

G. Domestic Industry

162. Crucible Magnetics Division of Crucible Materials Corporation manufactures permanent magnets, including NdFeB magnets, in the United States and sells them worldwide (DuPlessis, CX-141 at Q.30-33).

163. Crucible Magnetics has its headquarters at Elizabethtown, Kentucky, and manufactures its magnets at its Elizabethtown facility (DuPlessis, CX-141 at Q.40-42, 94).

164. Crucible also has a facility at Hodgenville, Kentucky, which manufactures assemblies and sub-assemblies using magnets and also slices and dices large bulk magnets into smaller magnets. These bulk magnets [ ] (DuPlessis, CX-141 at Q.42).

165. Crucible Research Division at Pittsburgh performs research for Crucible Magnetics (DuPlessis, CX-141 at Q.39, 43).

166. Crucible Magnetics' total permanent magnet sales in 1992-95 were:

1992	[ ]
1993	[ ]
1994	[ ]
through July 30, 1995	[ ]

(DuPlessis, CX-141 at Q.34-35; CX-8C).

167. Crucible's neodymium-iron-boron magnets are sold under the trade name Crumax (DuPlessis, CX-141 at Q.36-37).

168. CPX-7 is an NdFeB magnet made by Crucible Magnetics (DuPlessis, CX-141 at Q.38).

169. Crucible's NdFeB magnets are sold in standard commercial grades (DuPlessis, CX-141 at Q.44).

170. CX-9 is a copy of a Crucible brochure along with individual data sheets for Crucible's standard commercial grades (DuPlessis, CX-141 at Q.44).

171. Crucible's standard commercial grades are identified by a number which refers to a specific set of magnetic properties (DuPlessis, CX-141 at Q.44-46; CX-9). These grade numbers are: 261, 282, 301, 315, 322, 355, 2630, 2830, 2925, 3125, 3220, 3520, 3517, 3817, 3714, and 4014 (DuPlessis, CX-141 at Q.46-47; CX-9). Grades 261 and 301, 282 and 322, and 315 and 355, respectively, [

] (DuPlessis, CX-141 at Q.48-49).

172. [

] (DuPlessis, CX-141 at Q.50-51).

173. CX-100 details Crucible's shipments of its NdFeB magnets for 1992-94 and part of 1995 (DuPlessis, CX-141 at Q.87).

174. The term "shipments" in CX-10 is equivalent to sales (DuPlessis, CX-141 at Q.89).

175. Shipments (sales) of Crucible's NdFeB magnets in 1992-1995 were:

1992	shipments	[ ]
	pounds shipped	[ ]
1993	shipments	[ ]
	pounds shipped	[ ]

1994	shipments	[ ]
	pounds shipped	[ ]
1995 through March 31st		
	shipments	[ ]
	pounds shipped	[ ]

(DuPlessis, CX-141 at Q.88; CX-10 (C 10 01 0793, C 10 01 0886, C 10 01 0973, C 10 01 1000)).

176. CX-11 contains the beginning and ending inventories for Crucible's NdFeB magnets from 1992 through March 31, 1995 (DuPlessis, CX-141 at Q.90-91). Using this information on inventories and the data on shipments, it is possible to determine the amount of NdFeB produced by Crucible in 1992-95 (DuPlessis, CX-141 at Q.92).

177. Crucible's production of neodymium-iron-boron magnets in 1992-1995 was:

1992	[ ]
1993	[ ]
1994	[ ]
1995 through March 31st	[ ]

(DuPlessis, CX-141 at Q.93).

178. Crucible routinely samples magnets from mill batches to determine that their chemical composition is within the range specified for the particular grade (DuPlessis, CX-141 at Q.97-99).

179. CX-13 contains all of the chemical analyses done in the period 1992 through the cutoff of 1995 on sintered neodymium-iron-boron magnets produced at Crucible Magnetics (DuPlessis, CX-141 at Q.100). The majority of these analyses (CX-13) results are complete chemical analyses performed on magnets from mill batches. [

] (DuPlessis, CX-141 at Q.100).

180. The test results in CX-13 are reported as weight percent. Oxygen is usually tested

two or more times (DuPlessis, CX-141 at Q.101).

181. The weight percent of oxygen may be converted to parts per million by multiplying by ten to the fourth power (DuPlessis, CX-141 at Q.102).

182. The analyses in CX-13 show that for all of the completed tests, the total rare earth content was between 30 and 36 percent, with the exception of one test which had 37.3 percent (DuPlessis, CX-141 at Q.104). Neodymium and dysprosium were the primary rare earth elements making up the 30 to 36 percent total rare earth content (DuPlessis, CX-141 at Q.105).

183. As to iron, with the exception of [

] all of the samples analyzed for iron in CX-13 had between 60%-66% weight percent (DuPlessis, CX-141 at Q.106).

184. All of the complete analyses performed in CX-13 showed that the magnets contained boron (DuPlessis, CX-141 at Q.107).

185. The same tests in CX-13 show that a very substantial number of the magnets tested contained oxygen between 6,000 and 35,000 ppm (DuPlessis, CX-141 at Q.108). The oxygen content is stated on the individual analyses of each sample tested for oxygen content (DuPlessis, CX-141 at Q.108).

186. Neodymium and dysprosium appeared in all of Crucible's NdFeB magnets produced between 1992 and June 1995, according to Crucible's routine tests of its magnets (DuPlessis, CX-141 Q. 105, p. 21; CX-13).

187. Essentially all of Crucible's NdFeB magnets produced between 1992 and June 1995 showed an iron concentration between 60 and 66 weight percent, according to Crucible's routine tests of its magnets (DuPlessis, CX-141, Q. 106, p. 21; CX-13).

188. Boron appeared in all of Crucible's NdFeB magnets produced between 1992 and June

1995, according to Crucible's routine tests of its magnets (DuPlessis, CX-141 Q.107, p. 21; CX-13).

189. Calculations show that a large portion of magnets produced by Crucible in 1992-1995 were covered by claims 1-3 of the '439 (DuPlessis, CX-141 at Q.110-112; CX-14).

190. [

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192. [

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193. [

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194. [

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195. [

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H. Remedy

196. At least certain respondents in this investigation are entities of the People's Republic of China (China) or obtain their NdFeB magnets from sources in China (Exhibits to CX-2).

197. CX-105 is a September 1993 article by Dr. Yang Luo, Vice-President of San Huan, entitled "The Decade of the NdFeB Magnet in China" which summarizes the development of the NdFeB magnet industry in China (DuPlessis, CX-141 at Q.500-502).

198. China began development of its NdFeB magnet industry soon after the announcement of the discovery of NdFeB magnets (CX-105).

199. The NdFeB industry in China has developed rapidly:

a. The number of NdFeB magnet manufacturers in China increased from less than 10 in 1984 to 154 in 1992 (CX-105 at 5 and Table 5).

b. Chinese NdFeB magnet production increased from 2 tons in 1984 to 490 tons in 1992 (CX-105, Table 3).

c. In 1992, China was second only to Japan in the production of sintered NdFeB magnets, with about 22 percent of world production (CX-105 at 13).

d. Chinese capacity to produce NdFeB magnets increased from 20 tons in 1985 to 1200 tons in 1992 (CX-105 at 2-5 and Table 3).

200. Paralleling the increase in the number of producers, production, and production capacity, there was a continuous decline in the price of NdFeB magnets made in China from 1984 to 1992 (CX-105 at 8 and Table 6).

201. A more recent analysis of the Chinese NdFeB magnet industry by Dr. Yang Luo states that the number of producers has declined to 115-120 in 1994 (CX-392 at 7-8 and Table 4). However, during that same period, production rose to 1000 tons and capacity to 1500 tons (CX-392, Fig. 3).

202. Prices for NdFeB magnets have risen since 1992 (CX-392, Table 5).

203. San Huan is the largest producer of sintered magnets in China, with about 17 percent of total Chinese production (CX-105 at 13). San Huan is 100% owned by the Chinese Academy of Sciences (CX-365C, Response to Int. No. 41(c)). The Chinese Academy of Sciences is under the jurisdiction of the central government of the People's Republic of China (CX-365, Response to Int. No. 43).

204. Xin Huan, San Huan Lucky, and Jing Yue are three of the first four producers listed in a list of the top ten manufacturers of rare earth magnets in China, which appears as an Appendix on page 3-27 of a study entitled "The Magnetic Materials Industry of China," published by Intertech Corporation in March 1994, portions of which constitute CX-110. The list is as follows:

1. Konit Industries, Inc.;
2. San Huan Lucky New Materials, Inc.;
3. Xin Huan Technology Development Company, Ltd.;
4. Jing Yua [Yue] Magnet Factory;
5. No. 8272 Factory;
6. Hongung Magnetic Steel Plant;
7. Xichen Machinery Factory;

8. Baotou Rare Earth Research Institute;

9. Southwest Institute of Applied Magnetism and Magnetic Materials; and

10. Magnet Plant, Yuelong Chemical Company.

205. [

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206. Simple inspection will not reveal the source of NdFeB magnets (DuPlessis, CX-141 at Q.518). Mr. Moon, the President of Tridus and Vice-Chairman of Ningbo, agreed (Moon Dep. CX-362 at 169-170).

207. Mr. Moon estimated that 100 tons of unlicensed NdFeB magnets manufactured in China, entered the United States in 1994 (Moon Dep. CX-362 at 191-193). [ridus bought or imported and sold only 18 to 20 tons in 1994 (Moon Dep. CX-362) at 191-193; (Moon Dep. CPX-25 at 177). Mr. Moon estimated that unlicensed imports constitute 5 times Tridus's imports] They also constitute 10 percent of the entire 1994 production (1000 tons) in China (CX-392, Fig. 3).

208. Crucible routinely tests Chinese origin magnets it finds on the market (SX-5, SX-6, SX-7, SX-8, SX-9, SX-10).

209. Mr. Moon testified that he understood that NdFeB magnets are brought into the United States by mislabeling or misdescribing them on the Customs entry form (Moon Dep. CX-362 at 167-168).

210. Some importers misdescribe NdFeB magnets as samarium cobalt magnets (CX-398).

211. Non-respondents Wal-Mart and Wearnes Technology (Microscience) have sold imported downstream products that contain NdFeB magnets (CX-87, CX-93).

212. H.T.I.E. imports its magnets from China. The exact name of the manufacturer is not clear, though it is apparently one associated with certain government ministries (DuPlessis, CX-141 at

Q.508-509, CX-108).

213. American Sunyouth obtains its magnets from China (DuPlessis, CX-141 at Q.510-511, CX-109).

214. There are 120 manufacturers of NdFeB magnets in China (CX-392).

215. Mr. Moon mailed Mr. DuPlessis a list of "infringers." (DuPlessis, CX-141 at Q.543-545; CX-126). This list identifies 52 distributors, importers, and exporters who deal in "infringing" magnets (DuPlessis, CX-141 at Q.544-545; CX-126). These are firms thought to "infringe" the GM or Sumitomo NdFeB magnet technology patents under which San Huan is licensed. Novel, Hennaco Excell, and H.T.I.E. appear on Mr. Moon's list (CX-126).

216. In a letter dated December 9, 1994, Mr. Moon listed five major factories which manufacture NdFeB magnets without a license and ship them to the U.S. without a license from GM, Sumitomo or Crucible (DuPlessis, CX-141 at Q.546-548; CX-127). The factories named were:

1. China National Factory No. 8272, Jinlin Province, China;
2. Bautou [Baotou] Rare Earth Research Institute, Inner Mongolia, China;
3. Beijing Jinma New Materials Co., Ltd., Beijing, China;
4. Jinshan Fitting Factory, Liaoning Province, China; and
5. Wuxi Rare Earth Permanent Magnet Factory, Jiangsu Province, China.

217. It is difficult, if not impossible, to know which factory is shipping at any one time through which distributors. The location of the distributors can often be found, but the factory or factories they buy from are not apparent. In many cases the distributors print up their own data sheets for the product to further mask the source(s) of the magnets. Even Moon of Tridus, which has part ownership of a government-sanctioned factory, San Huan-Ningbo, has indicated to DuPlessis the

difficulty it has had in locating the sources and stopping the shipment of magnets that are not licensed under the GM/Sumitomo patents (DuPlessis, CX-141 at Q.564).

218. There is an established demand for NdFeB magnets in the United States market, including an established demand for NdFeB magnets that resist corrosion (DuPlessis, CX-141 at Q.555-556).

219. Marketing and distribution networks exist in the United States for potential foreign manufacturers. There are marketing organizations for the licensees, the major magnet producers from all over the world that are licensed for the United States, which would include the producers in the United States and these organizations generally have sales and marketing personnel located around the country to cover the whole U.S. Beyond that there are innumerable distributors of varying sizes that participate in the market. Some of these, like Hennaco, are distributors that operate out of their homes or garages and others are quite large and are well-established companies (DuPlessis, CX-141).

220. The cost to foreign entrepreneurs of converting a facility capable of producing NdFeB magnets with the higher oxygen content is minimal. If a factory is already producing NdFeB magnets and wanted to produce magnets within the range of Crucible's '439 patent with higher oxygen, it would be of marginal cost to make such a change (DuPlessis, CX-141 at Q.559).

221. All foreign NdFeB magnet manufacturers' facilities could be retooled to produce the patented article (DuPlessis, CX-141 at Q.560).

222. The cost to foreign magnet manufacturers of retooling their facility to produce the patented articles would depend on the size of the factory and the details of their production equipment and processes. Such cost, however, would be marginal if the factory already produces NdFeB or rare earth magnets of any type (DuPlessis, CX-141 at Q.561).

223. Crucible has identified NdFeB magnets in downstream products sold by Wal-Mart and Wearnes Technology (Microscience).

224. The 'Walmart product is a set of headphones, the package clearly marked "Made in China" (Duplessis, CX-141C at Q.370-374; CX-87; CX-87A; CPX-5). These headphones were purchased from Wal-Mart for $4.94 (CX-87).

225. The Wearnes Technology (Microscience) products are disk drives (CX-1 at ¶ 3.25; (DuPlessis, CX-141 at Q.384-399; CX-91; CX-92).

226. The "Competitive Sample Report" of Crucible, for each of the two Wearnes Technology disk drives (Microscience Model 8040-80 and 8040-58), indicate "Chinese" under "Competitor." The disk drives were obtained from Wearnes Technology of San Jose California (CX-91 (C 03 01 1822); CX-92 (C 03 01 1815)).

227. A Dun and Bradstreet report indicates that Wearnes Technology of San Jose has a foreign parent, Wearnes Technology, PTE Ltd., in Singapore (CX-397).

228. The value of neodymium-iron-boron magnets versus other types of magnet materials that might be used in a downstream product is that the product performance can be considerably enhanced with the neodymium-iron-boron magnets over what it would otherwise be with the other magnets. In most instances the product can be made smaller and more compact, which is particularly important in devices like headphones, disk drives, and speaker assemblies (DuPlessis, CX-141 at Q.563).

229. No manufacturer in China is licensed by Crucible (CX-6; CX-7 at 4-5). China produced nearly a third of the world's tonnage of sintered NdFeB magnets in 1994 (CX-392 at Table 15).

230. Hennaco Excell appears to have inventories of NdFeB magnets in the United States (CX-2, Ex. 6 (second, fourth, and fifth pages)).

231. H.T.I.E. and American Sunyouth, domestic distributors of Chinese-made imported NdFeB magnets, have sold in the United States magnets that contain 30 to 36 weight percent rare

earth, including both neodymium and dysprosium, 60 to 66 weight percent iron, boron, and oxygen at or above the 6,000 ppm level (CX-94; CX-95; CX-96; CX-98; CX-100; CX-102; DuPlessis, CX-141 at Q. 401 - 424, pp. 79-83 and Q. 436 - Q. 472, pp. 85-90).

232. All eight of the respondents have sold in the United Sates magnets that contain 30 to 36 weight percent rare earth, including both neodymium and dysprosium, 60 to 66 weight percent iron, boron, and oxygen at or above the 6,000 ppm level (SPF 52-60; CX-34 through CX-53; DuPlessis, CX-141 at 135 - Q. 494, pp. 28-95).

233. Neodymium-iron-boron magnets bear no identifying marks (CPX-10 to CPX-24).

234. [

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235. There are a large number of Chinese manufacturers of neodymium-iron-born magnets (See generally CX-392; DuPlessis, CX-141 at Q. 546-Q.548, p. 104, CX-128).

236. The plants of Chinese manufacturers of neodymium-iron-boron magnets could easily be converted to making infringing magnets, if they do not already have that capability (DuPlessis, CX-141 at Q. 559 - Q. 561, p. 108).

237. [

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238. [

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239. Written materials from Hennaco Excell and Hennaco Industrial advertising the sale of neodymium-iron-boron magnets indicate that Hennaco Excell and Hennaco Industrial maintain some stock of standardized items (CX-2, Ex. 6).

IX. Conclusions Of Law

1. The Commission has in rem jurisdiction and subject matter jurisdiction.

2. The Commission has in personam jurisdiction over respondent Hennaco Excell, Inc.

3. The '439 patent is not invalid and is enforceable.

4. Complainant has sustained its burden in establishing that each of respondents Novel, Hennaco Industrial, Hennaco Excell, Sino American and InJohnson infringes the claims in issue.

5. There is a domestic industry with respect to the asserted claims of the '439 patent.

6. There is a violation of section 337.

X. Remedy And Bond Recommendations

1. General exclusion order not limited by any certification requirement, but excluding downstream products.

2. Cease and desist order against respondent Hennaco Excell, Inc.

3. A bond of 100 percent of entered value.

XI. Final Initial and Recommended Determinations And Order

Based on the foregoing findings of fact, conclusions of law, the opinion, and the record as a whole, and having considered all of the pleadings and arguments presented orally and in briefs, as well as certain proposed findings of fact, 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 neodymium-iron-boron magnets and magnet alloys. It is also his recommended determination, under Commission rule 210.42(a)(1)(ii), that a general exclusion order not limited by any certification requirement, but excluding downstream products as well as a cease and desist order against respondent Hennaco Excell, Inc. issue and that a bond of 100 percent of entered value be set.

The administrative law judge hereby CERTIFIES to the Commission these final initial and recommended determinations together with the record consisting of the exhibits admitted into evidence and the transcript of the November 7, 1995 telephone conference. The pleadings of the parties, and transcript of closing arguments are not certified, since they are already in the Commission's possession in accordance with Commission's rules.

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 210.5(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 those portions of the initial determination which contain bracketed confidential business information to be deleted from the public version of the initial determination, and all attachments thereto, no later than Thursday, December 28, 1995. Any such bracketed version shall not be served by telecopy on the

administrative law judge. If no 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 initial determination.

3. The final initial determination shall become the determination of the Commission forty-five (45) days after the service thereof, unless the Commission, within forty-five (45) days after the date of filing of the initial determination, shall have ordered review of the final initial determination or certain issues therein pursuant to Commission rules 210.43(d) or 210.44 or by order shall have changed the effective date of the final initial determination.

Paul J. Luckern
Administrative Law Judge

Issued: December 11, 1995