

IN THE MATTER OF

TEXTRON, INC.

CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATION OF
SEC. 7 OF THE CLAYTON ACT AND SEC. 5 OF
THE FEDERAL TRADE COMMISSION ACT

Docket 9226. Complaint, Feb. 28, 1989--Decision, May 6, 1994

This consent order requires, among other things, the respondent to license to a Commission-approved entity the right to manufacture and sell Monobolt rivets, divest to the licensee certain Monobolt manufacturing assets, and provide technical assistance to the licensee for five years.

Appearances

For the Commission: *Howard Morse* and *Allee A. Ramadhan*.

For the respondent: *Dhikhail M. Maneckii*, in-house counsel, Providence, R.I. *Patricia Bailey, Squire, Sanders & Dempsey*, Washington, D.C. *Patricia Hennessey, Beigel & Sandler*, New York, N.Y.

COMPLAINT

The Federal Trade Commission, having reason to believe that respondent Textron Inc., ("Textron"), a corporation subject to the jurisdiction of the Commission, has entered into agreements with Avdel PLC ("Avdel") and Banner Industries, Inc. that violate Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. 45, that pursuant to these agreements, Textron has acquired stock in "Avdel" and has commenced a cash tender offer to acquire all outstanding shares of Avdel, which acquisition, cash tender offer, and merger would, if consummated, violate Section 7 of the Clayton Act, as amended, 15 U.S.C. 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. 45, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues its complaint pursuant to Section 11 of the Clayton Act, 15 U.S.C. 21, and Section 5(b) of the Federal Trade Commission Act, 15 U.S.C. 45(b), stating its charges as follows:

I. THE PARTIES

A. *Textron, Inc.*

1. Respondent Textron is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business located at 40 Westminster Street, Providence, Rhode Island.

2. Textron designs, manufactures and sells aerospace fasteners, including aerospace blind rivets, aerospace blind bolts, nutplate rivets, and lock bolts, and non-aerospace fasteners, including non-aerospace structural blind rivets. It is one of the two leading manufacturers of aerospace blind rivets and of non-aerospace structural blind rivets in the Free World. Textron also has operations in aerospace, commercial products and financial services. For the year ending January 2, 1988, Textron had net revenues of approximately \$7.2 billion and total assets of \$7.8 billion.

B. *Avdel PLC*

3. Avdel PLC is a corporation organized and existing under the laws of Great Britain, with its principal place of business located at Welwyn Garden City, Herts, England.

4. Avdel operates in the United States through its subsidiary Avdel Corporation, which has its principal offices located at 15 Lackawana Avenue, Parsippany, New Jersey. In 1987, Avdel Corporation's sales in the United States were around \$22 million.

5. Avdel designs, manufactures and sells fasteners for aerospace and non-aerospace use. Avdel is one of the two largest manufacturers of non-aerospace structural blind rivets in the Free World and the third largest manufacturer of aerospace blind rivets. For the year ended December 31, 1987, Avdel had net sales of approximately 76.3 million pounds and total assets of approximately 53.2 million pounds.

II. JURISDICTION

6. At all times relevant herein, respondent Textron has been, and is now, engaged in commerce as "commerce" is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. 12, and is a corporation whose business is in or affecting commerce as "commerce" is defined

in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. 44.

7. At all times relevant herein, Avdel has been, and is now, engaged in commerce as "commerce" is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. 12, and is a corporation whose business is in or affecting commerce as "commerce" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. 44.

III. THE PROPOSED ACQUISITION

8. On January 16, 1989, Textron agreed to acquire 46.6% of the shares of Avdel from Banner Industries, Inc. for 60 million pounds.

9. Textron and Avdel entered into an agreement pursuant to which Textron commenced to acquire by a cash tender offer and other means all outstanding voting securities of Avdel. Textron currently owns or has accepted for payment in excess of 95 percent of the stock of Avdel.

IV. TRADE AND COMMERCE

10. A relevant line of commerce within which to analyze the effects of this acquisition is the design, manufacture and sale of aerospace blind rivets, and any narrower market contained therein.

11. A relevant section of the country or geographic area within which to analyze the effects of this acquisition with respect to the design, manufacture and sale of aerospace blind rivets is the entire Free World, the United States, and any narrower market contained therein.

12. A relevant line of commerce within which to analyze the effects of this acquisition is the design, manufacture and sale of non-aerospace structural blind rivets, and any narrower market contained therein.

13. A relevant section of the country or geographic area within which to analyze the effects of this acquisition with respect to the design, manufacture and sale of non-aerospace structural blind rivets is the entire Free World, the United States, and any narrower market contained therein.

V. MARKET STRUCTURE

14. The proposed acquisition would substantially increase concentration in the Free World and United States aerospace blind rivet markets and the Free World and United States non-aerospace structural blind rivet markets, and would make those markets highly concentrated, whether measured by the Herfindahl-Hirschmann Indices or two-firm and four-firm concentration ratios.

VI. ENTRY CONDITIONS

15. Entry into the Free World and United States aerospace blind rivet markets and the Free World and United States non-aerospace structural blind rivet markets is difficult.

VII. ACTUAL COMPETITION

16. Textron and Avdel are actual, direct and substantial competitors in the design, manufacture and sale of aerospace blind rivets in the Free World and the United States.

17. Textron and Avdel are actual, direct and substantial competitors in the design, manufacture and sale of non-aerospace structural blind rivets in the Free World and the United States.

VIII. EFFECTS OF THE ACQUISITION

18. The effects of the proposed acquisition of Avdel by Textron may be substantially to lessen competition in the relevant markets in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. 45, in the following ways, among others:

(a) It will eliminate substantial direct competition between Textron and Avdel in the relevant markets;

(b) It will substantially increase concentration in the relevant markets, thereby increasing the likelihood of successful anticompetitive interdependent conduct, nonrivalrous behavior, and actual or tacit collusion among firms in the relevant markets; and

(c) It will eliminate Avdel as a substantial independent competitive force in the relevant markets.

All of the above increase the likelihood that firms in the relevant markets will increase prices and restrict output, both in the near future and in the long term.

IX. VIOLATIONS CHARGED

19. The acquisition of Avdel stock by Textron, from Banner Industries, Inc. and otherwise, violated Section 7 of the Clayton Act, as amended, 15 U.S.C. 18. The agreement between Textron and Avdel, and the agreement between Textron and Banner Industries, Inc., whereby Textron agreed to acquire stock of Avdel, violated Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. 45.

INITIAL DECISION

BY JAMES P. TIMONY, ADMINISTRATIVE LAW JUDGE
OCTOBER 4, 1991

I. BACKGROUND

A. Textron

1. Respondent Textron Inc. ("Textron") is a publicly-held corporation organized under the laws of the state of Delaware, with its principal place of business in Providence, Rhode Island. Textron has more than thirty divisions and subsidiaries in three areas: aerospace and defense, commercial products, and consumer financial services. (Dolan, Tr. 6225-27; CX-1826-A to CX-1826-Z-44.)

2. Textron's total revenues in 1989 were \$7.4 billion. (CX-897-D.)

3. Beverly Dolan ("Dolan") is the Chief Executive Officer and Chairman of the Board of Directors of Textron. (Dolan, Tr. 6223.)

4. The Cherry division of Textron ("Cherry"), in Santa Ana, California, manufactures and sells fasteners and installation tooling for aerospace and commercial (truck cabs, trailers and buses) use. Cherry is the only division of Textron that manufactures any products in the lines of commerce alleged in the complaint. (Wahlberg, Tr. 6342.)

5. Textron's divisions that manufacture fasteners, including Cherry, are smaller than its aerospace divisions. The fasteners

divisions report to the group vice president for commercial products, who is not the vice-president for the aerospace and defense divisions. (Dolan, Tr. 6227-29.)

B. Avdel

6. Avdel PLC ("Avdel") is a corporation organized under the laws of the United Kingdom, with its principal place of business in Welwyn Garden City, England. (CX-253-A to CX-253-J.)

7. John Marley is a member of the Board of Directors and Chief Executive of Avdel. (Marley, Tr. 3351.)

8. Avdel manufactures and sells fasteners and installation tooling for commercial and industrial use, and fasteners for aerospace use. (CX-253-A to CX-253-J.)

9. Avdel's total revenues world-wide in 1990, in U.S. dollars, were \$162.9 million. (CX-1311.)

10. Avdel has subsidiary or related companies engaged in the sale and marketing of its products in Canada, Australia, Japan, Germany, Italy, France, Mexico and South Africa. (Marley, Tr. 3353-54; RX-457.)

C. The Transaction

11. In the latter part of 1988, Banner Industries launched a hostile take-over bid for Avdel by a tender-offer. (Marley, Tr. 3422; CX-290-A to CX-290-S.)

12. The Avdel Board of Directors recommended to the company's shareholders that they reject Banner's offer. (Marley, Tr. 3427; CX-258-A to CX-258-S.)

13. By December of 1988, Banner acquired 38% of Avdel's equity. John Marley contacted Quinton Achuff, the group vice president for Textron's fastener divisions, to solicit Textron as a "white knight" to acquire Avdel. (Marley, Tr. 3428-29.)

14. Textron explored the acquisition of Avdel because its fastener divisions and automotive components divisions had been unsuccessful in penetrating markets in Europe and Japan, in which Avdel sold. (Dolan, Tr. 6231-33.)

15. Textron sent William Ledbetter, Mark Woolley and Donald Eckerson, then President of Cherry, to visit Avdel in December of

1988 to gather information to decide whether to bid for Avdel. (Marley, Tr. 3429-30; Eckerson, Tr. 5457-59; Dolan, Tr. 6231, 6258-59.)

16. In 1986, Mr. Eckerson recommended the acquisition of Avdel as a means for Cherry to expand its commercial fastener sales outside of the United States (Eckerson, Tr. 5499-5500; RX-304-A to RX-304-N.)

17. In December 1988, Textron senior management perceived the primary strategic benefits of acquiring Avdel to be (1) giving Textron a worldwide network of trained sales engineers to sell the different fasteners of the various Textron fastener divisions, (2) providing a presence in Europe before "Europe 1992," and (3) gaining an entree into Japan for all of Textron's fastener and automotive divisions. (CX-387, Tr. 5464; CX-388-A.)

18. On December 14, 1988, the Board of Directors of Textron considered acquiring Avdel and authorized management to proceed with the transaction. (CX-496-Z-87 to CX-496-Z-89.)

19. By notice dated December 23, 1988, the Avdel Board recommended to its shareholders that they accept Textron's offer for their shares. (CX-496-Z-68 to CX-496-Z-69.)

20. On January 10, 1989, the Textron Board of Directors authorized an increase in the offer to acquire the remaining shares of Avdel since Banner would not relinquish its shares at the lower price. (Dolan, Tr. 6244; CX-451-M to CX-451-N.)

21. Textron paid \$250 million to acquire all of the shares of Avdel plc. (Dolan, Tr. 6248.)

22. Antitrust authorities in the U.K. reviewed Textron's acquisition of Avdel and determined that it raised no competitive concerns. (Dolan, Tr. 6243.)

D. This Proceeding

23. On February 22, 1989, the Federal Trade Commission obtained a Temporary Restraining Order to block the completion of Textron's acquisition of Avdel stock.

24. The complaint was filed on February 28, 1989, naming Textron as respondent. The complaint alleges that Textron's acquisition of Avdel violates Section 7 of the Clayton Act by substantially lessening competition in two lines of commerce: one involving aerospace "structural" blind rivets and the other involving

commercial (industrial) “structural” blind rivets. (Complaint paragraphs 10-13.)

25. On March 9, 1989, the U.S. District Court for the District of Columbia entered an order, consented to by the parties, requiring that Avdel voting stock be held in trust and that Avdel be maintained under separate management pending the outcome of this proceeding.

II. AEROSPACE BLIND RIVETS

A. *The Industry*

1. Manufacturers of aerospace blind rivets

26. Cherry manufactures aerospace blind rivets, including the CherryLOCK, Bulbed CherryLOCK, CherryMAX, CherryMAX A, and the CherryLOCK A (or A Code) at its plant in Santa Ana, California. It also manufactures other aerospace fasteners, including blind bolts and self-plugging and pull-through rivets. (RX-278-A to RX-278-D; RX-279-A to RX-279-C; RX-280-A to RX-280-C; RX-283-A to RX-283-B.)

27. Avdel manufactures aerospace blind rivets, including the MBC, Chobert and the Avdel Rivet. The MBC is manufactured at Avdel’s facility in the U.K. (CX-270-A to CX-270-L; CX-214-A to CX-214-D; Palmiteer, Tr. 505.)

28. Allfast Fastening Systems, Inc. (“Allfast”), manufactures aerospace blind rivets at its plant in City of Industry, California. Its aerospace blind rivets include rivets identified as NAS 1398 and NAS 1399 rivets (Allfast 1398 and Allfast 1399), rivets identified as NAS 1738 and NAS 1739 rivets (Allfast 1738/39), and the AllMax. It also manufactures the aerospace blind rivets previously manufactured by Olympic, whose assets relating to aerospace rivets Allfast acquired in April 1989. (CX-24-B to CX-Z-9; RX-78-A to RX-78-C; RX-80-A to RX-80-C; F. 33.)

29. John Hassall Co. (“Hassall”), manufactures aerospace blind rivets, by a license from Cherry for the CherryMAX, at its plant in Westbury, New York. (RX-456-A to RX-456-Z-18; Hachadoorian, Tr. 6986-87.)

30. Hi-Shear Corporation, not currently a manufacturer of aerospace blind rivets, has its plant in Torrence, California. It

manufactures non-blind aerospace fasteners including Hi-Locks, Hi-Lights, and others. (Ragan, Tr. 1773, 1906.)

31. Huck Manufacturing Co. ("Huck") manufactures aerospace and commercial fasteners, including aerospace blind rivets. Its aerospace blind rivet manufacturing facilities are in Tucson, Arizona. (Faulkner, Tr. 138.) Its aerospace blind rivets include the MLS, Unimatic, and the Huck Clinch. (CX-89-A to CX-89-D; CX-90-A to CX-90-C; CX-91-A to CX-91-C; CX-52-A to CX-52-P.)

32. Monogram manufactures aerospace blind bolts and other aerospace fasteners. Monogram manufactured aerospace blind rivets from 1978 until 1983. It manufactured an A Code rivet and holds patents on other blind rivets. (Pratt, Tr. 9203-04; Faulkner, Tr. 146; CX-317-Z-2.)

33. Olympic Fastening Systems, Inc. ("Olympic"), was a manufacturer of aerospace blind rivets and installation tooling until it sold its aerospace assets to Allfast in March 1989. Before it exited the industry, Olympic manufactured several aerospace blind rivets, including the OlympicLok and Bulb-Lok. (CX-24-Z-34 to CX-24-Z-47; Willey, Tr. 1171.)

34. Voi-Shan/Screw Corp. ("Voi-Shan"), a division of VSI Corp., a wholly owned subsidiary of Fairchild Industries, is the world's largest aerospace fastener manufacturer and is in Culver City, California. It was a manufacturer of aerospace structural blind rivets until late 1988. Voi-Shan manufactured blind rivets, including the CherryLOCK, Bulbed CherryLOCK, and CherryMAX, all by a license from Cherry, as well as an A Code rivet it developed itself. (CX-210-A to CX-210-Z-10; CX-116-A to CX-116-E.)

35. Fukui Byora is a commercial fastener manufacturer in Japan. It is affiliated with Hassall through a trading company and, by agreement with Hassall, can only sell to the U.S. through Hassall. It will soon begin production of CherryMAX for sale in Japan and for sale by Hassall in the United States. (Hachadoorian, Tr. 7069-79, 7171-77.)

2. Purchasers of aerospace blind rivets in the U.S. market

36. Beech Company, Wichita, Kansas, manufactures general aviation (small, light-weight, propeller-engined) airplanes. (RX-252; Skrobecki, Tr. 7992.)

37. Bell Helicopter, a subsidiary of Textron, is in Ft. Worth, Texas. It manufactures commercial and military helicopters. (Cabe, Tr. 5040-41.)

38. The Boeing Company (Boeing) manufactures airplanes (commercial and military), helicopters, and space vehicles, with over 150,000 employees. (Jarosz, Tr. 7626.) Last year Boeing had revenues of \$27.5 billion and is the world's largest producer of commercial airplanes. (Overstreet, Tr. 11029; RX-369-A.) Boeing has plants in Renton, Washington, Everett, Washington, Wichita, Kansas and Philadelphia, Pennsylvania. (Boeing Helicopter.) (RX-26-A; Beals, Tr. 7889-90.)

39. A division, Boeing Commercial Airplane Group (BCAG), makes all commercial airplanes made by Boeing. (Jarosz, Tr. 7425.)

40. Defense Industrial Supply Center ("DISC"), Philadelphia, Pennsylvania, is a part of the Defense Logistics Agency, Department of Defense. It purchases spare parts and consumable items for the military services, the Coast Guard and NASA. (Cosfol, Tr. 2049-51.)

41. Douglas Aircraft Corporation, Long Beach, California, is part of McDonnell Douglas Corporation. It manufactures commercial jet aircraft, including the narrow-bodied DC-9, and the wide-bodied DC-10 and DC-11. It designs and manufactures a military transport known as the C-17, which is the Air Force's next generation of military transport. (RX-140-A to RX-140-I; RX-142-A to RX-142-Z-257; RX-146-A to RX-146-Z-31.)

42. General Dynamics, Fort Worth, Texas, manufactures military aircraft. Its primary product is the F-16 (Flying Falcon) fighter aircraft. (Benson, Tr. 11163-64.)

43. Grumman Corporation, Long Island, New York, manufactures the F-14 airplane, a naval, carrier-based, fighter plane, and other military planes. (Beal, Tr. 812.)

44. Lockheed Corporation, Southern California, has plants all over the United States and manufactures commercial and military airplanes. The commercial airplanes it manufactures include the wide-bodied L-1011. A division, the Lockheed Advanced Development Company, makes advanced military and intelligence airplanes including the U-2, SR-71, and the F-117 (the Stealth Fighter-Bomber). (Hatton, Tr. 8667.)

45. McDonnell Douglas Helicopter ("MDHC"), Mesa, Arizona, a subsidiary of McDonnell Douglas Corporation, manufactures military and commercial helicopters including the AH-64A (Apache)

attack helicopter and the MD-500. (Santee, Tr. 1599-600; Van Horn, Tr. 1479-80; Findley, Tr. 942.)

46. McDonnell Douglas ("McAir"), St. Louis, Missouri, manufactures military and commercial airplanes. McAir produces the front end of the F-18 Naval Fighter-Bomber, for which it is the prime contractor; the F-15 (Fighting Eagle) Air Force fighter bomber; the T-45, which is a naval jet trainer; the AV-8B (Harrier), a vertical takeoff and landing fighter bomber for the Marines and for which McAir is the prime contractor. (Smith, Tr. 4336, 4348.)

47. Mooney Aircraft, Kerrville, Texas, manufactures small, general aviation planes. Its primary product is a four-seater, single engine plane. In 1989 it manufactured 150 planes, which is down from its peak several years earlier. (Rogers, Tr. 766, 797.)

48. Northrop Corporation, Southern California, manufactures commercial and military airplanes. (Page, Tr. 8776.) It currently manufactures the aft fuselage of the F-18 fighter aircraft, a naval, carrier-based, fighter bomber designed by McDonnell Douglas Corporation. (Page, Tr. 8781.) It also subcontracts for the Boeing Corporation on some of its commercial airplanes, including the 747. It also produces the B-2 bomber.

B. The Product

1. General characteristics

49. A blind rivet is a fastener that joins two or more sheets of material with access to only one side of the joint. A blind rivet is composed of components, including a sleeve and a stem. The back part of the stem, the plug, has a larger diameter than the inside diameter of the sleeve. The sleeve fits around the stem above the plug. The rivet is installed by inserting it into a hole through the sheets to be joined and pulling the stem, forcing the plug up into the rivet. This deforms the blind-side of the rivet sleeve to form a head on the back of the material being joined. A point on the rivet stem known as the "break notch" is manufactured to be less able to bear stress than the remainder of the stem. When the force exerted on the stem exceeds what the break notch can bear, the stem breaks off and installation is complete. (Wahlberg, Tr. 6347-48; RX-279-D, RX-279-E, RX-279-P.)

50. If the stem is left in the rivet after installation, it may be locked in place either mechanically -- by deforming metal on the sleeve, the stem or both -- or by the force of friction between the stem and sleeve. Rivets that retain their stem only by friction do not retain the stem as well as those that are mechanically locked. (Wahlberg, Tr. 6348-49; 6358; RX-390-A; RX-389-A.)

51. Aerospace blind rivets that require greater strength are referred to as structural. Structural is also used to refer to aerospace blind rivets that are mechanically locked. (Luhm, Tr. 1124-26; Wahlberg, Tr. 6345.)

52. Aerospace blind rivets are sold to manufacturers of airplanes, missiles, and helicopters ("aerospace OEMs") and to repair these products. Aerospace blind rivets require tighter tolerances than commercial blind rivets, and are made in monel, inconel, grades of aluminum, and specialty steels. (Luhm, Tr. 998-99.)

53. Aerospace blind rivets are not used in primary structure that is heavily loaded. (Skrobecki, Tr. 7996-97.) They are used for slots, flaps, wings, and doors. (Wahlberg, Tr. 6342; RX-388-A.)

54. Aerospace blind rivets come in several materials. (Hammer, Tr. 1715.) The ability to make a rivet in one material does not indicate a firm's ability to make the rivet in other materials. (Zurko, Tr. 6139.) Changing the stem material can affect the shear strength and tensile strength of a blind rivet. (RX-279-H.)

a. Installation and tooling

55. Blind rivets are installed with pneumatic tools that hold the rivet in a pre-drilled hole and pull on the stem to form the blind-side head. The tool has a nose piece, the pulling-head, that fits over the stem of the rivet and grips it during the installation process. Some rivets require different sized nose pieces for every diameter of rivet. (Wahlberg, Tr. 6418; RX-279-Z-7 to RX-279-Z-13 (CherryLOCK tooling).)

56. Tooling is double (shifting) or single (non-shifting) action depending on the design of the rivet. (Wahlberg, Tr. 6352-54.) Rivets requiring double-action tooling cannot be installed with single-action tooling. (Wahlberg, Tr. 6395-96.)

57. Single-action tooling is lighter and easier to maintain than double-action tooling and is preferred by blind rivet customers. (Wahlberg, Tr. 6394-95.)

b. *Rivet sizes*

58. Aerospace blind rivets are measured in diameter and grip. Diameter is the outer diameter of the rivet sleeve (Wahlberg, Tr. 6439-41), and is measured in 32nds of an inch. A “four diameter” rivet is a rivet with a sleeve diameter of 4/32nds of an inch. (RX-279-T.) The most common aerospace diameters are four, five, six, and eight. Grip measures the combined thickness of all the sheets being fastened. In aerospace rivets, grip is measured in 16ths of an inch. A “two grip” rivet means a rivet that is suitable for fastening material that is 2/16ths of an inch thick. (RX-279-G.) A “4-2” is a rivet that is 4/32 of an inch in diameter with a grip of 2/16 of an inch. (RX-280-G.)

59. Some aerospace rivets are sold in oversize, 1/64 of an inch larger in diameter than the standard measurement in 32nds of an inch. (RX-279-F.) Rivets that are not oversize are referred to as nominal. (Wahlberg, Tr. 6426-27.)

60. Rivets come in head styles, including a flush or countersunk head, and a protruding or universal head. (Wahlberg, Tr. 6362-63; RX-279-F, RX-280-G.)

c. *Bulbs and wiredraws*

61. There are two types of structural aerospace blind rivets based on their configuration after installation and the method of forming the blind-side head on installation: wiredraws and bulbs. (Hammer, Tr. 1677; Faulkner, Tr. 351 (some customers like bulb feature, others value sheet take-up); Findley, Tr. 948-49, 974-75; Luhm, Tr. 1009-12, 1106-07 (MDD-St. Louis prefers wiredraws); Palmiteer, Tr. 727 (MBC not as good in thin sheets as Cherry bulbs); Willey, Tr. 1302; Santee, Tr. 1632-34; Jarosz, Tr. 7426-28 (design manual says to use bulbs if blind side sheet less than D/4); Petraska, Tr. 7814 (wiredraws have good hole-fill, but bulbs better in thin sheet).)

62. During the installation of a wiredraw rivet, the plug of the stem is pulled up into the sleeve, forcing the sheets together; the rivet sleeve, reinforced by the back-side sheet, acts like a die through which the plug of the stem is extruded. (Wahlberg, Tr. 6360; RX-279-P; RX-392-A.) Because the inside diameter of the wiredraw rivet’s sleeve is initially smaller than the die formed by the sleeve pressing against the backside sheet, the extruding stem of the rivet

gradually forces the rivet sleeve outward, filling the hole as the extrusion takes place. (Wahlberg, Tr. 6354-58, 6416-17; Jarosz, Tr. 7428-29; RX-392-A; RX-279-P.)

63. Bulb rivets do not wiredraw or rely on pressure against the backside sheet (Wahlberg, Tr. 6374); rather the plug or back, end of the stem collapses the rivet sleeve and compresses it outward, creating a large bulge or bulb on the backside. (Wahlberg, Tr. 6371-73; Pratt, Tr. 8901; RX-279-E.) Because of the way the large blind side head is formed, bulb rivets do not distort the back sheet if it is thin, as do wiredraw rivets. (F. 317.) Bulb fasteners tend to exhibit less hole-fill, especially in longer grips (Wahlberg, Tr. 6374, 6382-83; RX-379-B), and less sheet-takeup than wiredraw fasteners. (Wahlberg, Tr. 6656-57.)

d. Other fasteners

64. Aerospace blind rivets are among thousands of fasteners used to hold together an airplane. Other fasteners used in the aircraft include solid rivets, shear pins, taper locks and blind bolts. (Jarosz, Tr. 7426-27; Chenarides, Tr. 8069-71; RX-146-J; Parker, Tr. 6862.)

65. Nutplates can also be used in blind applications. They consist of a plate with a large threaded hole in the center and small holes at either end. The plate is then attached to what will become the blind side sheet by rivets through the two small holes. Nut plates are used to be able to remove and replace the fastener. (Hatton, Tr. 8671-75; Parker, Tr. 6870, 6956.)

66. Aerospace blind bolts, like blind rivets, join sheets of material that can be installed with access to only one side of the joint. They differ from blind rivets in that they tend to be heavier, of larger diameter, stronger, more expensive than blind rivets, and are used in applications that are subject to tensile stress (stress along the length of the fastener), rather than shear stress (stress across the width of the fastener). (Faulkner, Tr. 63-66.)

2. Aerospace specifications

67. Aerospace blind rivets differ according to (1) materials, dimensions, head styles, and sizes; (2) performance characteristics, such as shear strength, fatigue resistance, and spindle retention; (3)

different materials and sheet thicknesses; and (4) tooling for their installation. (F. 83-106; RX-347-A; RX-408-A.)

68. Aerospace blind rivets are specified for use by callouts on the design drawing. A callout identifies the blind rivet by vendor's part number, buyer's part number or an aerospace specification. (Wahlberg, Tr. 6361-62, 6369-70.)

69. There are several kinds of specifications to which blind rivets are sold: manufacturer (vendor) specifications, National Aerospace Standards (NAS) specifications, military specifications, and customer specifications. (Beal, Tr. 867; RX-127-Z-239 to RX-127-Z-246; RX-280-C.)

70. Aerospace blind rivet specifications are composed of: (a) a procurement specification of the tests a fastener must pass (RX-376-A to RX-376-O (NAS 1400); RX-378-A to RX-378-M (NAS 1740)) and (b) standards pages that describe the physical attributes of the fastener, its dimensions, head style and materials. (Wahlberg, Tr. 6364-69; RX-377-A to RX-377-D (NAS 1398/1399); RX-379-A to RX-379-D (NAS 1738/1739).)

71. Procurement specifications for blind rivets identify two types of testing: (a) "quality assurance," "lot," or "inspection" tests that every batch of rivets shipped under that specification must pass (Pratt, Tr. 8907), and (b) "qualification" tests that the fastener must pass to meet that specification. (Cabe, Tr. 5144-45; Wahlberg, Tr. 6364-69, 6433-35 (Mil-R-7885); Hachadoorian, Tr. 7122-23; Pratt, Tr. 8901-07; RX-376-F (NAS 1400); RX-378E-F (NAS 1740); RX-402-A (Mil-R-7885).)

a. *Manufacturer (vendor) specs*

72. Some blind rivet manufacturers have their own specifications for the products they sell. Each manufacturer has part numbers to identify fasteners by rivet, sleeve and stem material, head style, and size. (Wahlberg, Tr. 6360-62.) Cherry shipped over 2,000 aerospace part numbers in the first three months of 1991. (Andrews, Tr. 9754-55.)

b. *NAS specs*

73. NAS specifications are written by the National Aerospace Standards Committee (NASC), standardizing hardware purchased by

aerospace original equipment manufacturers (“OEMs”). (Faulkner, Tr. 105; Page, Tr. 8812, 8816.) The NASC is a committee of the Aerospace Industries Association (AIA), a trade association of OEMs (Chenarides, Tr. 8100; Wahlberg, Tr. 6363-64) (McDonnell Douglas, Boeing, Northrop, Rockwell International, and Grumman). Voting members represent OEMs that are members of the AIA. Government agencies are represented. The manufacturers who supply OEMs can attend as non-voting members. NASCs hold public meetings and also closed meetings where only the government representatives and the AIA members can attend. Fastener manufacturers cannot attend closed meetings. The agenda is set and meetings run by the Steering Committee. (Page, Tr. 8806-09.)

74. Fastener manufacturers demonstrate that a product meets an NAS specification by passing tests in the procurement specification and preparing a qualification report of these tests. (Wahlberg, Tr. 6368.) OEMs that purchase blind rivets are invited, but not required, to witness these tests and to sign these qualification reports. (Page, Tr. 8873.)

75. Qualification to a specification must be accomplished for each combination of materials in which the fastener manufacturer offers the rivet. (Wahlberg, Tr. 6368-69; Chenarides, Tr. 8144-45.)

76. A specification is issued by NASC. A member of the NASC requests it. A draft of the specification is circulated to the members. (Page, Tr. 8818; Ford, Tr. 1467.)

c. Military specs

77. The military has specifications for blind rivets. The only military specification for aerospace blind rivets is Mil-R-7885 by Naval Air Systems Command (NavAir). (CX-390-A to CX-390-Z-152; Zurko, Tr. 6044-47; Keimes, Tr. 5850-51.)

78. Mil-R-7885 has slash sheets that specify material, head-style, and whether the rivet is oversize or nominal. (Zurko, Tr. 6191-92.)

79. A Qualified Products List (QPL), identifies companies and products qualified by specification. The military conducts or reviews qualification tests for the QPL. (Zurko Tr. 6062; Keimes, Tr. 5850, 5888; CX-390-A to CX-390-Z-152.)

d. *Air frame manufacturer specs*

80. Major aerospace OEMs (Boeing and McDonnell Douglas at St. Louis (McAir)), procure some blind rivets by their own specifications, which may not match the vendor, NAS, or military specification for the same rivet. (Faulkner, Tr. 105-07; Willey, Tr. 1335; Luhm, Tr. 1081, 1099-1100; Jarosz, Tr. 7435; RX-127-Z-239 to RX-127-Z-246.)

e. *Military Handbook 5*

81. Military Handbook 5 ("Mil-Hdbk-5") is a volume of tables published by the Mil-Hdbk-5 Committee of the Air Force. It lists data for products the industry uses, including blind rivets. These tables list lap joint shear tests. The values in these tables are known as joint allowables. (Faulkner, Tr. 108; Ford, Tr. 1399-1401.)

82. The Fastener Task Group ("FTG") is the subcommittee of the Mil-Hdbk-5 Committee responsible for the chapter on fasteners and is made up of representatives from OEMs. A rivet can have values added to Mil-Hdbk-5 by a request from a sponsor. The data is from joint allowable tests on different sizes of fasteners.

3. Specific products

a. *MLS*

83. In the early 1960's Huck began manufacturing and selling an aerospace blind rivet, the MLS. The MLS uses double-action tooling and requires a different nose piece for every diameter. (CX-89-A to CX-89-D.) It is a bulb-type fastener (Beal, Tr. 867, 876; Faulkner, Tr. 82-83) that some customers use for both thin and thick sheet applications. (Benson, Tr. 11135-37.)

84. Many years after the MLS was introduced and sold in the marketplace, the NASC issued the NAS 1900 procurement specification and standards pages NAS 1919 (protruding head) and NAS 1921 (flush-head) to cover the MLS. (RX-381-A to RX-381-J.) NAS 1900 states that it describes "blind rivets with a mechanically-locked-spindle and bulbed blind side." NAS 1900, paragraph 1.1. (RX-381-A.)

b. *CherryLOCK (1398/1399 rivets)*

85. Cherry sold its first structural aerospace blind rivet, the CherryLOCK, about 1961. (Wahlberg, Tr. 6351-52; RX-347-A; RX-391-A.) The CherryLOCK is a wiredraw fastener that requires double-action tooling and a different nose piece for every diameter, and is available only in nominal sizes. (CX-93-A to CX-93-E.) The wiredraw CherryLOCK had good clamp-up and hole-fill, a flush break and a wide grip range. (Benson, Tr. 11139; RX-347-A.)

86. Shortly after the CherryLOCK appeared on the market, the NASC issued procurement specification NAS 1400 (RX-376-A to RX-376-O (April 1961)) and NAS standards pages 1398 and 1399, covering mechanically locked, wire-drawing fasteners in nominal sizes. (RX-377-A to RX-377-D (April 1961); RX-279-P.)

c. *Bulbed CherryLOCK (1738/1739 rivets)*

87. Cherry found that it needed a fastener that performed better in thin sheets than the wiredrawing CherryLOCK. The wiredraw rivet's pressure on the backside sheet during installation can dimple or fold that sheet if it is too thin. (Wahlberg, Tr. 6374; Jarosz, Tr. 7429; Benson, Tr. 11144; RX-347-A; RX-394-A.) The Bulbed CherryLOCK, a bulb fastener that requires double-action tooling and a different nose piece for every diameter, was sold in 1964 for thin sheets. It is only in oversize diameters. (CX-94-A to CX-94-E.)

88. The Bulbed CherryLOCK sold under Cherry part number or OEM specifications until 1968, at which time NASC issued NAS 1740 (RX-378-A to RX-378-M (March 1968)) and standards pages 1738 and 1739, describing bulb-type, mechanically locked blind rivets such as the Bulbed CherryLOCK. (RX-379-A to RX-379-D (March 1968); RX-279-D.)

d. *OlympicLok (A Code rivets)*

89. Olympic began in 1969 to manufacture and sell the OlympicLok, a wiredraw rivet that resembled the CherryLOCK and met the requirements of NAS 1400, but could be installed with single-action tooling. The OlympicLok is only in nominal sizes. (CX-94-A to CX-94-C; Wahlberg, Tr. 6390-93; RX-397-A.)

90. Because the CherryLOCK qualified to NAS 1400, but could not be installed with single-action tooling, the NASC added an “A” to the specification for OlympicLok-type rivets. (Luhm, Tr. 1021-22; Wahlberg, Tr. 6390-93.) NAS 1400 rivets installed with single-action tools are known as “A Code” rivets. (Wahlberg, Tr. 6390.) A Code blind rivets identical to the OlympicLok were later sold by Monogram, Voi-Shan and Cherry. (RX-127-Z-218 to RX-127-Z-219.)

91. Most aerospace OEMs that use NAS 1400 rivets use either the CherryLOCK or the A Code, but not both depending on the type of tooling the air frame company owned. (Wahlberg, Tr. 6396-97; Jarosz, Tr. 7433-34.)

e. *Bulb-Lok*

92. In 1974, Olympic began manufacturing and selling a rivet known as the Bulb-Lok, under the same NAS specification as the Bulbed CherryLOCK. (Wahlberg, Tr. 6397-98; RX-398-A.)

93. Using single-action tooling, the Bulb-Lok has a cavity stem different than the Bulbed CherryLOCK. (Wahlberg, Tr. 6398-99; RX-398-A.) The Bulb-Lok uses wiredrawing action to form its blind-side head, and has a blind-side head after installation that is smaller than that of the Bulbed CherryLock. (Wahlberg, Tr. 6398-6400; RX-399-A.) The Bulb-Lok met the performance requirements of NAS 1740 but because it differed from the Bulbed CherryLOCK, the NASC generated two new standards pages, NAS 1768 and 1769, to cover the Bulb-Lok. (Wahlberg, Tr. 6397-98.)

f. *Unimatic*

94. In the 1970's, Huck introduced the Unimatic, a version of its MLS that uses single-action tooling. The Unimatic is identical in performance to the MLS and is sold pursuant to NAS 1919 and 1921, except that an S is added to the specification. (CX-90-A to CX-90-C.)

g. *CherryMAX*

95. Cherry first marketed the CherryMAX rivet about 1975. (RX-400-A; CX-593-C to CX-593-D.) The installed CherryMAX

looks like the Bulbed CherryLOCK. The CherryMAX has an improved locking mechanism and can be installed with single-action tooling with one nose piece for any diameter of rivet. (Wahlberg, Tr. 6414-15, 6418; RX-347-A.) The CherryMAX had a new component, called the driving anvil, that falls away after the installation process is completed. (Wahlberg, Tr. 6402-04, 6418.) The CherryMAX's new locking mechanism increased the rivet's stem retention. (Wahlberg, Tr. 6420-21.) With the CherryMAX, Cherry introduced a new single-action tool that was lighter and easier to operate. (Wahlberg, Tr. 6422-23.)

96. Cherry sold the CherryMAX under its own specification or customer specifications for several years. The military issued the Mil-R-7885 specification to cover some versions of the CherryMAX in 1980. (Wahlberg, Tr. 6429.) In 1987 the NASC issued procurement specifications NAS 1686 and NAS 1687 and standards pages NAS 9301 through 9312 that covered different versions of the CherryMAX. (RX-382-A to RX-382-Z-18; RX-383-A to RX-383-X.) Now the CherryMAX is sold under Cherry part number, customer specifications, Mil-R-7885 and the NAS standards pages. (RX-208-C.)

h. *MBC*

97. In the late 1970's Avdel developed a fastener for aerospace applications based on its commercial blind rivet, the Monobolt. Avdel called this rivet the MBC, which stands for Monobolt concept. (Palmiteer, Tr. 551-52; Marley, Tr. 3480.)

98. The MBC uses single-action tooling. Like the Olympic Bulb-Lok, MBC is a wiredraw rivet that has a hollow cavity, but the MBC's cavity is larger than that of the Bulb-Lok. Unlike the Bulb-Lok and other aerospace blind rivets, the MBC is a two-piece rivet because its mechanical lock is the Monobolt lock integral to the stem. (CX-228-A to CX-228-F; Luhm, Tr. 1132-33.)

99. The MBC uses the Monobolt lock. At the factory, part of the stem is skived away forming a lip which is then folded back unto itself. During installation, the lip moves along the sleeve as the stem is pulled until it comes in contact with a special nose piece that unfolds the lip into a groove in the sleeve. (CX-228-C to CX-228-D; Marley, Tr. 3382; Peavy, Tr. 1948.)

100. Originally, the MBC required a different nose piece for every diameter and a special nose piece configuration to form the

lock. Proper formation of the lock depends on a high level of maintenance of the nose piece. (F. 183; Smith, Tr. 4416; Peavy, Tr. 1971.)

101. Avdel considered qualifying the MBC under NAS 1400, but tests showed that the MBC could not qualify to that specification. (Palmiter, Tr. 736; Marley, Tr. 3466; Overstreet, Tr. 10272-75.) Avdel proceeded to sell in the United States under its part number. Avdel eventually got a new NAS procurement specification for the MBC, NAS 1722, and associated standards pages, NAS 1719, 1720, and 1721 in 1987. (RX-358-A to RX-358-P; RX-357-A to RX-357-D; RX-356-A to RX-356-D; Chenarides, Tr. 8102-05.)

i. *CherryMAX A*

102. In 1984, Cherry began selling a new wiredrawing blind rivet with the CherryMAX lock, using an anvil and a single nosepiece for all diameters, which it called the CherryMAX A. (RX-347-A; Wahlberg, Tr. 6457-59.) This fastener was for customers who required wiredraw-type rivets but did not want the CherryLOCK because of its double-action tooling or the CherryMAX because it was a bulb rivet. (Wahlberg, Tr. 6460-61.) The CherryMAX A meets the requirements of NAS 1400 and is sold to standards pages NAS 1398 and 1399, with an A to identify its use of single-action tooling. (Wahlberg, Tr. 6461-62.) As with all NAS 1400 rivets, it is available in nominal sizes only. (F. 85, 89.)

j. *Huck Clinch*

103. In 1985, Huck introduced another aerospace blind rivet, the Huck Clinch. (CX-91-A to CX-91-E; RX-351-A.) The Huck Clinch has an internal lock formed by the stem scraping away material from the sleeve as the rivet is installed. After installation, the lock is not visible. (Keimes, Tr. 5846-47; Cabe, Tr. 5081.)

104. The internal lock of the Clinch was different than the locking mechanism originally specified by Mil-R-7885 as promulgated in 1980. The Navy added the Huck Clinch to the QPL for Mil-R-7885 in 1986, and later revised Mil-R-7885 to delete reference to a visible, separate locking element. (Smith, Tr. 4433; Zurko, Tr. 6172-74; Keimes, Tr. 5850.)

k. *AllMax*

105. In 1986, Allfast began selling a rivet called the AllMax that infringed Cherry's patent for the CherryMAX. It was placed on the QPL for some slash sheets of Mil-R-7885 and sold to the Government under Government immunity from infringement suits. It differed from the CherryMAX in that it lacked a stop ring at the back of the stem and the plug section had knurls rather than steps. This version of the AllMax was also known as the AllMax I and is no longer marketed. (Luhm, Tr. 1112; Willey, Tr. 1293-94; CX-520-H to CX-520-I.)

106. About 1988 Allfast began selling the version of the AllMax currently sold that does not infringe on the CherryMAX patents. (Luhm, Tr. 1026.) This is known as the AllMax II. This version has a stop ring and a stepped plug section and was also placed on the QPL for some slash sheets of Mil-R-7885. (Luhm, Tr. 1113-14; CX-19-A to CX-19-F; Chenarides, Tr. 8126.)

4. Manufacturing processes

107. Components are assembled into blind rivets. All components begin as wire, which is cut off and formed. Operations include heading (forming by striking the wire one or more times into one or more dies) (Hachadoorian, Tr. 7093-95); thread rolling (forming by rolling the wire between dies) (Hachadoorian, Tr. 7106-07); chucking (forming by cutting the wire to a particular shape) (Hachadoorian, Tr. 7128); and wrapping (the process of flattening and shaping the wire) (Hachadoorian, Tr. 7134-36). Each component may undergo heat treatment (used to soften or harden the metal), cleaning, plating, and/or lubrication as part of the manufacturing process. (Hachadoorian, Tr. 7099-102; Andrews, Tr. 9738-9747.) Components are made to drawings that specify allowable values for dimensions known as "tolerances." (Hachadoorian, Tr. 7096.)

a. *Batch method*

108. Once the components are formed, it is necessary to join them to form a blind rivet. Traditionally rivets have been manufactured by a batch process in which the components such as the stem, sleeve and lock ring are made in different parts of the factory and

then joined to form a completed rivet. (Andrews, Tr. 9747-48; Hachadoorian, Tr. 7138-41.)

109. The components, even if all made within the allowable manufacturing tolerances, sometimes do not fit. It is then necessary to use different lots of components or lubricants or to use heat or chemicals on the components to get a combination of parts that will form a functioning rivet. This process of fitting together the components to form a working blind rivet is called "matching" and is part of the batch manufacturing process. (Andrews, Tr. 9748-49, 9751-59; Hachadoorian, Tr. 7142; RX-411-A to RX-411-B.)

110. In the manufacturing process at Cherry, rivets that cannot be matched in final assembly go to a part of the plant called "matching" where specialists try to make them work. (Andrews, Tr. 9757-61; Hachadoorian, Tr. 7142-46; Pratt, Tr. 9149-50; RX-411-A to RX-411-B.)

111. If components are outside of tolerances, they sometimes can be reworked to be inside the tolerances. (Hachadoorian, Tr. 7141-42.) After assembly, with whatever matching was necessary, the rivets go through quality control. (Andrews, Tr. 9751; Hachadoorian, Tr. 7120-21.) If components do not work they are scrapped. A manufacturer's scrap rate is the percentage of components that are not made into finished rivets. (Andrews, Tr. 10020; Eckerson, Tr. 5426.)

112. The amount of matching a manufacturer must engage in will affect the expense of making aerospace blind rivets. (F. 115.) At Cherry for certain rivets matching is part of the thread-roll operation. (Pratt, Tr. 8944-46; Andrews, Tr. 9799-9803, RX-455.) Certain materials and rivet designs require more matching than do others. (Andrews, Tr. 9760-61 (70% of monel CherryMAX vs. 15-20% of the other material combinations), 9798-9801 (A-Code); Pratt, Tr. 5429.)

113. The batch manufacturing process can take from 5 to 40 weeks to produce a batch of rivets. (Andrews, Tr. 9752.) The average length of time for CherryMAX today is about 10-12 weeks. (Andrews, Tr. 9752-53.)

b. *Cell method*

114. Huck, Hassall, and Cherry have begun using a Japanese technique of production known as the cell method. The cell method

groups all the operations to manufacture a single rivet in one location in the factory with a single team of people operating all the machines in what is known as a cell. (Andrews, Tr. 9761-64; Hachadoorian, Tr. 7125-26; Faulkner, Tr. 331-32; RX453.) This allows faster feedback, rather than discovering at the end of the process that sleeves and stems will not work together. (Andrews, Tr. 9774-75; Hachadoorian, Tr. 7126-27.) This method also reduces the level of in-process inventory. (Andrews, Tr. 9764-65.)

115. The cell is better able to use modern statistical process control (SPC) to reduce variation in lots of components. (Hachadoorian, Tr. 7014-15, 7191-92.) The use of the cell method in CherryMAX production has reduced the time from start to finish down to 11-12 days, cut scrap to zero, and eliminated matching. (Andrews, Tr. 9766, 9771-74; RX-451-A to RX-451-B; RX-452-A to RX-452-B.)

C. Competitive History of Aerospace Blind Rivets

1. Mechanically locked aerospace blind rivets

116. The first aerospace blind rivets, in the late 1930's, were hollow and friction lock rivets. The hollow rivets were known as pull-thrus. (Wahlberg, Tr. 6343-45; RX-389-A.) The friction lock rivets were known as self-pluggers, because the stem that formed the blind side "plugged" the sleeve. (Wahlberg, Tr. 6346-49; RX-390-A.) The self-pluggers required a secondary operation after installation to remove by grinding, shaving, or clipping, the stem that protruded above the installed rivet head. (Wahlberg, Tr. 6348; RX-389-A; RX-390-A.)

117. By the early 1960's, Huck and Cherry sold mechanically locked fasteners that broke flush and did not require an operation after installation. Cherry had a wire draw fastener, the CherryLOCK, and a bulb fastener, the Bulbed CherryLOCK, and Huck had the MLS. (F. 83, 85, 87.) Soon after Cherry introduced the CherryLOCK and the Bulbed CherryLOCK, it licensed Voi-Shan to make both rivets. (Buster, Tr. 2648; CX-491-Z-39 to CX-491-Z-49 (CherryLOCK 1964 license).) Voi-Shan sold about 25% of all structural aerospace blind rivets purchased in the U.S. Voi-Shan frequently underbid Cherry. (Buster, Tr. 2750-51; Hammer, Tr. 1738; Ragan, Tr. 1833-35, 1869-70.)

2. Entry of Olympic

118. Olympic began manufacturing aerospace blind rivets in the late 1960's. (CX-95-A to CX-95-C; Wahlberg, Tr. 6389; RX-397-A; F. 89.) Olympic first developed its OlympicLok blind rivet because McAir, a user of NAS 1400 rivets and Olympic tools, wanted better tools than the double-action tools. (Smith, Tr. 4423, 4425.) The OlympicLok qualified to NAS 1400 and gained sales because of its superior, single-action tool. (Wahlberg, Tr. 6391-95.)

119. Olympic later introduced its Bulb-Lok to better compete with bulb rivets like the Bulbed CherryLOCK. (Wahlberg, Tr. 6400-01; RX-398-A; F. 92-93.) Some OEM's did not view the Bulb-Lok as interchangeable with other bulb rivets, even though it qualified to NAS 1740. (Jarosz, Tr. 7443; Wahlberg, Tr. 6398-6401; Chenarides, Tr. 8051-53.) Many customers rejected the Olympic Bulb-Lok because it was a wiredraw and not a bulb. (Peavy, Tr. 1979-81, 1986; Wahlberg, Tr. 6411-12; Jarosz, Tr. 7442-43; Overstreet, Tr. 10276; RX-105-A to RX-105-G; RX-350.) The Olympic Bulb-Lok's sales declined to \$427,500 by 1990. (Luhm, Tr. 1134-36; RX-460-C.)

3. Development of the CherryMAX

120. The CherryMAX was a replacement for the Bulbed CherryLOCK. It was offered in the oversize diameters rivets under NAS 1740, and not in the nominal diameters under NAS 1400. (Wahlberg, Tr. 6426-27.) Later a nominal version of the CherryMAX was sold. (RX-280-H (CherryMAX brochure).)

121. The CherryMAX initially sold in 1976 under Cherry part numbers and OEM specifications because it had no military or NAS specification. Northrop, a subcontractor to McDonnell Douglas on the F-18, procured the CherryMAX for the F-18 under a McAir spec., (Smith, Tr. 4440; Page, Tr. 8788.) Boeing also developed its own spec for the CherryMAX in 1977. (Jarosz, Tr. 7435; RX-127-Z-239 to RX-127-Z-246.) The CherryMAX succeeded in the marketplace because it was perceived as equivalent to the Bulbed CherryLOCK and much easier to install. (Wahlberg, Tr. 6425-26.)

122. The lack of an NAS or military specification did not deter those customers who wanted the CherryMAX from purchasing it. (Wahlberg, Tr. 6427-28; Chenarides, Tr. 8063-64.) Cherry was selling ten million CherryMAX rivets a year to the government

before the rivet had its military specification. (Keimes, Tr. 5834.) Some aerospace OEMs that adopted the CherryMAX to replace the Bulbed CherryLOCK continued to design their aircraft on the basis of the performance characteristics of NAS 1740. (Cabe, Tr. 5148, 5316; Jarosz, Tr. 7733.)

123. In 1976 Cherry licensed Voi-Shan to manufacture and sell the CherryMAX in the United States. (Buster, Tr. 2703-04; CX-440-Z-5 to CX-440-Z-6; CX-440-O to CX-440-R.)

4. Development of Mil-R-7885

124. In the mid 1970's, NavAir requested the Naval Air Development Center to study all blind rivets to develop a new specification of aerospace blind rivets for repair. The study included the CherryMAX, MLS, Unimatic, OlympicLok, Bulb-Lok, CherryLOCK, and Bulbed CherryLOCK. (Zurko, Tr. 6046-52; RX-135-A; RX-136-A; RX-137-A to RX-137-Y.)

125. NavAir's examination of blind rivets in the mid 1970's found that no fastener served all purposes, but that the CherryMAX, because of its simplified tooling and installation, had more desirable features than any other blind rivet. (RX-137-W to RX-137-Y.) NavAir drafted a new blind rivet specification intended to describe the desirable attributes of the CherryMAX. (Zurko, Tr. 6053-54; RX-351-A.)

126. The Navy circulated its draft of the new specification, in the form of a revision of an old specification, Mil-R-7885, for comment by the other military services, aerospace OEMs, and fastener manufacturers. This was done via the Fastener Engineering and Optimization of Performance (FEOPS) Committee, a committee established by the Navy with members from government agencies and OEMs. (RX-259-B to RX-259-D.) Over four hundred comments were received and resolved by the FEOPS committee before the specification was officially issued on August 20, 1980 as Mil-R-7885, Revision C. (RX-259-B to RX-259-D; Wahlberg, Tr. 6429, 6432-33.) Mil-R-7885 was written to cover more than one producer's rivets. (Ford, Tr. 1468-69.) Mil-R-7885 did not require any features that were covered by Cherry patents. (Wahlberg, Tr. 6443-44.)

5. Entry of additional A Code manufacturers

127. In the late 1970's and early 1980's Voi-Shan and Monogram designed and began selling their own versions of the A Code rivet. (F. 90.)

6. Entry of Allfast

128. Allfast first sold aerospace blind rivets about 1979 with a copy of the original CherryLOCK, whose patent had expired. (Luhm, Tr. 1020.) Allfast identified these rivets by their standards pages numbers as NAS 1398 and NAS 1399 rivets and by Allfast part number. (RX-78-W to RX-78-Y.)

129. About 1980, Allfast began making and selling a rivet that was a copy of the Bulbed CherryLOCK, whose patent had one more year to run. Allfast identified these rivets by their standards page numbers as NAS 1738 and NAS 1739 rivets, and by Allfast part number. (Luhm, Tr. 1022-23; RX-78-S to RX-78-V.)

130. Allfast designed a copy of the CherryLOCK and Bulbed CherryLOCK and produced blind rivets in a short time by hiring experienced employees from Cherry and other fastener companies. (Willey, Tr. 1208-09.)

7. Entry of the MBC to the U.S.

131. Avdel began in the aerospace blind rivet business in the 1950's and 1960's by selling two aerospace rivets, the Avdel Rivet (a friction locked, self-plugging rivet) and the Chobert, neither of which are structural blind rivets and both of which had been developed by other companies. (Lambe, Tr. 4103-04.)

132. About 1981, Avdel asked Cherry to make and sell the MBC in the United States pursuant to Cherry's original Monobolt license (Ragan, Tr. 1850-51; Buster, Tr. 2682-83; Marley, Tr. 3385). This license gave Cherry the right to manufacture and sell the MBC in the U.S. because the MBC is based on the same patents as the Monobolt. (Marley, Tr. 3380.) Cherry decided not to make and sell the MBC under its Monobolt license. (Buster, Tr. 2757-59; Marley, Tr. 3386; CX-491-Z-91 to CX-491-Z-92.)

133. In 1982, Avdel introduced the MBC to the U.S. market, manufacturing it in England. (Palmiteer, Tr. 552; F. 27.)

134. In 1987, Martin Marietta (Denver)'s representative to the NASC, Darryl Miller, requested a new NAS specification for the MBC, released as NAS 1722, to have a fastener with a space compatible lubricant for use on missiles and rockets. (Page, Tr. 8810.) The lubricant specified in NAS 1722 was dichronite. Avdel later found that the MBC would not perform to specification with that lubricant. (Palmiteer, Tr. 679-81.)

135. Avdel modified the design of the MBC it markets in the U.S. to include what it calls a "lock creator," which is a driving anvil. (Palmiteer, Tr. 677-79; Peavy, Tr. 1949-50.) NAS 1722 was modified to reflect the change. (RX-384-A to RX-384-N.) The effect was to permit Cherry's tooling to install Avdel's MBC. (Palmiteer, Tr. 666.)

136. Boeing Helicopter sponsored a revision to Mil-Hdbk-5 to provide for Avdel's request to manufacture the MBC in hard metric sizes. (CX-1208-A to CX-1208-B.) There is no evidence that Avdel, to date, has made the MBC in any metric sizes. (Grawe, Tr. 4777.)

137. Avdel was to receive Mil-Hdbk-5 tables in mid-1991, after the addition of the lock creator to the design. (Ford, Tr. 1434.)

8. Qualification of CherryMAX to Mil-R-7885

138. Cherry's CherryMAX was listed on the QPL for slash sheets 6 and 7 under Mil-R-7885, on August 6, 1982. (Wahlberg, Tr. 6429-30; CX-498-F.) Cherry's CherryMAX was listed on the QPL for slash sheets 2 and 3 under Mil-R-7885, March 13, 1984. (Wahlberg, Tr. 6430-31; CX-498-F.) Voi-Shan's version of the aluminum sleeve and alloy steel stem CherryMAX was listed on the QPL for slash sheets 2, 3, 6 and 7 under Mil-R-7885 as of June 18, 1984. (Wahlberg, Tr. 6445; CX-498-D.)

139. Most blind rivet purchasers did not change their callouts to Mil-R-7885 as soon as Cherry was listed on the QPL for that specification; most continued to buy the CherryMAX under Cherry part number. (Wahlberg, Tr. 6445-46.)

9. Introduction of Cherry A Code rivets

140. Cherry did not offer its new CherryMAX A, which is a wiredraw rivet with the tooling and lock features of the CherryMAX, as a Mil-R-7885-type rivet or as an alternative to the standard, bulb CherryMAX. (Wahlberg, Tr. 6460-62; F. 111-12.)

141. In 1986-87, Cherry developed its version of the Olympic-Lok or A Code, also sold under NAS standards pages 1398A and 1399A (Wahlberg, Tr. 6470), because Cherry's customers wanted a wiredraw-type blind rivet, installed with single-action tools, but without the driving anvil of the CherryMAX A. (Wahlberg, Tr. 6463-67.) Cherry called this rivet the CherryLOCK A or A Code. (Wahlberg, Tr. 6466.) Cherry found the CherryLOCK A or A Code rivets difficult to manufacture consistently. (Andrews, Tr. 9798-9801.)

10. Huck Clinch and NAS 1686 and 1687

142. Despite opposition because the fastener lacked a visible locking ring (Petraska, Tr. 7822), the Huck Clinch was listed on the QPL for slash sheets 6 and 7 of Mil-R-7885 as of October 7, 1985. (CX-498-D.) In April 1988, despite opposition from Cherry, several OEMs, and the Air Force, Mil-R-7885 revision D was released, deleting references to a separate visible locking ring from Mil-R-7885. (RX-351-B; Wahlberg, Tr. 6490.) The Clinch was not regarded by many aerospace customers as interchangeable with the other fasteners qualified under Mil-R-7885 because of its unique, non-visible locking mechanism. (Petraska, Tr. 7820-22, 7844; Faulkner, Tr. 99-100; RX-122-A; Luhm, Tr. 1075-76.)

143. NASC in 1986 began two new NAS procurement specifications, NAS 1686 and 1687, requiring a visual locking mechanism. (Chenarides, Tr. 8118-21; Wahlberg, Tr. 6491; Cabe, Tr. 5084-86.) An ad hoc committee under Nick Chenarides of Douglas proposed a specification, with representatives of Huck, Olympic, Allfast, and Cherry invited to participate. (Chenarides, Tr. 8121-22.) Huck threatened suit. (Chenarides, Tr. 8128-31; RX-112-A to RX-112-G.)

144. NAS 1686 and 1687 were issued by the NASC in June 1987 (Wahlberg, Tr. 6491), requiring a visible locking ring. (Chenarides, Tr. 8133-37.) Cherry qualified its monel sleeve/stainless steel stem CherryMAX to NAS 1687 in 1987. (Wahlberg, Tr. 6497.) Only a

few OEMs have used NAS 1686 and 1687 or the standards pages in their call-outs. (Cabe, Tr. 5157-58; Wahlberg, Tr. 6497-98; Chenarides, Tr. 8319.)

11. Introduction of AllMax

145. The AllMax I was listed on the QPL for Mil-R-7885 in one diameter of slash sheets 6 and 7 as of September 12, 1986. (CX-18-Z-37.) The AllMax II was listed on the QPL for Mil-R-7885 in all diameters of slash sheets 2, 3, 4, 5, 6, 7, and 8 as of January 9, 1989. (CX-594-J to CX-594-K; RX-98-A.)

12. Exit of Voi-Shan and Olympic

146. In September 1988, Voi-Shan left the aerospace blind rivet business after more than twenty years as a successful manufacturer. (CX-593-I.) Voi-Shan left because of declining profits due to Allfast's aggressive price-cutting and "horrible price erosion." (RX-32-H; Grawe, Tr. 4851; Willey, Tr. 1170; CX-1717.)

147. At the time Voi-Shan announced its exit, Allfast had not yet introduced to the market its non-infringing version of the AllMax. (CX-520-I.)

148. In April 1989, Olympic sold its aerospace assets to Allfast. (CX-24-A.) Allfast then moved the equipment and machinery it had purchased to its plant in City of Industry, California. (Willey, Tr. 1174.) Some major aerospace OEMs, such as Boeing, required Allfast to qualify the former Olympic products Allfast proposed to sell because it moved the equipment. (Jarosz, Tr. 7453-54; Beals, Tr. 7884-85.) This left Cherry as the only qualified supplier of A Code type rivets procured under NAS 1398 and 1399. (Andrews, Tr. 9827.)

13. Cherry's April 15, 1989 disclosure

149. From late 1987 until early 1989, Cherry attempted to qualify its aluminum sleeve (5056)/stainless steel stem (15-7 ph) version of the CherryMAX to the newly issued NAS 1686. This materials combination was not covered by Mil-R-7885. (Wahlberg, Tr. 6498-99.)

150. Testing in preparation for Cherry's qualification to NAS 1686 indicated that aluminum sleeve (5056)/stainless steel (15-7 ph) stem version of the CherryMAX, a version not covered by Mil-R-7885, did not consistently meet the qualification requirements of NAS 1686 for sheet take-up and shank expansion. (Wahlberg, Tr. 6498-6499; Pratt, Tr. 8909.)

151. At a Cherry staff meeting in early April of 1989, John Pratt, then Cherry's head of R&D, revealed difficulties in producing an aluminum sleeve/stainless steel stem version of the CherryMAX to meet the sheet take-up and shank expansion requirements of NAS 1686 and 1687. (Pratt, Tr. 8915-17; Andrews, Tr. 9804; Wahlberg, Tr. 6501-02.) The question was whether every rivet, in every size and head style, had to meet every qualification test in the specification, or whether only the size and style of rivets identified in the specification for testing needed the characteristics. (Andrews, Tr. 9808-10.)

152. On April 15, 1989, Cherry wrote to its customers that as Cherry now interpreted the spirit or intent of NAS 1686 and 1687, Mil-R-7885 and the Cherry company specification for the CherryMAX, the CherryMAX did not consistently meet the sheet take-up and shank expansion qualification requirements of these specifications. (Andrews, Tr. 9805-07; RX-308-A to RX-308-H.)

153. Allfast's Ralph Luhm described Mil-R-7885 as "ambiguous." (Luhm, Tr. 1068.) Some OEMs told Cherry that its new reading of the specifications was incorrect. (Page, Tr. 8818-21; CX-794-A to CX-794-B; Benson, Tr. 11278-79.) Many of Cherry's customers did not regard sheet take-up and shank expansion as important attributes of the CherryMAX rivet. (Chenarides, Tr. 8150-52; Jarosz, Tr. 7456-59; RX-423-A to RX-423-E; Beals, Tr. 7890-91; Benson, Tr. 11307-08.) Most of Cherry's customers continued to purchase the CherryMAX after Cherry's April 15 letter. (Wahlberg, Tr. 6506; Andrews, Tr. 9814-15; CX-817-A to CX-817-C.)

154. After Mooney Aircraft received a letter from their CherryMAX distributor about Cherry's April 15 disclosure, the next rivet manufacturer to contact Mooney was Avdel, and Mooney identified the MBC for use on its aircraft. (Rogers, Tr. 770-71, 801.)

155. In the summer of 1989, Cherry requested that the Navy waive or modify the sheet take-up and shank expansion requirements of Mil-R-7885. (Andrews, Tr. 9817-18.)

156. NavAir found that the AllMax rivet by Allfast also was deficient in sheet take-up and shank expansion. (Zurko, Tr. 6187.)

157. The Navy reduced tests for sheet take-up and shank expansion, but required a test known as the Boomer Banger. (CX-859-A to CX-859-B.) In 1990, DISC resumed making some CherryMAX purchases by waiving the sheet take-up and shank expansion requirements. (Andrews, Tr. 9951-52.)

158. In further testing of CherryMAX rivets following the April 15 disclosure letter, Cherry determined that its current production rivets could not always meet the joint allowables published for the CherryMAX in Mil-Hdbk-5. (Pratt, Tr. 5738-39.) Cherry notified the Mil-Hdbk-5 Committee, and, in May of 1990, the joint allowables previously published in Mil-Hdbk-5 for the CherryMAX were removed. (Ford, Tr. 1423-24; Pratt, Tr. 5745-46.)

159. Following Cherry's April 15 disclosure letter, the NASC began a project to consider modifications of NAS 1686 and 1687. (Chenarides, Tr. 8153-55.) The likely result of the NASC's project will be the NASC's decision to eliminate the sheet take-up and shank expansion requirements from NAS 1686 and 1687. (Chenarides, Tr. 8167, 8174-75.) Allfast initially opposed this change, but then later changed their position. (Chenarides, Tr. 8173-74.)

160. The April 1989 disclosure and the Mil-Hdbk-5 problem cost Cherry credibility with some of its customers. (Chenarides, Tr. 8160-62; Overstreet, Tr. 11017-18.)

14. The licensing of John Hassall Co.

161. Started over 100 years ago, John Hassall Co. manufactures fasteners for commercial and aerospace use; its techniques include reheading, a form of heading that is precise and economical. (Hachadoorian, Tr. 6992-95, 7001-04.) Hassall also designs machinery for fasteners production. (Hachadoorian, Tr. 7262-64.) Hassall's aerospace customers regard it as one of their best suppliers of fasteners. (Schwarz, Tr. 7378-81; RX-413; RX-414; RX-415; RX-416; RX-417-A to RX-417-B.)

162. Among the aerospace products Hassall manufactures are fasteners for aircraft jet engine manufacturers (none of them blind) that require both high tolerances and the ability to form exotic materials such as monel, inconel, and specialty steels. (Hachadoorian, Tr. 7003-05, 7031-32.)

163. In 1989, Textron decided to license Hassall to make and sell the CherryMAX to meet concerns about diminished competition in the sale of aerospace blind rivets. (Dolan, Tr. 6285-87.) Hassall surveyed the market and found that the CherryMAX was in demand. (CX-557-A to CX-557-D.) Demand for the MBC in the U.S. was very small. (Hachadoorian, Tr. 7242-43, 8623-26, 8650-53.)

164. In June 1990, a license for the CherryMAX was granted by Cherry to Hassall. (Hachadoorian, Tr. 7159.) The license was not final unless Hassall manufactured 20 part numbers of the aluminum sleeve (5056)/alloy steel stem (8740) version of the CherryMAX and passed the tests in the CherryMAX specification by October 15, 1990. (RX-456-A to RX-456-Z-18; Hachadoorian, Tr. 7160-64.)

165. Hassall used cell manufacturing rather than the batch technique primarily employed by Cherry. (Hachadoorian, Tr. 7155-56.) Hassall's personnel went to Cherry's Santa Ana factory and trained on a cell to produce the aluminum sleeve/alloy steel stem version of the CherryMAX. (Hachadoorian, Tr. 7164-68.) Hassall purchased most of the necessary tooling and machinery from Cherry and set up its own cell to manufacture the CherryMAX. (Hachadoorian, Tr. 7168-69.) Hassall qualified the requisite 20 sizes before the October 15 deadline, less than 100 days after the license was signed. (Hachadoorian, Tr. 7169-70.)

166. Hassall is considering production of other aerospace blind rivets, such as the Huck MLS and the A Code rivets, for which no license is necessary. (Hachadoorian, Tr. 7240-42, 8626-27.)

167. Hassall's CherryMAX license permits Hassall's Japanese affiliate Fukui Byora, a fastener manufacturer for the Japanese commercial market, to manufacture the CherryMAX for sale in Japan and export to Hassall for sale in the U.S. (Hachadoorian, Tr. 7171; RX-456-A to RX-456-Z-18; F. 35.) Fukui Byora also designs and manufactures fastener manufacturing machinery. (Hachadoorian, Tr. 7074-77.)

168. Hassall changed the CherryMax production process using Fukui Byora machinery. (Hachadoorian, Tr. 7181, 7187-92.) Hassall intends to differentiate its CherryMAX through improved quality and advanced manufacturing techniques. (Hachadoorian, Tr. 8654-56.) Hassall's prices for CherryMAX are lower than Cherry's list prices. (Hachadoorian, Tr. 8601.)

D. Recent Sales and Trends

169. Total U.S. sales in 1989 of structural aerospace blind rivets were \$49,815,095. Estimated 1990 sales for these products were \$63,700,000. (RX-460-D.)

170. In 1988, Voi-Shan's total U.S. sales of aerospace blind rivets were \$4,600,000; by 1989, Voi-Shan's sales dropped to \$300,000. (RX-460-D.)

171. In 1989 and 1990, Cherry's U.S. sales of aerospace blind rivets were (RX-460-B to RX-460-D):

	<u>1989</u>	<u>1990</u>
CherryMAX	\$22,394,932	\$30,149,564
CherryMAX A	1,070,970	1,339,226
Bulbed CherryLOCK	2,757,801	3,476,259
CherryLOCK	4,071,912	5,874,365

172. The exit of Olympic and Voi-Shan, Allfast's having to requalify, and more orders from Boeing and other aerospace OEMs increased Cherry's sales of aerospace blind rivets late in 1989 and early in 1990. (Andrews, Tr. 9792-9795.) This influx of orders at Cherry increased Cherry's past due orders. (Andrews, Tr. 9790-91, 9797-98.) Production of A Code rivets ordered by Boeing fell behind. (Andrews, Tr. 9827; Farley, Tr. 3033.)

173. Since 1989, Cherry increased its aerospace blind rivet output. Its past dues were reduced and its current production exceeds its shipments. (Beals, Tr. 7894; Andrews, Tr. 9795-9798.)

174. For 1989 and 1990, Allfast's U.S. sales were (RX-460-B to RX-460-D):

	<u>1989</u>	<u>1990</u>
AllMax	\$2,378,000	\$4,195,500
Allfast 1398, 1399 and A Code	3,727,000	4,908,000
Allfast 1738 and 1739	1,927,000	2,245,500
Bulb-Lok	265,000	427,500

175. Allfast's acquisition of Olympic's aerospace business expanded Allfast's line and capacity and customers. (Luhm, Tr. 1037-38, 1146; Smith, Tr. 4468.) Allfast recently qualified its AllMax blind rivet at several major OEMs, including Bell Helicopter

and Northrop. (Cabe, Tr. 5299-5300; Page, Tr. 8792; 92-A-B.) Allfast should be qualified on its A Code blind rivet at Boeing by mid 1991. (Jarosz, Tr. 7454.) Allfast should be qualified on the AllMax at Boeing by early 1992. (Jarosz, Tr. 7454-55; Farley, Tr. 3026-27.) Allfast should gain approval for the AllMax at Douglas, Long Beach when NAS 1686 and 1687 are revised, at which point, Nick Chenarides of Douglas expects "a massive industry conversion from Cherry to AllMax." (Chenarides, Tr. 8126-27.) Allfast expects blind rivet sales of \$4-5 million in 1991. (Willey, Tr. 1298.)

176. In 1989 and 1990, Huck's U.S. sales were (RX-460-B to RX-460-D; Andrews, Tr. 9820):

	<u>1989</u>	<u>1990</u>
Clinch	\$17,000	900,000
MLS/Unimatic	10,561,000	10,594,500

177. Because it moved to a new plant in Tuscon, Huck stopped marketing the Clinch from 1986 until mid-1989. (Faulkner, Tr. 100-02.) In 1990, Huck sales of the Clinch to DISC were \$900,000. (Andrews, Tr. 9820.) Through August, the 1990 Clinch sales were estimated to be only \$99,000. (RX-460-D.)

178. Hassall has CherryMAX orders of \$800,000, and has shipped \$100,000 worth. (Hachadoorian, Tr. 7213.) Hassall projects that it will ship \$2,000,000 of CherryMAX in 1991. (Hachadoorian, Tr. 7214-15.) Boeing's on-site, quality audit of Hassall went very well and Hassall was approved. (Beals, Tr. 7886-87; Hachadoorian, Tr. 7225.)

E. History and Prospects of MBC in U.S.

1. The past

179. MBC sales in the U.S. have been "essentially flat" from 1988 to 1990, despite receiving an NAS specification in 1987. (Palmiteer, Tr. 734-35.)

180. Avdel's worldwide and U.S. MBC sales, valued in U.S. dollars, were (RX-460-D; Kurtz, Tr. 4293):

	<u>U.S.</u>	<u>Worldwide</u>
1988	\$323,962	\$2.56m
1989	343,680	3.08m
1990(Annualized)	393,000	N/A

181. As of 1988, U.S. blind rivet manufacturers did not regard Avdel as a significant competitor for the sale of aerospace blind rivets in the U.S. (Hammer, Tr. 1743-44; RX-32-H.)

2. The product

182. The MBC is an aerospace blind rivet copied from Avdel's commercial rivet, the Monobolt. (Faulkner, Tr. 346-48; Lambe, Tr. 4070-71; Luhm, Tr. 1012-14, 1121-22; Overstreet, Tr. 10331.)

183. Aerospace customers expressed concerns about the MBC's locking mechanism, particularly its dependence on well-maintained tooling for proper installation. (Faulkner, Tr. 400-01; Beal, Tr. 904-05; Luhm, Tr. 1122-23; Peavy, Tr. 1948-51 (if nosepiece not sharp, may be only a friction lock); Chenarides, Tr. 8082-83.) Ralph Luhm, an experienced fastener engineer, described the MBC as "semi-structural until they fix the lock." (Luhm, Tr. 1126-27.) Three of the four U.S. customers currently purchasing the MBC from Avdel's only U.S. distributor selected the MBC for applications previously filled by antiquated friction lock rivets. (Peavy, Tr. 1972-74.)

3. Limited U.S. presence

184. A foreign plant is an obstacle to Avdel or any aerospace blind rivet firm attempting to market aerospace blind rivets in the U.S. (Palmiteer, Tr. 551, 712-13; Peavy, Tr. 1969, 1993-95, 2002; Page, Tr. 8795; Overstreet, Tr. 10505; CX-1707-A to CX-1707-B; RX-163-A.)

185. The absence of a full-line product is an obstacle to any aerospace blind rivet firm attempting to market its product in the U.S. Northrop turned down the MBC because at that time it came in only two sizes, and they were both oversizes, not nominal (standard) sizes.

(Page, Tr. 8793.) The MBC now comes in three of the four standard sizes. (CX-1221-A to CX-1221-B.)

4. Limited U.S. design success

186. The MBC is currently called out for repair on the Apache AH-64A helicopter manufactured by McDonnell Douglas Helicopter ("Longbow"). The MBC was added to the callouts because it is the only wire draw type rivet available in oversize. (RX-366-A to RX-366-B; Overstreet, Tr. 10544-55, 10560; Santee, Tr. 1610, 1642.) The Longbow will account for 40,000 rivets over several years. (Santee, Tr. 1641, 1655-56.)

187. The MBC is currently called out for use in the NOTAR (no tail rotor) system being developed at McDonnell Douglas Helicopter for use on the MD-N500 helicopter. It was chosen over the Cherry and Huck blind rivets primarily because of concern about using a rivet with a locking mechanism that was not integral to the rivet. The MBC was the only rivet with an integral locking mechanism. (Van Horn, Tr. 1502-05, 1512.) NOTAR will use 1200-1400 rivets per month. (Van Horn, Tr. 1500, 1505.)

188. Except the four seater aircraft being built by Mooney, no airplane manufacturer has selected the MBC as the primary blind rivet for use on any aircraft designed in the U.S. (Overstreet, Tr. 10337.)

189. Major commercial and military aircraft OEMs in the U.S. have no plans to use the MBC on any existing programs. (Page, Tr. 8800-01; Overstreet, Tr. 10337, 10340.) Frank Jarosz of Boeing testified that he believes there is no likelihood that the MBC will be an approved blind rivet at Boeing. (Jarosz, Tr. 7502.)

190. The MBC has not been selected for use in the LHX (the Army's new light helicopter); the Boeing 777 (Boeing's next generation commercial airplane); the ATF (the Air Force's next generation stealth fighter); the MD-12 (McDonnell Douglas's next generation commercial airplane). (Parker, Tr. 6892; Jarosz, Tr. 7505; Overstreet, Tr. 10315-16; Petraska, Tr. 7832; Smith, Tr. 4450-51.)

191. In 1988 Avdel produced a revised version of its MBC rivet, the Lock-Creator, that incorporated a driving anvil (similar to Cherry's). (Palmiteer, Tr. 665-66.) The effect of this modification was to permit Cherry's tooling to install Avdel's MBC. (CX-582-Z-26; CX-646-A to CX-646-B; CX-1038; Palmiteer, Tr. 666.) The

Lock-Creator meets the spindle retention requirements of Mil-R-7885, NAS 1740 NAS 1400. (CX-641, CX-1031-H to CX-1031-I.)

192. The MBC's lack of success in being designed into recent new aircraft programs in the U.S. and its limited prospects of being substituted into existing programs mean that its sales in the U.S. are unlikely to increase significantly in the foreseeable future. (Overstreet, Tr. 10337; CX-1707.)

5. Significance of Europe

193. The MBC sells better in Europe, primarily in the U.K. and France. (CX-1661-E.) Its total sales in Europe of structural aerospace blind rivets rank third behind those of Cherry and Huck. (Overstreet, Tr. 10345; RX-464-C.)

194. British Aerospace used the MBC rivet in the original designs of the Airbus A330s, A340s, and British Aerospace 146 aircraft. (Palmiteer, Tr. 574; Lambe, Tr. 3987; CX-546-B.) The Airbus is sold to United States commercial airlines. (Lambe, Tr. 3986.)

195. About 1988, Avdel's MBC competed with blind rivets from Cherry, Huck and Olympic for the business of an English consortium, which MBC won with a 23.5% discount. The MBC also offered a 30% discount at MBB Bremen on the Airbus "programme." Cherry considered these discounts on the MBC in pricing its InterMAX. (CX-378-Z-132 to CX-378-Z-133.)

196. The MBC eroded the "semi-aerospace," "low end of the scale" CherryMAX customer base in the European aerospace market. Cherry then introduced its InterLOCK rivet.¹ (CX-409-Z-40; CX-379-Z-6; CX-407-W.)

197. The MBC has been selected as one of the blind rivets for the European Fighter Aircraft (EFA). (CX-546-B.) British designers of parts of the plane made in that country may select a British rivet. (Overstreet, Tr. 10550-53.)

F. *Relevant Product Market*

1. Selection of blind rivets

¹ "InterLOCK" and "UniLOCK" are prior names for Cherry's InterMAX blind rivet. (CX-379-Z-74.)

198. The purchase of fasteners by aerospace OEMs involves standards engineers, design engineers, and procurement specialists. (F. 198-212.)

199. Standards engineers at aerospace OEMs are the fastener specialists. They evaluate fasteners (Page, Tr. 8783; Skrobecki, Tr. 7966-67), maintain the manuals and policies that guide fastener use (Parker, Tr. 6863-64), test new rivets and qualify new suppliers. (Beals, Tr. 7883, 7935; Cabe, Tr. 5042-44, 5059-60.)

200. The standards organization at Boeing is known as Boeing Materials Technology ("BMT"). (Jarosz, Tr. 7423.) Frank Jarosz is the most knowledgeable person about fasteners at Boeing. (Parker, Tr. 6886.)

201. Aerospace OEMs standardize fasteners to reduce their costs. (Petraska, Tr. 7806; Page, Tr. 8784-86; Chenarides, Tr. 8035-36; Overstreet, Tr. 10528-29.)

202. Major aerospace OEMs establish criteria for blind rivets. Boeing has a list of fasteners for use in the design of Boeing's planes. (Jarosz, Tr. 7431-35; Skrobecki, Tr. 7962-63; Beals, Tr. 7881-82.) Douglas issues a fastener policy manual for each new program. (Chenarides, Tr. 8039-41; RX-140-A to RX-140-I; RX-142-A to RX-142-Z-109; RX-144; RX-146.)

203. Design engineers select blind rivets they need from among those the standards engineers identify. (Jarosz, Tr. 7489-90; Page, Tr. 8784-85; Skrobecki, Tr. 7969-70.)

204. An aerospace OEM's fastener selection will not change for a new airplane unless there is some problem with the fasteners previously used or some change in the design of the plane. (Willey, Tr. 1367-68; Jarosz, Tr. 7439; Petraska, Tr. 7823-24; Parker, Tr. 6865; Page, Tr. 8785; Chenarides, Tr. 8054-57, 8183.)

205. Boeing's design of its 737-300, 737-400, 737-500, 757-200, 767-200, 767-300, 747-300 and 747-400 commercial airplanes did not result in any changes in the fasteners recommended for use in metallic structures. (Jarosz, Tr. 7440-41.)

206. Air frame OEMs will not adopt an additional blind rivet to solve one problem. (Benson, Tr. 11319.) Boeing has not increased the number of blind rivet systems it uses in order to resolve a problem on its 737 and 757 doors. (Jarosz, Tr. 7493-95 (MBC), 7499-7500 (Bullfrog); Benson, Tr. 11237-38, 11318-19.)

207. Because of aerospace OEMs desire for fewer types of blind rivets, a blind rivet manufacturer can gain widespread use of a new

rivet only if it can demonstrate that the new rivet is better than one of the standard blind rivet systems already in use. (Jarosz, Tr. 7499-7500; RX-429-A to RX-429-D; Page, Tr. 8796; Parker, Tr. 6866; Overstreet, Tr. 10528-29.)

208. Boeing evaluated the CherryMAX in 1976-77 before adopting it to replace the Bulbed CherryLOCK, performing tests that were not part of any NAS specification. (Jarosz, Tr. 7437-38.) The first CherryMAX shipments of rivets were tested further, and when they did not perform as expected, Boeing went back to using the Bulbed CherryLOCK. (Jarosz, Tr. 7445.) When Boeing reconsidered whether to use the CherryMAX in 1981-82, Boeing representatives came to Cherry and randomly selected production-quality CherryMAX for further testing. (Wahlberg, Tr. 6449-50; Jarosz, Tr. 7446-47.)

209. Design engineers do not necessarily select the optimal fastener for every joint on an aircraft because they select from those fasteners which their company has chosen to standardize. (Petraska, Tr. 7807; Page, Tr. 8784.)

210. Aerospace OEMs are reluctant to change the fastener selection on an aircraft once the aircraft is in production. (Findley, Tr. 978-79; Beal, Tr. 850; Smith, Tr. 4471; Page, Tr. 8785-86.)

211. Procurement purchases the blind rivets the standards and design engineers have selected. (Farley, Tr. 3016-17; Palmiteer, Tr. 523.) Procurement may recommend that additional manufacturers be added as qualified sources. (Jarosz, Tr. 7449-50; Parker, Tr. 6959; Beals, Tr. 7881-82.)

212. Competition for the sale of aerospace blind rivets to an air frame OEM is limited to qualified vendors whose rivets meet specifications on the design drawings for that OEM's aircraft. (Farley, Tr. 3018-19; Palmiteer, Tr. 523; Willey, Tr. 1309-10.)

2. Bulb rivets and wiredraw rivets as substitutes

213. The Bulbed CherryLOCK could not meet the requirements of NAS 1400 procurement specification or of NAS standards pages 1398 and 1399; similarly, the CherryLOCK could not meet the requirements of NAS 1740 procurement specification or of NAS standards pages 1738 and 1739. (Wahlberg, Tr. 6379-81.)

214. The NAS 1738 standards page says that wiredraw-type rivets provide greater hole-fill than bulb-type rivets, especially in the longer grip lengths. (RX-379-B; Wahlberg, Tr. 6383; F. 63.)

215. The design manual for the Boeing Commercial Airplane Group specifies that wiredraws should not be used if the back sheet is thinner than 1/4 of the diameter of the rivet. (Jarosz, Tr. 7427-28; RX-127-Z-38 to RX-127-Z-39.) Lockheed uses bulbs where the back-side sheet is .0025 inch or less. (Hatton, Tr. 8677.)

216. Fastener manufacturers do not market wiredraw-type rivets sold under NAS 1400 procurement specification and NAS standards pages 1398 and 1399 as substitutes for bulb rivets like the CherryMAX. (Faulkner, Tr. 347; Willey, Tr. 1301-02.)

217. Trying to sell the CherryMAX, Cherry found some customers, like McAir, who were committed to wiredraw rivets. (Wahlberg, Tr. 6484-85.) Cherry therefore developed two wiredraw rivets. (F. 102, 141.)

3. MBC

a. *MBC as a substitute for Cherry's bulb rivets*

218. Avdel does not regard the MBC as an across-the-board substitute for bulb-type rivets such as the CherryMAX. (Palmiter, Tr. 737; Marley, Tr. 3390-91.)

219. Fastener manufacturers do not regard the MBC as an across-the-board substitute for bulb-type rivets such as the CherryMAX, the AllMax or the Huck Clinch. (Faulkner, Tr. 347-48; Willey, Tr. 1382-83.) MBC could fill only 5-10% of holes filled by CherryMAX. (Ragan, Tr. 1790.)

220. The MBC does not qualify for Mil-R-7885. (Zurko, Tr. 6193.) Mil-Hdbk-5 will have a table for 7885-type rivets, which will include the Huck Clinch, the CherryMAX and the AllMax, but not the MBC. (Palmiter, Tr. 726-27.)

221. Cherry's disclosures in April of 1989 about the CherryMAX's failure to meet two qualification requirements helped the sales of Allfast's AllMax, but gave no boost to Avdel's MBC sales. (Palmiter, Tr. 737-38; Marley, Tr. 3390-91; Keimes, Tr. 5889-90, 5900.)

222. Aerospace OEMs do not regard the MBC as a substitute for the CherryMAX or AllMax. (Cabe, Tr. 5290; Chenarides, Tr. 8096; Findley, Tr. 971.)

223. In deciding which blind fasteners to use, aerospace OEMs depend primarily on design engineers. Function is the important factor. The cost of the rivet includes installed cost and tooling. Therefore, the price effect test does not control product market analysis. (Grawe, Tr. 4611-15.)

224. MBC rivets have in a few instances been used to replace Huck and Cherry blind rivets, but the main competition they offer is at the design stage. (Grawe, Tr. 4816-18.)

b. MBC as a substitute for Cherry's wiredraw rivets

225. The MBC differs from other wiredrawing fasteners sold in the U.S.: it has a large cavity in its stem (Luhm, Tr. 1013; Benson, Tr. 11197-98), and its locking mechanism is part of its stem, and not a separate piece as it is on the other mechanically locked aerospace blind rivet sold in the U.S. (Wahlberg, Tr. 6477.)

226. Avdel does not sell the MBC for very thin sheet applications. (Palmiter, Tr. 727.) The cavity in the stem reduces the rivet's strength in some sizes, and in aluminum alloy products. (Palmiter, Tr. 728.)

227. When McDonnell Douglas Helicopter asked Avdel for shear and tensile strength data so they could evaluate whether the MBC could be treated as equivalent to the CherryLOCK called out under NAS 1398D, Avdel withheld the test results because MBC's shear strength was 13-17% below that of the CherryLOCK. (RX-196-B; Palmiter, Tr. 729-30.)

228. Boeing recently had problems with timely delivery of A Code wiredraw rivets sold under NAS standards pages 1398 and 1399 but has not turned to the MBC as an alternative. (Beals, Tr. 7900-01; Andrews, Tr. 9830.)

229. McDonnell Douglas in St. Louis, a major user of wiredraw-type fasteners (Luhm, Tr. 1107), has not used the MBC or specified it as an acceptable substitute for rivets called out under NAS 1398 and NAS 1399. (Smith, Tr. 4421; Page, Tr. 8883.)

230. Most aerospace OEMs do not consider the MBC to be interchangeable with or a close substitute for blind rivets that meet NAS 1400 procurement specification and NAS standards pages 1398

and 1399. (Jarosz, Tr. 7501-02, 7794-95; Chenarides, Tr. 8096-97; Hatton, Tr. 8703.)

G. Relevant Geographic Market

231. European aerospace OEMs include Airbus, a consortium of five governments (Faulkner, Tr. 89-91), owned by a consortium of five European companies, Aerospatiale (France), British Aerospace (Britain), Bel Airbus (Belgium), Casa (Spain), and MBB (Germany). (Lambe, Tr. 4120; Ragan, Tr. 1857.) Airbus manufactures narrow and wide-bodied commercial airplanes for passenger traffic, including the A-310, A-320, A-321, A-330, and A-340.

232. Panavia is a consortium of Italy, England, and Germany that manufactures the Tornado Fighter-Bomber. (LeCann, Tr. 2226, 2243.)

233. The European Fighter Aircraft (EFA) project is a consortium of Britain, Germany and Italy to develop the next generation of fighter-bomber for Europe. (Lambe, Tr. 3915.)

234. British Aerospace makes parts of airplanes manufactured by European consortia including, Airbus (commercial) and EFA, Tornado, Jaguar (military) aircraft, as well as commuter aircraft such as the BAe 146. (Lambe, Tr. 3915-19, 3989.)

235. Fokker, located in the Netherlands, manufactures components of airplanes designed by other aerospace companies and large commuter airplanes such as the F-100, a hundred seat jet-engined craft. (Lambe, Tr. 3995-96.)

236. European aerospace OEMs have different preferences for blind rivets than do aerospace OEMs in the U.S. (Faulkner, Tr. 116-17, 365-67; Chenarides, Tr. 8080; Overstreet, Tr. 10305.)

237. Prices for aerospace blind rivets in European countries differ from and do not move consistently with the prices for those same blind rivets in the U.S. (Hammer, Tr. 1723-24 (Allfast entry in U.S. did not affect European prices); Overstreet, Tr. 10801; CX-1238-A to CX-1238-B.)

238. Cherry developed a new fastener, the InterMAX, because Cherry's fasteners were viewed by its European customers as not interchangeable with the MBC. (Lambe, Tr. 3924, 3933-35, 3946; Wahlberg, Tr. 6480-81; Ragan, Tr. 1783-84; Overstreet, Tr. 10349, 10351.) Like the MBC, InterMAX is a wiredraw fastener with a

cavity in its stem. (Wahlberg, Tr. 6473-77; RX-403-A; RX-404-A; RX-406-A.)

239. The U.S. blind rivet manufacturers developing MBC-like products intend to market those fasteners primarily in Europe, because the U.S. sales of the MBC have not been good. (Faulkner, Tr. 168, 169, 270-71 (CX-1149), 362; Luhm, Tr. 1029-30; Ragan, Tr. 1785-86; CX-378-Z-237; Overstreet, Tr. 10349-50.)

240. Cherry put InterMAX on hold in 1989, but reactivated the project in 1990 because of demands from its European customers. (Andrews, Tr. 9846-47.) Although Cherry qualified InterMAX to NAS 1722, Cherry's prospective European customers for the InterMAX intend to purchase the product under Cherry part number. (Pratt, Tr. 5732-35; Wahlberg, Tr. 6483-84.)

H. State of Competition

1. Current performance

241. There are few sellers of aerospace blind rivets and concentration is high. (Overstreet, Tr. 10312.)

242. Sales data for 1989 understate the competitive strength of Huck and Allfast's products. (Faulkner, Tr. 342; Willey, Tr. 1282.) Because of the probable growth of Allfast, Huck and Hassall, Cherry's share of U.S. aerospace blind rivets sales is likely to decline in 1991. (Faulkner, Tr. 342-44; Willey, Tr. 1298-1300.)

243. Voi-Shan and Monogram left the aerospace blind rivet business because of low prices and low profitability. (RX-32-H; Faulkner, Tr. 67-70; Hammer, Tr. 1741.) Aerospace blind rivet manufacturers today are not able to impose non-competitive price increases on their customers. (Faulkner, Tr. 169-70; Andrews, Tr. 9827-28; Willey, Tr. 1364.)

244. Buyers of aerospace blind rivets tend to be sophisticated firms far larger than the blind rivet manufacturers from whom they buy. (Overstreet, Tr. 10356-57, 11029.) Buyers protect against non-competitive price increases by refusing to buy any fasteners of a company requesting such increases. (Faulkner, Tr. 169-70; Palmiteer, Tr. 548; Overstreet, Tr. 10320.)

245. Cherry did not intentionally create its "past due" situation with Boeing. (Andrews, Tr. 9828-30; Farley, Tr. 3081.)

246. Demand for blind rivets is unpredictable because of factors that make demand for military and commercial aircraft unpredictable, including the economy, fuel prices and federal budgetary decisions about military spending. (Faulkner, Tr. 356-57; Willey, Tr. 1302-03; Ragan, Tr. 1917-20.)

247. The irregularity, infrequency and unpredictability of new aircraft designs, and of the consequences of being left off those designs, make difficult any collusion among blind rivet manufacturers to be included in these new designs. (Overstreet, Tr. 10295-96.)

248. Fastener manufacturers reach customers, especially their smaller customers, through distributors. (Faulkner, Tr. 114-15; Buster, Tr. 2653-54.) Fastener manufacturers at times compete with and bid against their own distributors, even for contracts with major OEMs and DISC. (Faulkner, Tr. 407; Peavy, Tr. 1998-2000.)

249. Collusion in this industry is difficult because it would require agreement on prices across a wide array of products and material combinations. (RX-461-A to RX-461-Z-7.) This wide array of products means that any cartel would likely collapse because of difficulty in detecting cheating by cartel members. (Overstreet, Tr. 10320-25.)

250. There is no evidence of collusion among those competing in the manufacture and sale of aerospace blind rivets. (Willey, Tr. 1350.)

2. Alleged anti-competitive behavior

251. The qualification reports Cherry submitted to the Navy to qualify the CherryMAX to Mil-R-7885 stated what tests had been performed on what rivets, including the fact that only protruding head rivets had been tested for shank expansion. (Zurko, Tr. 6183; RX-409; RX-410.)

252. Several aerospace fasteners not manufactured by Cherry have later proven to be unable to perform in the same manner as when they were initially tested. (Palmiteer, Tr. 679-81; Ford, Tr. 1473.)

3. Ease of entry

253. Entry into the manufacture and sale of aerospace blind rivets has been slow because of the time needed to develop a saleable product, master the batch manufacturing techniques, and gain acceptance by customers. (Faulkner, Tr. 144-45; Overstreet, Tr. 10358.)

254. Aerospace OEMs have preferences for types of fasteners, built up over many years and not changed quickly. (Faulkner, Tr. 373-74; Luhm, Tr. 1132-33.)

255. NAS specifications are adopted by the OEMs that buy blind rivets; they decide what standards the NASC will promulgate and what they will contain. (Faulkner, Tr. 105; Willey, Tr. 1328-29; Page, Tr. 8816-18.)

256. The matching process has been a barrier to manufacturing blind rivets. That barrier is reduced by the cell method of manufacturing. (Faulkner, Tr. 141, 368-70; Andrews, Tr. 9771-75; RX-451-A to RX-451-B; RX-452-A to RX-452-B; Overstreet, Tr. 10359-61.)

257. Licensing has been a means of entry into the manufacture and sale of aerospace blind rivets. (Overstreet, Tr. 10411.)

258. Aided by technical assistance from Cherry, John Hassall manufactures and sells complex aerospace blind rivets less than 6 months after a licensing agreement with Cherry. (Hachadoorian, Tr. 7169-70, 7213.)

259. Entry is possible into aerospace blind rivet manufacture by hiring experienced engineers from existing manufacturers and reverse engineering products currently on the market. (Lambe, Tr. 4108-09; Overstreet, Tr. 10360.) Hi-Shear and SPS could reverse engineer a Mil-R-7885 rivet. (Pratt, Tr. 8980-82.)

I. *Likely Effects of Acquisition*

1. Prices

260. The prices in the U.S. of aerospace blind rivets made in the U.S.A. have not been affected by the availability of the MBC in the U.S. (Faulkner, Tr. 166, 374; Keimes, Tr. 5891; Overstreet, Tr. 10310-11, 10351.)

261. The uncertainties of blind rivet selection for new aircraft programs, including whether the program will go forward into

production, when and in what quantity, render collusion very difficult to achieve. (Overstreet, Tr. 10296; Grawe, Tr. 4928-29.)

2. Availability of MBC

262. Avdel Corp.'s current standard gross margin on its MBC sales in the U.S. is 70%. (Kurtz, Tr. 4295.)

263. There is no reason to believe that Textron will eliminate the MBC from Avdel's product line following Textron's acquisition of Avdel. (Ragan, Tr. 1915-16; Marley, Tr. 3453; Overstreet, Tr. 10328-29.)

3. Innovation in blind rivets

264. Some firms capable of designing aerospace blind rivets do not now manufacture blind rivets. (Faulkner, Tr. 69-70; Parker, Tr. 6879; Overstreet, Tr. 10362-65; CX-1707.) At the time Avdel developed the MBC, it was not making any structural aerospace blind rivets. (Grawe, Tr. 4969.)

265. Avdel's research & development centers on commercial fasteners and installation tooling, not on aerospace blind rivets. (Marley, Tr. 3432-33.) Avdel expects a ratio of 10:1 between new commercial and aerospace products it may bring to market over the coming years. (Marley, Tr. 3432.)

266. A bulbed MBC for composites is the only new aerospace blind rivet on which Avdel is presently working. (Marley, Tr. 3432-33.) Future use of composites and adhesives will diminish Cherry's sale of fasteners for metallic structures. (CX-373-B, CX-373-F; CX-381-B; CX-424-L (1989-93); CX-495-Z-17.) Some companies manufacturing fasteners for use with composites do not make blind rivets for metallic structures. (Parker, Tr. 6910-15, 6869.)

267. Avdel now has a steel stem MBC that has greater shear strength than the all-aluminum MBC. The MBC's strength increased as did its weight compared to other fasteners. (Peavy, Tr. 1942-43 (30% lighter to 5-10% lighter).)

III. COMMERCIAL BLIND RIVETS

A. *The Industry*

1. Manufacturers

268. The companies that manufacture and sell commercial blind rivets in the U.S. include Huck, Cherry, Avdel, Emhart, Marson, Automatic Fasteners, Gesipa Fasteners USA, and Creative Engineering. (RX-286-A; Kurtz, Tr. 4268-69.)

269. Cherry's commercial fasteners include its N-rivet, C-rivet, E-rivet, Q-rivet, T-rivet, D-rivet, Cherry-Mate and Monobolt. (RX-284-C; RX-448-A to RX-448-B; RX-449-A.)

270. Cherry's commercial fastener operations are separate from its aerospace fastener operations in the Cherry plant in Santa Ana, California, using separate equipment and employees. (Boak, Tr. 9378-80; Wahlberg, Tr. 6339.) Cherry also manufactures commercial blind rivets at a facility in St. Paul, Minnesota. (Boak, Tr. 9227; Andrews, Tr. 9986.)

271. Avdel manufactures Monobolts at a plant in Parsippany, New Jersey. (Palmiteer, Tr. 505-06.)

272. Huck manufactures commercial fasteners for sale in the U.S., including the Magna-Lok, Magna-Bulb, Daisy and BOM at a facility in Waco, Texas. (Faulkner, Tr. 60; RX-286-A.) Huck manufactures commercial blind rivets for sale outside the U.S. at a plant in France. (CX-72-A to CX-72-B.)

273. Olympic made commercial fasteners, including the Olympic Bulb-Tite, until it sold the manufacturing assets to Gesipa in March of 1990. (Dyszkiewicz, Tr. 3530-31; RX-286-A.)

274. Pop Fasteners ("Pop"), a division of Emhart now owned by Black & Decker, is in Shelton, Connecticut, and manufactures commercial fasteners, including Pop rivets, Q-type rivets, and T-type rivets. (RX-286-A; CX-1819-A to CX-1819-B; Gustafson, Tr. 2837.) Pop is the largest commercial fastener manufacturer in the world. (Kurtz, Tr. 4270; Dyszkiewicz, Tr. 3532.)

275. Automatic Fastener Corp. ("Automatic"), Branford, Connecticut, manufactures and sells commercial blind rivets, including a N-rivet, a Q-rivet and a T-rivet. (Boak, Tr. 9376; Andrews, Tr. 9980-82; RX-286-A.) Automatic competes on price, notwithstanding its minimal research and development. (Boak, Tr. 9376-77; Andrews, Tr. 9980-82.)

276. Creative Engineering manufactures and sells commercial fasteners, including a N-rivet, a Q-type rivet and a T-type rivet and was recently acquired by Stanley Tools. (Boak, Tr. 9368, 9377.)

277. Gesipa Fasteners USA (“Gesipa USA”), Trenton, New Jersey, is the subsidiary of a German company that manufactures installation tooling and structural commercial fasteners, including a Q-type rivet, and fasteners previously made by Olympic. (CX-70-A to CX-70-Y; RX-286-A; F. 455.)

278. Cherry and Avdel probably account for about 10-12% and 3-4% of all commercial blind rivet sales in the United States. (Woycik, Tr. 3240-41.)

2. Buyers

279. The most important end-users for Magna-Lok and Monobolt-type commercial blind rivets manufacture trucks, trailers, vans and buses. (Faulkner, Tr. 278; Boak, Tr. 9284-88; CX-72-E to CX-72-G.)

280. The major school bus manufacturers that purchase commercial blind rivets include Carpenter, Bluebird, Thomas American Transportation, and Wayne Corp. (Toby, Tr. 3846.) Major truck manufacturers include Peterbilt, Kenworth (Whitaker, Tr. 3513-14) and Navistar. (Gurudutt, Tr. 9640.)

B. *The Products*

1. Characteristics

281. Commercial blind rivets, like aerospace blind rivets, consist of at least two components, a stem and a sleeve, and are installed by use of a tool that pulls the rivet stem up into the sleeve forming a blind side head, until, at some predetermined point, the stem breaks and installation is complete. (F. 281-93.)

2. Specific products

a. *Monobolt*

282. The Monobolt is a flush-breaking, wiredraw blind rivet that has high shear and tensile strength. The stem is locked in place during installation by a special nosepiece that flares a portion of the stem out into a recess in the rivet head. It has a wide grip range. (Boak, Tr. 9253-57; RX-284-X to RX-284-Z-1; RX- 444-A.)

b. *Magna-Lok*

283. The Magna-Lok is an internally locked, high strength blind rivet for commercial use. (Faulkner, Tr. 122-23.) The lock is a solid circle of material that is formed just under the rivet head as the stem is pulled into the rivet. The fastener breaks flush, and has other performance characteristics like the Monobolt. (RX-51-A to RX-51-E; CX-1192.)

c. *Other structural commercial fasteners*

284. The Magna-Bulb is a bulbing version of the Magna-Lok that is more suitable for thin sheet applications and for joining materials like fiberglass and plexiglas. (Faulkner, Tr. 309-10; CX-1822-A to CX-1822-B.)

285. The Hemlok is a rivet made by Avdel that is similar to the Magna-Bulb. (Faulkner, Tr. 311.)

286. The T-rivet is a mechanically locked blind rivet with high shear and tensile strength. The blind side forms three flares or prongs that clamp the material together and hold the rivet in place. (RX-284-W; RX-439-A; RX-440-A; Boak, Tr. 9242-47.)

287. The Bulb-Tite is a high strength rivet that forms 3 prongs and is available in both steel and aluminum. (CX-227-Z-2 to CX-227-Z-5; Fankhauser, Tr. 3698-99.) Its shear/tensile range is 600/400 to 2250/1700. (CX-227-Z-7.)

288. The Q-rivet is friction-locked, high strength blind rivet with a large back side. (RX-284-P; RX-437-A.) The Q-rivet will break flush if used in the proper grip length. (Boak, Tr. 9239.)

289. Monobolt-type rivets possess characteristics not found in other commercial blind rivets. (Kurtz, Tr. 4171.) These characteristics include: high strength (Kurtz, Tr. 4173; Gustafson, Tr. 2939-42; Whitaker, Tr. 3491; CX-453-X); a stem that breaks flush with the rivet's head (Gustafson, Tr. 2940-42; Hindsley, Tr. 3792-94; CX-453-X); broad grip range (Cook, Tr. 1560; Reisel, Tr. 3126; Whitaker, Tr. 3496-99); and hole-fill (Gustafson, Tr. 2854; Kurtz, Tr. 4172; Whitaker, Tr. 3496; CX-453-X).

290. Monobolt and Magna-Lok types blind rivets have shear strengths ranging from 600 pounds (CX-1820-B) to 2650 pounds (CX-1817-C) and tensile strengths ranging from 500 pounds (CX-

1817-C, CX-1820-B, CX-1821-C) to above 2350 pounds (CX-1817-C).

291. High strength and a flush-breaking stem are important in the heavy-duty transportation industry. (Gustafson, Tr. 2848; Woycik, Tr. 3206; Kurtz, Tr. 4173; Hindsley, Tr. 3792-94; Whitaker, Tr. 3496.) Customers do not view as substitutes for Monobolts or Magna-Loks Emhart's steel closed-end rivets (Gustafson, Tr. 2991), Q-rivets (Whitaker, Tr. 3500-01), Daisy rivets (Toby, Tr. 3849-50), or Olympic Bulb-Tite rivets (Fankhauser, Tr. 3654; Gustafson, Tr. 3003; Hindsley, Tr. 3797-98).

292. A wide grip range permits the customer to use one fastener grip instead of several. (Fankhauser, Tr. 3654-55; Whitaker, Tr. 3495-96; Reisel, Tr. 3128-29.) This reduces inventory costs, installation error and the cost of the assembled vehicle. (Fankhauser, Tr. 3654-55.) Hole-fill increases water tightness of the joint. (Hindsley, Tr. 3792-96; Reisel, Tr. 3124; CX-166-D.)

293. Aerospace blind rivets are not a practical substitute for Monobolt-type rivets because they are too expensive. (Fankhauser, Tr. 3668; Kurtz, Tr. 4186.)

3. Competitive history

294. Avdel developed the Monobolt in England in 1975. (Marley, Tr. 3366.) Cherry licensed the Monobolt from Avdel in 1977. (CX-491-Z-64 to CX-491-Z-90.)

295. Avdel felt that licensing Cherry to manufacture and sell the Monobolt in the U.S. would help expand the market for customers who would not specify a sole source product made only by a foreign firm. (Marley, Tr. 3370-71.)

296. Cherry's Monobolt license with Avdel grants Cherry permission to sell the Monobolt in North America. (Boak, Tr. 9278.) Cherry's Monobolt license requires that Cherry pay a 5% royalty on its Monobolt sales. (Boak, Tr. 9278.)

297. Huck developed the Magna-Lok in 1983 to compete with the Monobolt, solid rivets and welding. (Faulkner, Tr. 122.) The Magna-Lok can be installed with a Monobolt nosepiece, but Monobolt can not be installed with the Magna-Lok nosepiece. (Boak, Tr. 9326-27; Gurudutt, Tr. 9663.)

298. Huck brought its Magna-Bulb fastener to market in 1990, with sales of about \$1.5 million. It will be marketed more broadly in

1991. (Faulkner, Tr. 309-10.) Avdel introduced its version of the Magna-Bulb called the Hemlok. (Faulkner, Tr. 311.)

299. Gesipa USA will offer in 1991 its Maxi-Grip, a new blind rivet to compete with the Magna-Lok and Monobolt, that Gesipa finished following its purchase of Olympic's commercial business. (Dyszkiewicz, Tr. 3531-37.)

300. Pop is now offering the Ultra Grip (RX-74-A to RX-74-I), which is a Magna-Lok sold under the Pop name. (Woycik, Tr. 3274-75; RX-10-A to RX-10-H.)

D. Recent Sales and Trends

301. In 1989, Avdel's U.S. sales of the Monobolt were \$3,510,000. (RX-465-A; RX-244; CX-302-A.) Avdel's annualized 1990 U.S. Monobolt sales will be \$3,158,000. (RX-465-A.)

302. Cherry's 1989 U.S. Monobolt sales were \$4,706,400. (RX-465-A.) In 1990, Cherry's U.S. Monobolt sales are expected to be \$3,539,441. (RX-465-A.)

303. Huck's 1986 U.S. Magna-Lok sales were \$2,371,000. (RX-465-A.) Huck's 1989 U.S. Magna-Lok sales were \$5,334,900. (RX-465-A.) Since 1983, Huck's share of Magna-Lok/Monobolt sales has risen from zero to about 40%. (Faulkner, Tr. 288.)

304. The Huck Magna-Lok's market share increased due to perceived technical advantages of this fastener versus the Monobolt, and aggressive pricing. (Boak, Tr. 9335-37, 9364; F. 303-08.)

305. The Monobolt nosepiece must function correctly because the nosepiece folds material back from the stem that becomes the lock. (Gurudutt, Tr. 9659; Palmiteer, Tr. 679; Boak, Tr. 9297-98; RX-284-Z-1.) Monobolt nosepieces must be inspected and changed more frequently than Magna-Lok nosepieces. (Boak, Tr. 9301, 9321-23; Andrews, Tr. 9870; Fankhauser, Tr. 3701-02.)

306. The Magna-Lok design is better suited to automated installation than the Monobolt design. (Gurudutt, Tr. 9660; Boak, Tr. 9324-25.) Some customers prefer the Magna-Lok because it can be installed more quickly. (Boak, Tr. 9300-01, 9320-21; Gurudutt, Tr. 9660.)

307. Cherry lost major commercial Monobolt accounts to Huck's Magna-Lok and cut its price to keep others. (Boak, Tr. 9335.) Cherry's major customer, Navistar, said that Cherry needs to develop

a product with the advantages of the Magna-Lok's internal lock if it wishes to keep their business. (Gurudutt, Tr. 9666-67.)

308. Cherry decided to invest in the development of a new blind rivet to compete with the Magna-Lok. (Andrews, Tr. 9869-71; Boak, Tr. 9359-62, 9372-73.)

E. Relevant Product Market

1. Selecting fasteners

309. Standards engineers evaluate fasteners that design engineers may select for a truck or cab. (Fankhauser, Tr. 3647-48; Gurudutt, Tr. 9643-44.)

310. Purchasing decides from whom to buy the blind rivets that engineering has selected. (Whitaker, Tr. 3508; Reisel, Tr. 3137.)

311. The design cycle on new trucks is about five years. (Fankhauser, Tr. 3685.) The design cycle for trucks is quite a bit less than for airplanes. (Faulkner, Tr. 390.)

2. Magna-Lok/Monobolt vs. other fasteners

312. From 1978 to 1984, Monobolts replaced solid rivets and screws. (Boak, Tr. 9289.)

313. Navistar and TMC, the Greyhound Bus Manufacturer, began using the Monobolt in place of welding and Q-rivets. (Gurudutt, Tr. 9647-48; Reisel, Tr. 3128.)

314. To attach exterior skin in school buses, four manufacturers use different methods of fastening: lock bolts, screws, solid rivets and blind rivets. (Toby, Tr. 3873-74; Boak, Tr. 9289-9291.)

315. Chrysler tries not to use blind rivets and redesigned one of its window assemblies to permit the use of screws rather than blind rivets. (Boak, Tr. 9384-88.)

316. Ford recently changed a dust shield on its brake to use a Q-rivet instead of a Monobolt. (Boak, Tr. 9285.)

317. General Motors used the Monobolt to attach glass to the window sash, but they switched to N-rivets and the Cherry Klamptite. (Boak, Tr. 9286-87.)

318. Some truck and cab companies have replaced blind rivets. (Toby, Tr. 3853 (lockbolts rivets); Gurudutt, Tr. 9673 (solid rivets, lockbolts and collars).) Some users of Magna-Loks and Monobolts

have redesigned their vehicles to eliminate their need for these fasteners. (Reisel, Tr. 3138; Boak, Tr. 9353; Hindsley, Tr. 3801; Toby, Tr. 3853.)

319. Stahl changed from Q-rivets to Monobolts and then back to Q-rivets in order to save about \$1.00 per truck. (Boak, Tr. 9348-50.) Some customers have switched from the Monobolt to the Daisy or the BOM by Huck, or to Pop's closed-end rivet. (Boak, Tr. 9354-56.) Monobolts and Magna-Loks are used by OEMs where their competitors use different fasteners. (F. 312-19.)

3. Magna-Bulb and Hemlok

320. Avdel's Hemlok and Huck's Magna-Bulb form bulbs on the blind side, rather than expanding radially like the Monobolt and Magna-Lok, and do not have the same hole-filling characteristic. They may require redesign to replace Magna-Loks. (Fankhauser, Tr. 3663-65; CX-483-D to CX-483-E.)

321. Huck perceives the Magna-Bulb as part of the same product group as the Monobolt and the Magna-Lok. (Faulkner, Tr. 311.) So do some customers. (Reisel, Tr. 3127.)

322. Hemlock and Magna-Bulb are used for thin sheet applications; wiredraw Monobolt and Magna-Lok are not. (Marley, Tr. 3377-80; Kurtz, Tr. 4256; Faulkner, Tr. 309-10.)

323. Huck prices the Magna-Bulb to minimize customers switching from the Magna-Lok to the Magna-Bulb. (Faulkner, Tr. 311-12.)

4. The Monobolt/Magna-Lok market

324. If a monopolist or a cartel raised prices of the Monobolt and Magna-Lok, substitution would not defeat the profitability of the increase. (Overstreet, Tr. 10365-68.)

F. *Relevant Geographic Market*

325. Huck's introduction of the Magna-Lok in the U.S. did not affect Monobolt prices in Europe but in the U.S. it caused the Monobolt price to drop from six cents to four cents. Two years later, when the Magna-Lok entered the European market, the price of the Monobolt dropped from about nine cents to six cents. (Faulkner, Tr.

135-36.) Prices for commercial blind rivets are set country-by-country, and not on a world-wide basis. (Gustafson, Tr. 2912; Dyszkiewicz, Tr. 3527-28.) Product introduction and marketing strategy decisions for commercial blind rivets are made on a country-by-country basis, and not on a world-wide basis. (Gustafson, Tr. 2897-2900; 2902-03, 2912; Dyszkiewicz, Tr. 3527-28.)

326. Avdel sells a different version of the Monobolt in the U.S. than it sells in the U.K. (Faulkner, Tr. 287.)

327. Successful American firms selling commercial fasteners in Europe have facilities and plants in Europe. (Andrews, Tr. 9862-63.) Avdel opened a manufacturing facility in the U.S. to enter the U.S. market. (Overstreet, Tr. 10373-74.)

328. Cherry has made special efforts in Asia and Japan, but with no real success. (Andrews, Tr. 9860-62.) Entering Japanese commercial products markets is very difficult for American firms. (Andrews, Tr. 9864-65.)

329. Commercial blind rivet customers prefer local manufacturing because of their concern about the promptness of deliveries. (Gustafson, Tr. 2906, 2932.)

330. Because of nationalism and tariffs, different companies are the leading commercial fastener sellers in different countries. (Gustafson, Tr. 2900-01, 2903-05.)

G. State of Competition

1. Current performance

331. Total U.S. sales in 1989 of Monobolts and Magna-Loks were \$13,551,300. (RX-465-A.)

332. Concentration in the sale of Magna-Lok and Monobolt-type blind rivets is high. That is in part due to the small size of the market. (Faulkner, Tr. 290 (could sustain at most five firms); Overstreet, Tr. 10844.)

333. Automobile, truck and bus companies today demand price reductions from fastener manufacturers as part of long-term blind rivet purchase agreements. (Boak, Tr. 9393-94; Kurtz, Tr. 4259.) Automobile manufacturers decline business with commercial blind rivet manufacturers who discuss price increases. (Boak, Tr. 9394-95; Kurtz, Tr. 4261.) Automobile manufacturers expect fastener

manufacturers to improve cost controls, not raise prices. (Kurtz, Tr. 4260.)

334. Emhart did not believe it could profitably enter this market in the U.S. as a royalty-paying, licensed, third seller of Monobolts. (Gustafson, Tr. 2963-73.)

335. Cherry's Monobolt prices declined in recent years. (Boak, Tr. 9399.) Avdel's Monobolt prices have been flat over the last three to four years, with some decline in the past year. (Kurtz, Tr. 4189.) Price competition for fastener sales to ground transportation customers has been intense because that business has been shrinking. (Kurtz, Tr. 4190.) Avdel has recently cut prices to maintain its market share because of increased competitive pressure. (Kurtz, Tr. 4262.) During the years that its U.S. Monobolt prices have been flat, Avdel has had increased manufacturing costs. (Kurtz, Tr. 4253-54.)

336. Huck, the largest seller in the Magna-Lok/Monobolt-type blind rivet market, cannot demand a price premium for a product that is widely perceived as better, or increase its prices more than costs. (Faulkner, Tr. 291-92; Woycik, Tr. 3235.) Huck has recently cut prices in an effort to win major accounts from Cherry's Monobolt, including a \$100,000 saving Huck recently offered to Navistar. (Boak, Tr. 9336-37; Gurudutt, Tr. 9667-68.)

2. Entry

337. In May of 1990, Huck signed a private label agreement whereby Emhart will market the Magna-Lok under its own name. (RX-10-A to RX-10-H.) Emhart calls the version of the Magna-Lok it sells the "Pop Ultra-Grip." (Woycik, Tr. 3274-75.) Emhart entered into the private label distribution agreement because of customer requests. (Gustafson, Tr. 2876-77; 2915-17.)

338. Pop's competitors, Creative and Automatic, believe that they too must enter the Magna-Lok/Monobolt market to remain competitive. (Boak, Tr. 9374-76.)

339. When purchased by Gesipa, Olympic had been working on a blind rivet known as the Maxi-Grip to compete with the Monobolt and the Magna-Lok. (Dyszkiewicz, Tr. 3531-32, 3535.) Gesipa retained George Siebold, an innovator in blind rivets, to help complete work on the Maxi-Grip. (Dyszkiewicz, Tr. 3533-34.)

340. Gesipa received a patent on the Maxi-Grip and will market it in the first quarter of 1991. (Dyszkiewicz, Tr. 3537.) Gesipa

expects sales of the Maxi-Grip in 1991 to be \$1 million. (Dyszkiewicz, Tr. 3540.)

3. Buyers

341. Commercial blind rivet customers tend to purchase more than just Magna-Loks and Monobolts from the suppliers of those rivets. (RX-62-C; Toby, Tr. 3854-55.)

342. In deciding what prices to charge to Monobolt customers, Avdel looks at its potential long-term relationship with that customer, including the value of all the products that customer buys. (Kurtz, Tr. 4276, 4324-25.)

343. Commercial fastener customers have "vendor reduction programs" to reduce the number of fastener manufacturers with which they deal. (CX-446-E (Navistar); Faulkner, Tr. 324; Whitaker, Tr. 3511; Kurtz, Tr. 4270-71; Gurudutt, Tr. 9677; CX-371-D.)

344. A fastener manufacturer that raises its prices on the Magna-Lok or Monobolt may jeopardize not only its Magna-Lok or Monobolt sales, but also the sales of all of its fasteners to that customer. (Overstreet, Tr. 10377-80; F. 341-43.)

4. Distributors

345. Some commercial fastener customers purchase rivets through distributors. (Fankhauser, Tr. 3699-3700; Kurtz, Tr. 4264.)

346. Manufacturers on occasion compete with distributors who buy in large volumes at low prices. (Kurtz, Tr. 4323.)

347. Emhart's private label agreement lets it buy the Magna-Lok at 30% below the list price for Huck's distributors. (RX-10-A to RX-10-H.)

H. *Likely Effects of the Acquisition*

1. Prices

348. The primary contributor to the growth of Magna-Lok sales has been customers switching from Monobolt. (Faulkner, Tr. 314.)

349. In 1986, Huck's share of U.S. Monobolt and Magna-Lok sales was 28%; by 1989, Huck's share of U.S. Monobolt and Magna-Lok sales had increased to 39.4%. (RX-465-A.) Huck expects its

40% share of the Magna-Lok/Monobolt-type fastener market in the U.S. to continue increasing after Textron and Avdel merge. (Faulkner, Tr. 289.)

350. The fact that customers view the Magna-Lok as being more desirable than the Monobolt means that it would be more difficult for the firms to collude after the merger. (Overstreet, Tr. 10380-81.)

351. Because of the rapid size and growth of Huck's market share the merger of Textron and Avdel will not produce a dominant firm with the ability to increase the price of Magna-Lok/Monobolt-type blind rivets in the U.S. (Andrews, Tr. 9877; Overstreet, Tr. 10376-77.)

352. The presence of Gesipa as a new entrant makes collusion among the sellers of Magna-Lok/Monobolt-type blind rivets even less likely to occur. (Overstreet, Tr. 10381-82.)

353. Textron's acquisition of Avdel is not likely to lead to collusion with respect to the prices in the U.S. of Magna-Lok and Monobolt-type blind rivets. (Faulkner, Tr. 292-93; Overstreet, Tr. 10377-80.)

2. New product development

354. Avdel has no plans to develop a successor to the Monobolt for the high strength, structural commercial blind rivet market. (Marley, Tr. 3379, 3381.)

355. Cherry spends a part of its R&D efforts improving the Monobolt. (CX-493-S to CX-493-T; CX-393-A to CX-393-Y; Overstreet, Tr. 10391-92.) Cherry successfully developed new variations of the Monobolt to suit customers. (Toby, Tr. 3877; Faulkner, Tr. 286-87; CX-519-B to CX-519-C.)

356. Future use of other technologies makes it unlikely that Magna-Lok and Monobolt sellers will collude to reduce new blind rivet development. (Overstreet, Tr. 10388.)

3. Reactions of competitors and consumers

357. Commercial blind rivet customers generally believe that the more sources the lower the price, but are satisfied with at least two suppliers of each product. (Toby, Tr. 3862-63, 3876.)

358. Competitors believe the merger of Textron and Avdel may intensify price competition in the U.S. for Monobolts and other

similar blind rivets. (Dyszkiewicz, Tr. 3546-47; Gustafson, Tr. 2996-98; Overstreet, Tr. 10388-90.)

DISCUSSION

From December 1988 to February 1989, Textron Inc. ("Textron"), a U.S. company, acquired the stock of an English company, Avdel PLC ("Avdel") for \$250 million. (F. 11-22.) Both firms make and sell, among other things, blind rivets which are used to bind sheets to a frame from one side, primarily in attaching the skin of airplanes, buses and trucks.

The products involved here are: (1) "aerospace structural blind rivets" in which Avdel's MBC allegedly competes with various rivets made by the Cherry division of Textron, and by Allfast, Huck and others, and (2) "Magna-Lok and Monobolt-type commercial blind rivets," in which Avdel's Monobolt allegedly competes with the rivet of its licensee, Cherry, and the Magna-Lok made by Huck. The alleged geographic markets are the United States and the "Free World."

I. LEGAL STANDARD

An acquisition of a significant competitor in a concentrated market raises a presumption of unlawful lessening of competition. *United States v. Citizens & S. Nat'l Bank*, 422 U.S. 86, 120 (1975). The burden of production then shifts to the respondent to show that the concentration ratios, which can be unreliable indicators of actual market behavior, did not accurately depict the economic characteristics of the market. Respondent can rebut the *prima facie* case by a demonstration that the merger will not have anticompetitive effects. *United States v. Marine Bancorporation, Inc.*, 418 U.S. 602, 631 (1974). If the presumption raised by concentration data is rebutted, complaint counsel must introduce persuasive evidence of likely anticompetitive effects to meet their ultimate burden of proof. *United States v. Baker Hughes, Inc.*, 908 F.2d 981, 982-83, 990-91 (D.C. Cir. 1990) (Thomas, J.).

II. AEROSPACE BLIND RIVETS

A. *Relevant Product Market*

The first product market alleged is the design, manufacture and sale of aerospace structural blind rivets. Because I find *supra* that the relevant geographic market here is the United States and not the Free World, the relevant product will be discussed primarily in the context of the United States.

Product market study focuses on interchangeability of use or cross-elasticity of demand. *Brown Shoe Co. v. United States*, 370 U.S. 294, 325-28 (1962); *Grand Union Co.*, 102 FTC 812, 1041-47 (1983). Here, the industry does not regard all “aerospace structural blind rivets” as reasonably interchangeable.

Major U.S. aerospace OEMs (Boeing, McDonnell Douglas, Lockheed and Northrop) buy millions of fasteners for their aircraft, including bolts, blind bolts, nuts, screws, solid rivets and other threaded and non-threaded fasteners, only a small percentage of which are blind rivets. (F. 64.) They buy fasteners through standards engineers who evaluate fasteners, design engineers who decide which of the fasteners identified by the standards engineers should be used to hold together parts of the aircraft, and buyers who look for the best price and delivery terms for the fasteners the engineers have chosen from the suppliers the engineers have approved. (F. 198-203.) These OEMs try to cut costs by standardizing, by having their standards engineers identify only a few types of blind rivets to meet their company’s needs. (F. 201-03.)

The engineers choose from aerospace blind rivets which differ in appearance, installation, function, application, material, resistance to heat and corrosion, and price. (F. 67.) The complicated qualification and selection process takes time. (F. 67-82.) After an aerospace blind rivet is chosen, the OEM is reluctant to change. Aircraft designs are based on past designs and proven components, and only rarely lead to reevaluation of the blind rivets used. (F. 204-05.) And major decisions to change blind rivets have been made unrelated to any particular new aircraft program, such as when Boeing and others adopted the CherryMAX. (F. 301.)

Design and standards engineers who choose the blind rivets and other fasteners to hold together new airplanes do not regard all aerospace blind rivets as interchangeable. (F. 219.) These engineers all differentiate, for example, between the two basic types of aerospace blind rivets, wiredraws and bulbs. (F. 216.) Many will not use wiredraw rivets if the back sheet is thin; others will never use a bulb in high-vibration where the hole-fill of a wiredraw is essential.

(F. 215.) No engineer testified that the choice of blind rivets would be affected by modest changes in their relative prices. (RX-366.)

The factors they look at include compatibility with tooling, shear and tensile strength, corrosive potential, galvanic compatibility, weight, ease of installation, potential for foreign object damage, lock inspectability and spindle retention. (F. 67.) U.S. aerospace OEMs today regard Avdel's MBC as only a tangential substitute for some of the blind rivets made by Cherry. (F. 230.) In the United States market, the MBC is a weak competitor, showing no particular promise of future success as a broad range aerospace blind rivet. (F. 192.)

The MBC is a wiredraw type fastener with a hollow stem, that reduces its weight and strength, and a unique method of locking the rivet spindle into the sleeve. (F. 106-11, 225.) The standards and design engineers who choose blind rivets see no substitutability between the wiredraw MBC and bulb rivets such as Cherry's CherryMAX or Bulbed CherryLOCK. (F. 218-43.) John Marley, chairman of Avdel, testified that "we are not out there in the marketplace selling a direct replacement for CherryMAX." (F. 218; Marley, Tr. 3390-91.) Avdel's U.S. aerospace sales manager, Bob Palmiteer, agreed that "the MBC is not a direct replacement for the CherryMAX." *Id.* (Palmiteer, Tr. 737.)

The MBC is not a substitute for wiredraw fasteners like the CherryLOCK. Avdel considered qualifying the MBC to NAS 1400, the specification pursuant to which wiredraw fasteners sold in the U.S. are procured. But the MBC could not meet all the requirements of NAS 1400, and Avdel decided to pursue its own specification. (F. 101.) Because of the MBC's distinctive traits, the MBC is not a close substitute for rivets sold under NAS 1400. (F. 230.)

Aerospace engineers seek the smallest possible number of kinds of blind rivets. (F. 201-03.) The MBC can fill only some of the holes filled by the blind rivets made by Cherry and others. (F. 219.) Where a limit is placed on the number of different types of blind rivets being used, fasteners that can only meet a few applications have no chance of being regarded as good substitutes for all-purpose rivets.

Sales of Avdel's MBC in the United States are the best test of whether the MBC is interchangeable with the fasteners most U.S. aerospace customers use on their aircraft. While other aerospace blind rivet sales have increased by leaps (F. 169-78), MBC sales in

the U.S. have been “essentially flat.” (F. 179.) U.S. aerospace blind rivet sales increased from about \$49 million in 1989 to over \$63 million in 1990. MBC sales increased by only \$50,000. (F. 180; RX-460.)

“For every product, substitutes exist. But a relevant market cannot meaningfully encompass that infinite range. The circle must be drawn narrowly to exclude any other product to which, within reasonable variations in price, only a limited number of buyers will turn” *Times-Picayune Pub. Co. v. United States*, 345 U.S. 594, 612 n.31 (1953). By that test, the MBC must be excluded from the market that includes Cherry’s aerospace blind rivets.

B. Geographic Market

For the aerospace blind rivets, complaint counsel argue that the appropriate geographic market is the United States and “Free World.” The “commercial realities,” however, show that the geographic market is the United States. *Brown Shoe Co.*, 370 U.S. at 336, quoting, *American Crystal Sugar Co. v. Cuban-American Sugar Co.*, 152 F. Supp. 387, 398 (S.D.N.Y. 1957), *aff’d*, 259 F.2d 524 (2d Cir. 1958).

At issue is whether Avdel, located outside the U.S., could constrain behavior by U.S. firms in the U.S. *United States v. Philadelphia Nat’l Bank*, 374 U.S. 321, 356-58 (1963). Price differences and industry perceptions show a market. *B.F. Goodrich Co.*, 110 FTC 207, 289 (1988). Customers in the U.S. would not look to rivets manufactured abroad in the face of a small, non-competitive increase in the prices of U.S.-made rivets. (F. 223.) Many customers have strong preferences against rivets made abroad and the markets here and abroad are different in consumer preferences, prices, and price movements. (F. 236-37.)

Section 7 is concerned with “whether a merger may substantially lessen competition anywhere in the United States.” *United States v. Pabst Brewing Co.*, 384 U.S. 546, 550 (1966). The record indicates that there may be a separate market for aerospace blind rivets in Europe, but it was not alleged. And if a merger has effects wholly outside the United States, the Clayton Act does not reach them.

There is evidence of substantial, vigorous competition between the MBC, Huck, and Cherry aerospace blind rivets in Europe. (F. 195-96.) That competition is undoubtedly due, in large part, to

preference by European aircraft manufacturers for European-made rivets. (F. 197.) There is some indication that some aircraft made by European aircraft manufacturers are purchased by U.S. airlines. (F. 194; CX-592-D.) But a price change in the cost of aerospace blind rivets used in these aircraft would not affect prices paid by U.S. purchasers of airplanes. (Grawe, Tr. 4763-64.) The United States is the relevant geographic market. (Grawe, Tr. 4763-64.)

C. Concentration

A horizontal acquisition that sufficiently increases concentration will presumptively lessen competition. *Citizens & S. Nat'l Bank*, 422 U.S. at 120. Here, the sales of the acquired firm are too trivial to conclude that this transaction causes a "sufficient" increase in concentration. The acquisition of a company whose sales are less than \$400,000 in a \$63 million dollar market does not significantly alter concentration. (F. 180.)

Such acquisitions do not lessen competition absent some special showing as to the acquired firm. *United States v. Aluminum Co. of America*, 377 U.S. 271, 280-81 (1964). In *Beatrice Foods Co.*, 101 FTC 733 (1983), the Commission explained as follows, 101 FTC at 825:²

We emphasize that in a case in which one of the merging firms has only .57% of the relevant market, the party challenging the merger is under a particularly heavy burden to show that notwithstanding the *de minimis* increase in concentration, the merger is anticompetitive and a violation of Section 7.

Horizontal violations are rarely found where the minimal increase in concentration is as tiny as that in this market. *Beatrice Foods Co.*, 101 FTC at 819.

The cases require a showing that the acquired firm "is a truly special or unique small competitor -- with a clear capacity to destabilize the market -- as measured by such qualities as originality in product research and development and boldness in price competition." *Beatrice Foods, Co.*, 101 FTC at 822. Avdel cannot pass that test: as an aerospace blind rivet firm in the United States it has no

² While large scale entry in Beatrice was extremely difficult, local and regional entry kept the market competitive. 101 FTC at 818-21. But the key to that decision, was the "absence of factors... to conclude that Beatrice was a special small competitor. . . combined with Beatrice's extremely small market share." 101 FTC at 824.

penchant for aggressive price cutting; on the contrary, its chairman described its strategy as one of avoiding head-to-head price competition and instead seeking niches for differentiated products that command premium prices.³ Its record for innovation has been meager with respect to aerospace blind rivets.⁴

D. *Competition*

Even if an increase in concentration of ½ of one per cent would raise a presumption that competition may be substantially lessened, this transaction is still not likely to substantially lessen competition.

1. Market share

The market shares do not accurately show competitive realities here. The MBC may be in the same product market as the blind rivets made by Cherry, Allfast, Huck and Hassall, but is not perceived as easily interchangeable with these other fasteners. Market shares may overstate the competitive impact of the transaction in cases involving differentiated products in which the acquired and acquiring firm's products are so dissimilar. *Heublein, Inc.*, 96 FTC at 579-81. Most MBC sales in the U.S. have been for uses previously served by non-structural or friction-locked rivets, for specific applications for which no other fasteners are available, for non-aerospace applications, or for aircraft designed abroad. Market share calculated for Avdel in aerospace blind rivets is 0.5%, which overstates the actual competitiveness between the MBC and the blind rivets made by Cherry and others.

In 1989, this market lost Olympic and Voi-Shan.⁵ (F. 146-48.) Allfast has acquired assets and product lines from Olympic, modified its AllMax to eliminate a patent infringement, and qualified at major OEMs. (F. 175.) Huck has a newly modernized plant near Tucson and is actively marketing its Clinch. (F.177.) Cherry suffered product quality problems with CherryMAX. (F. 160.) In addition, Textron licensed John Hassall, Inc. to manufacture and sell the

³ Marley, Tr. 3358. Avdel is not known for price cutting. (CX-440.)

⁴ The company's R&D resources are committed to commercial fasteners and installation tooling, and not to aerospace rivets. (F. 265.)

⁵ The Commission accepts post-acquisition evidence of changes in structure in merger cases. *Beatrice Foods*, 101 FTC at 824-25.

CherryMAX. (F. 161-68.) Allfast's recent growth, the resurgence by Huck, the fast entry by Hassall and Cherry's recent problems, minimize concentration analysis based upon 1989 sales data.

2. Buyers

Knowledgeable buyers make collusion by sellers more difficult. *FTC v. Elders Grain, Inc.*, 868 F.2d 901, 905 (7th Cir. 1989) (Posner, J). The major aerospace OEMs in the United States are sophisticated and powerful. (F. 244.) The recent exit of two blind rivet manufacturers was the result of aggressive price competition that left these firms unable to make a sufficient return to stay in the business. (F. 243.)

3. Dominant firm

Cherry is not a dominant firm. Cherry's large share of this market is based upon the sale of a single product, the CherryMAX, whose patent is about to expire. (F. 171.) Cherry developed and patented a product that many consumers regard as superior to anything else available in the market. That is not evidence of anticompetitive firm dominance. Further, there is a trend in the market against Cherry. Allfast's recent success in marketing its own similar fastener, the AllMax, by reverse engineering around Cherry's patent (F. 175), Cherry's recent licensing of John Hassall to manufacture the CherryMAX (F. 178), and Huck's reentry into the market (F. 177) mean that Cherry's market share is diminishing.

Textron's acquisition of Avdel will not slow this trend toward deconcentration. The sales gains by Allfast and Huck, as well as those expected by Hassall, will not be stopped by putting Avdel and the MBC under Textron.

4. Likelihood of collusion

The first concern in horizontal merger cases is whether the transaction increases the likelihood of collusion. *Hospital Corp. of Am. v. FTC*, 807 F.2d 1381, 1386 (7th Cir. 1986), *cert. denied*, 481 U.S. 1038 (1987). Collusion requires the ability of the colluders to agree on prices and prevent cheating. Aerospace blind rivets make difficult such an agreement. (F. 249.) They are not the fungible

products as to which collusion is regarded as feasible. (F. 67, 72.) DOJ Merger Guidelines Section 3.411.

The likelihood of collusion is remote in new plane design. Future rivet sales depend on vagaries of the federal budget process (for military planes) and obscure future market conditions for commercial aircraft. (F. 246-47.) In this great uncertainty, collusion is unlikely.

Collusion to reduce innovation in new fasteners would be difficult to arrange and police. (F. 249.) The technological threat of composites makes collusion less likely. (F. 266.) Moreover, an independent Avdel could probably do little to prevent collusion.

5. Potential competition

There is little present procurement competition between Avdel and Cherry. (F. 224.) Complaint counsel argue instead that Avdel represents potential competition in this market. (Grawe, Tr. 4902.) They worry about future design and innovation in blind rivets.

These concern potential competition. But that case was never pled or argued, *Beatrice Foods, Co.*, 101 FTC at 825, and does not meet the stringent requirements of *Marine Bancorporation*, 418 U.S. 602, 623-641 (1974); *Tenneco, Inc. v. FTC*, 689 F.2d 346, 352-54 (2d Cir. 1982).

The record shows little future in the U.S. for the MBC. (F. 192.) The blind rivets chosen for the most recent U.S. aircraft designs do not include the MBC. (F. 190.) The trend to standardization (F. 206, 207, 209), and the lack of new designs (F. 265), show little hope for Avdel. Avdel is not currently working on any new rivets or on any changes in the MBC to make it more competitive. (F. 266.)

III. COMMERCIAL BLIND RIVETS

A. *Monobolt and Magna-Lok*

Complaint counsel allege a substantial lessening of competition in another line of commerce, consisting of two products, the Monobolt and the Magna-Lok.⁶ The parties agree that this is a proper relevant market. However, at issue is whether the commercial

⁶ Complaint counsel originally alleged a market consisting of all structural, non-aerospace blind rivets. They have since limited the market to two fasteners.

realities of this market show that this acquisition may substantially lessen competition.

B. *Geographic Market*

The commercial blind rivet market is limited to the United States: prices in the U.S. and outside for Monobolts and Magna-Loks are unrelated (F. 325); U.S. firms selling in Europe have manufacturing facilities there; the sole European manufacturer has a facility in the U.S. (F. 327); the industry does not view it as a world-wide market (F. 325); consumer preference in the U.S. differs from Japan and Europe. (F. 326.)

Shipping patterns do not show that the market is larger than the U.S. Avdel makes most of the Monobolts that it sells in the U.S. in New Jersey. (F. 327.) Cherry ships only to the U.S. (F. 296.) And Huck, with a manufacturing facility in France, determined it could not compete as effectively in Europe from its plant in Waco, Texas. (F. 272.) Thus, the correct geographic market is the U.S.

C. *Concentration*

Cherry and Avdel, as licensee and licensor, respectively, sell in the Monobolt/Magna-Lok market, and following this transaction, Textron's total market share will be substantially greater. (F. 301-03, 331-32.) This raises a presumption that competition may be lessened by the acquisition. *Philadelphia Nat'l Bank*, 374 U.S. at 363.

D. *Competition*

The Monobolt/Magna-Lok market is concentrated.⁷ But high concentration "in and of itself would not doom competition." *Baker Hughes, Inc.*, 908 F.2d at 986. And concentration is not surprising where a product is esoteric and its market small. *Id.*

⁷ This \$13-\$15 million market probably can sustain four or five firms. (F. 332.) One major U.S. fastener manufacturer rejected the opportunity to become the third Monobolt manufacturer in this country. (F. 334.)

1. Prices

Magna-Lok and Monobolt blind rivets are sold by intense price competition. (F. 335-36.) Avdel has been unable to raise prices to cover cost increases. (F. 335.) Cherry has customers talking about how much prices will be cut, not raised. (F. 333.) Huck offered a \$100,000 price discount to lure a major commercial account away from Cherry. (F. 336.)

Downward pressure on price increases. Customers are losing business and want to cut costs. Their vendor reduction programs threaten manufacturers who discuss price increases. And long-term contracts build in price decreases during the contract term. This market is competitive. (F. 333.)

2. Entry

Entry occurs in this small market. (F. 337-40.) Feasible entry lessens concern about the impact of merger. *United States v. Waste Mgmt. Inc.*, 743 F.2d 976, 983 (2d Cir. 1984); *Echlin Mfg. Co.*, 105 FTC 410, 491 (1985).

Gesipa Fasteners, one of the leading sellers of fasteners outside the U.S., recently entered the U.S. market. (F. 340.) Black & Decker has a private label agreement with Huck allowing its Pop Division to sell its version of the Magna-Lok. (F. 337.)

The recent entry by Gesipa could eliminate concerns about this transaction. (Grawe, Tr. 4737-39.) It may be similar to the entry by Huck in 1983-84. From no sales at all, Huck has grown rapidly and today it is the leading firm with 40% of the market. (F. 303.) That share will continue to increase. Huck's product is perceived by consumers as preferable to the Monobolt. (F. 304.) *Baker Hughes*, 908 F.2d 981 (D.C. Cir. 1990), involved similar facts. There, a firm entered the market and five years later was market leader. The circuit court found that "this growth suggests that competitors can and probably will enter or expand if the acquisition leads to higher prices." 908 F.2d at 989. Here, fastener firms continue to be interested in entering in order to enhance their status as full line suppliers. Aggressive, efficient firms such as Creative and Automatic Fasteners continue to seek entry. (F. 338.)

Those facts depict a dynamic and competitive marketplace not marked by oligopolistic behavior.

3. Ascendancy of Magna-Lok over Monobolt

The marketplace has voted with its dollars that the Magna-Lok is a better product than the Monobolt. The analysis mandated by *United States v. General Dynamics Corp.*, 415 U.S. 486, 490-91 (1974), means that the market shares of Cherry and Avdel overstate their competitive significance. Avdel as licensor and Cherry as licensee of the Monobolt had 100% of the market in 1983. (F. 294, 297.) But that share is rapidly eroding and is likely to continue to do so. The recent private label deal between Huck and Pop will provide even greater distribution of the Magna-Lok and further market erosion for the Monobolt.

4. Buyers

Another factor undercutting the significance of the market share data here is the sophistication and economic power of the customers. *Baker Hughes, Inc.*, 908 F.2d at 986. The major customers of these products are not firms to be victimized by blind rivet manufacturers. (F. 279-80.) Rather than seeking more potential suppliers, these customers seek fewer vendors who can offer a broad product line. (F. 343.) They facilitate concentration in their suppliers' markets.

Fastener companies will not risk their relationship with automotive customers by trying to increase the price, above a competitive level, of a relatively minor product like the Monobolt or the Magna-Lok. They sell many products to these companies some of which far exceed in dollar volume their Magna-Lok or Monobolt. (F. 341.) The possibility of the Magna-Lok or Monobolt sellers exercising market power here is minimal.

5. Products outside the market

Magna-Lok and Monobolt blind rivets are a relevant line of commerce but boundary lines with adjoining markets are weak. (F. 312-23.) "Market definition is only the start of the analysis, and the definition of a 'relevant market' should not preclude consideration of any competitive pressures provided by products outside that definition." *Beatrice*, 101 FTC at 804. Here those pressures exist.

6. Likelihood of collusion

Conditions in this market render post-merger collusion unlikely.⁸ (F. 348-53.) Sellers are differently situated because of the range of other fasteners they sell to their Magna-Lok and Monobolt customers. (F. 341.) That broad range of products renders collusion difficult to enforce. Newcomer Gesipa and, to a lesser extent the new private label, Pop, diminish likely collusion. (F. 337, 346, 352.)

Despite the small number of sellers, this market has intense competition and low prices. (F. 335.) Huck entered the market and got a 40% share in seven years. (F. 303.) In this evolving marketplace, the future lies with the Magna-Lok and not the Monobolt. (F. 304.) The competitive impact of reducing by one the number of Monobolt sellers will be trivial.

CONCLUSION AND ORDER

Avdel sought this transaction to avoid a tender offer from Banner Industries, a company known for highly-leveraged, hostile takeovers and the dismemberment of the acquired firm. (F. 11-13.)

Textron wanted to enter European and Pacific markets with commercial fasteners and automotive components. (F. 14, 16.) Avdel's sales in Europe and Japan of commercial fasteners to automotive OEMs offered what Textron needed to expand its business outside the United States. (F. 14, 17-18.)

This acquisition was not driven by prospects in the United States in the two lines of commerce alleged in the complaint: Avdel's total U.S. sales in these two lines of commerce amount to about 2% of its total worldwide sales. (F. 9, 180, 301.) Textron's total U.S. sales of the rivets are less than 1% of its total sales. (F. 2, 171, 301; RX-464-C.) Most of the evidence challenging this transaction concerns aerospace fasteners, a business in which Avdel has a product with less than \$400,000 in U.S. sales and \$3 million in sales worldwide.

In the United States market for "aerospace structural blind rivets," Avdel's small sales do not yield the relatively modest increase in concentration necessary to give rise to a presumption that this acquisition may tend substantially to lessen competition.

The market share for Magna-Lok and Monobolt-type commercial rivets data is sufficient to raise a presumption of anticompetitive

⁸ There has been no claim here that this merger will create a dominant firm in the Magna-Lok/Monobolt market.

effects, but an examination of conditions in this small, competitive market demonstrates that no lessening of competition can in fact be expected from this acquisition.

Entry into the manufacture of aerospace blind rivets is relatively slow because of the difficulty in making and qualifying the product and customer reluctance to change. (F. 253-56.) In *Baker Hughes*, similar facts suggested difficult entry. The product was custom-made and not easily replaced. Buyers tended to return to sellers from whom they had purchased in the past. These findings did not negate the finding to the contrary. 908 F.2d at 989. The court held "that an acquiring company may successfully rebut a *prima facie* case by showing quick and effective entry does not mean that successful rebuttal requires such a showing." *Baker Hughes*, 908 F.2d at 987.

Entry into the manufacture of commercial blind rivets is easier. Several competitors recently entered or are threatening to.⁹ (F. 337-40.) Huck's fast expansion to market leader showed ease of entry. (F. 297-98, 303-07.) The equivalent of new entry may occur as fringe firms currently in the market greatly expand their current capacity. *Baker Hughes*, 908 F.2d at 988-89.

The blind rivet businesses involved here sell to large aircraft and motor vehicle manufacturers not dominated by fastener companies. (F. 40-46, 48, 280, 315-17.) This transaction poses no threat to competition in any line of commerce in any area of the country.

For these reasons, the complaint must be dismissed.

DECISION AND ORDER

The Federal Trade Commission having heretofore issued its complaint charging the respondent named in the caption hereof with violation of Section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act; and

The respondent, its attorney, and counsel for the Commission having thereafter executed an agreement containing a consent order, an admission by the respondent of all the jurisdictional facts set forth in the aforesaid draft of the complaint, a statement that the signing of said agreement is for settlement purposes only and does not constitute an admission by respondent that the law has been violated as

⁹ The record contains names of companies and their plans and proposed dates of entry. "Such evidence is rarely available; potential competitors have a strong interest in downplaying the likelihood that they will enter a given market." *Baker Hughes*, 908 F.2d at 987.

alleged in such complaint, and waivers and other provisions as required by the Commission's Rules; and

The Commission, having thereafter withdrawn this matter from adjudication in accordance with Section 3.25(c) of its Rules; and

The Commission having considered the matter and having thereupon accepted the executed consent agreement and placed such agreement on the public record for a period of sixty (60) days, and having duly considered the comments filed thereafter by interested persons pursuant to Section 3.25(f) of its Rules, now in further conformity with the procedure prescribed in Section 3.25(f) of its Rules, the Commission hereby makes the following jurisdictional findings and enters the following order:¹

1. Textron is a corporation organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its principal place of business located at 40 Westminster Street, Providence, Rhode Island.

2. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the respondent, and the proceeding is in the public interest.

ORDER

I.

It is ordered, That, as used in this order, the following definitions will apply:

A. "*Textron*" means Textron Inc., its predecessors, successors and assigns, subsidiaries, divisions, groups and affiliates controlled by Textron, and their respective directors, officers, employees, agents and representatives, and their respective successors and assigns.

B. "*Avdel*" means Avdel PLC, its predecessors, successors and assigns, subsidiaries, divisions, groups and affiliates controlled by Avdel, and their respective directors, officers, employees, agents, and representatives, and their respective successors and assigns.

¹ The Administrative Law Judge issued an Initial Decision in this matter, including a proposed order dismissing the complaint. Counsel supporting the complaint filed a timely notice of intention to appeal from the Initial Decision and perfected their appeal; the Initial Decision accordingly did not become the decision of the Commission. 16 CFR 3.51 (a) (1994). The appeal was subsequently briefed and argued to the Commission. This Decision and Order moots the appeal.

C. "*Cherry-Textron*" means the Cherry Division of Textron.

D. "*Avdel (US)*" means Avdel Inc., a wholly-owned subsidiary of Avdel.

E. "*Monobolt/MagnaLok Type Structural Blind Rivet*" means a multi-grip, flush break, positive lock, pull mandrel, self-plugging blind rivet suitable for use in joining the component parts of assemblies of varying grip range where structural integrity is a design requirement, used in non-aerospace applications.

F. "*Monobolt*" means all Monobolt/MagnaLok Type Structural Blind Rivets manufactured by Avdel, and, pursuant to license from Avdel, by Cherry-Textron and by Avdel (US), under the "MONOBOLT" trademark.

G. "*Monobolt License*" means an agreement that grants the perpetual non-exclusive right, without the right to transfer or to sublicense (except to a wholly owned subsidiary), under all Monobolt related patents, including but not limited to United States Letters Patent No. 4,046,053 and 4,365,495, and under Avdel's and Textron's proprietary rights to technology, know how and associated information related to manufacture, qualification and general sales applications (including all innovations since the original Monobolt patent), to manufacture, use and sell the Monobolt and associated systems in the United States and Canada, and that grants the non-exclusive right to use the "MONOBOLT" trademark, in the U.S. and Canada for five (5) years.

H. "*Monobolt Assets*" means such quantity and quality of machinery, fixtures, equipment, tooling, tools, gauges, and test plates as are necessary for the manufacture of Monobolts in order to maintain approximately 80 million units or \$4.5 million sales annually, if the Monobolt Assets of Cherry-Textron are divested, and 44 million units or \$3.3 million sales annually, if such Monobolts Assets of Avdel (US) are divested (including but not limited to the assets listed with respect to each of Cherry-Textron and Avdel (US) in Appendix A to this order), but not including equipment or machinery that is contained in Appendix B to this order. Monobolt Assets also include manuals, drawings, blueprints (including blueprints for customer owned tooling), technology, know-how, specifications, and other tangible document or documents sufficient to manufacture and sell Monobolts, and include customer and distributor lists of the firm whose Monobolt Assets are divested.

II.

It is further ordered, That, within six (6) months of the date this order becomes final, Textron shall:

A. Cause Avdel to enter into a Monobolt License, absolutely and in good faith, at no minimum price, without any obligation to pay royalties, with a licensee that receives the prior approval of the Commission and only in a manner that receives the prior approval of the Commission. Provided, however, that Huck Manufacturing Company shall not be eligible to be the licensee so long as it manufactures a Monobolt/MagnaLok Type Structural Blind Rivet, and; provided further that nothing in this paragraph shall preclude Textron from seeking payment for the license consistent with its absolute obligation to grant a license without royalties and at no minimum price; and

B. Cause the divestiture to such licensee, absolutely and in good faith, at no minimum price, of the Monobolt Assets of either Cherry Textron or of Avdel (US). The divestiture of the Monobolt Assets shall be made only in a manner that receives the prior approval of the Commission. In the event that the licensee chooses not to acquire the Monobolt Assets, or any part thereof, because the licensee does not need such assets in order to manufacture and sell Monobolts, Textron shall not be required to divest such assets.

The purpose of the license and divestiture required by paragraph II of this order is to enable the licensee to manufacture and sell Monobolt/MagnaLok Type Structural Blind Rivets and to remedy the lessening of competition in the Monobolt/MagnaLok Type Structural Blind Rivet market resulting from the acquisition of Avdel by Textron as alleged in the Commission's complaint.

III.

It is further ordered, That:

A. If Textron has not fully complied, absolutely and in good faith, with paragraph II of this order within the time period provided in such paragraph, Textron shall consent to the appointment of a trustee to enter the license and to divest the assets pursuant to paragraph II of this order. In the event the Commission or the

Attorney General brings an action pursuant to Section 5(1) of the Federal Trade Commission Act, 15 U.S.C. 45 (1), or any other statute enforced by the Commission, for any failure by Textron to comply with paragraphs II or III of this order, Textron shall consent to the appointment of a trustee in such action. Neither the appointment of a trustee nor a decision not to appoint a trustee under this paragraph shall preclude the Commission or the Attorney General from seeking civil penalties and any other available relief, including a court-appointed trustee, pursuant to Section 5(1), or any other statute enforced by the Commission, for any failure by Textron to comply with this order.

B. If a trustee is appointed by the Commission or a court pursuant to paragraph III.A of this order, Textron shall consent to the following terms and conditions regarding the trustee's powers, authority, duties, and responsibilities:

(1) The Commission shall select the trustee, subject to the consent of Textron, which consent shall not be unreasonably withheld. The trustee shall be a person with experience and expertise in licensing technology. If Textron has not opposed the selection of a proposed trustee, in writing, within fifteen (15) days after notice by the Commission's staff to Textron of the identity of the proposed trustee, Textron shall be deemed to have consented to the selection of the proposed trustee.

(2) The trustee shall, subject to the prior approval of the Commission, have the exclusive power and authority to effect the requirements of paragraph II of this order.

(3) The trustee shall have eighteen (18) months from the date of appointment to effect the requirements of paragraph II of this order. If, however, at the end of the 18-month period, the trustee has submitted a plan for effecting the requirements of paragraph II of this order or believes that such requirements can be accomplished within a reasonable time, the trustee's period for effecting such requirements may be extended by the Commission or, in the case of a court-appointed trustee, by the court.

(4) The trustee shall have full and complete access to the personnel, books, records and facilities of Textron and Avdel, or any other relevant information to effect the requirements of paragraph II of this order. Textron shall develop such financial or other information as the trustee may reasonably request. Textron shall cooperate

with the trustee and shall take no action to interfere with or impede the trustee's accomplishment of the requirements of paragraph II of this order. Any delays caused by Textron in meeting the reasonable requests of the trustee shall extend the time for the trustee to accomplish such requirements in an amount equal to the delay, as determined by the Commission or, for a court-appointed trustee, by the court.

(5) Subject to Textron's absolute and unconditional obligations under paragraph II of this order, the trustee shall use his or her best efforts to negotiate the most favorable price and terms available in effecting the requirements of paragraph II of this order.

(6) The trustee shall serve, without bond or other security, at the cost and expense of Textron on such reasonable and customary terms and conditions as the Commission or a court may set. The trustee shall have authority to employ, at the cost and expense of Textron, such consultants, attorneys, investment bankers, business brokers, accountants, appraisers, and other representatives and assistants as are reasonably necessary to carry out the trustee's duties and responsibilities. The trustee shall account for all monies derived from effecting the requirements of paragraph II of this order and for all expenses incurred. After approval by the Commission and, in the case of a court-appointed trustee, by the court, of the account of the trustee, including fees for his or her services, all remaining monies shall be paid to Textron, and the trustee's power shall be terminated. The trustee's compensation shall be based at least in significant part on a commission arrangement contingent on the trustee's effecting the requirements of paragraph II of this order.

(7) Except in the case of reckless disregard of his or her duties or intentional wrongdoing, Textron shall indemnify the trustee and hold the trustee harmless against any losses, claims, damages, or liabilities arising in any manner out of, or in connection with, the trustee's duties under this order.

(8) Within thirty (30) days after appointment of the trustee and subject to the prior approval of the Commission and, in the case of a court-appointed trustee, of the court, Textron shall execute a trust agreement that transfers to the trustee all rights and powers necessary to permit the trustee to effect the requirements of paragraph II of this order.

(9) If the trustee ceases to act or fails to act diligently, a substitute trustee shall be appointed in the same manner as provided in paragraph III.A of this order.

(10) The Commission and, in the case of a court-appointed trustee, the court, may on its own initiative, or at the request of the trustee, issue such additional orders or directions as may be necessary or appropriate to effect the requirements of this order.

(11) The trustee shall report in writing to Textron and to the Commission every sixty (60) days concerning the trustee's efforts to effect the requirements of paragraph II of this order.

IV.

It is further ordered, That Textron shall comply with all the terms of the Agreement to Hold Separate (Agreement) executed on September 8, 1993, and attached hereto as Appendix C and made a part of this order. The Agreement shall continue in effect until such time as Textron or the trustee has accomplished the licensing and the divestiture required by paragraph II of this order or until such time as the Agreement provides.

V.

It is further ordered, That, pending Textron's or the Trustee's full compliance with paragraphs II or III of this order, Textron shall not, without prior Commission approval, transfer, sell, assign or otherwise divert Monobolt Assets from or to any divisions, subsidiaries or otherwise related entities of Textron or to any other person. Textron shall preserve the value of the Monobolt Assets of Cherry-Textron and to the extent permitted by the Agreement, Textron shall also cause Avdel to preserve the value of the Monobolt Assets of Avdel until the obligations of paragraphs II or III of this order have been fully complied with.

VI.

It is further ordered, That, upon the Commission's approval of the licensee under paragraph II of this order, and for a period of five (5) years from the date the licensee is approved by the Commission, and on reasonable notice from the licensee to Textron, Textron shall provide reasonable technical assistance to the licensee with respect to the design, manufacture, qualification and general sales applications of the licensed products. Such technical assistance shall include reasonable consultation with knowledgeable Textron employees and

training at the licensee's manufacturing facility. Textron shall charge the licensee at a rate no more than its own direct costs for providing such technical assistance.

VII.

It is further ordered, That, for a period of ten (10) years from the date on which this order becomes final, Textron shall not, without the prior approval of the Commission, directly or indirectly, through subsidiaries, partnerships, or otherwise:

A. Acquire any stock, share capital, equity or other interest in any concern, corporate or non-corporate, engaged in the manufacture or sale of Monobolt/MagnaLok Type Structural Blind Rivets; provided, however, Textron may acquire up to one percent of the stock of any entity for any Textron employee benefit plan or Textron insurance company investment in accordance with normal investment practices; or

B. Acquire any assets used for, or previously used for (and still suitable for use for) the production of Monobolt/MagnaLok Type Structural Blind Rivets from any concern, corporate (other than Avdel) or non-corporate, engaged in or having engaged, at any time during the two years prior to such acquisition, in the manufacture or sale of Monobolt/MagnaLok Type Structural Blind Rivets; provided, however, Textron may acquire, without the prior approval of the Commission but with thirty (30) days prior notice to the Commission, machinery or equipment provided by or at the direction of Textron to the licensee pursuant to paragraph II of this order, and which machinery or equipment is available to Textron pursuant to a provision of the license agreement whereby Textron has the right of first refusal with respect to the sale of such machinery or equipment, if such right of first refusal is approved by the Commission in the license agreement pursuant to paragraph II of this order.

VIII.

It is further ordered, That:

A. Within thirty (30) days after the date this order becomes final and every sixty (60) days thereafter until Textron has fully complied with the provisions of paragraph II or the Trustee has fully complied

with paragraph III of this order, Textron shall submit to the Commission a verified written report setting forth in detail the manner and form in which it intends to comply, is complying or has complied with those provisions.

B. Within thirty (30) days after the divestiture pursuant to paragraph II or III of this order and on the next five anniversary dates of the date this order becomes final, Textron shall submit to the Commission a verified written report setting forth in detail the manner and form in which it intends to comply, is complying or has complied with the provisions of paragraph VI of this order.

C. On the anniversary of the date on which this order becomes final, and on every anniversary thereafter for the following nine (9) years, Textron shall file with the Commission a verified written report of its compliance with paragraph VII of this order.

IX.

It is further ordered, That, for the purpose of determining or securing compliance with this order and subject to any legally recognized privilege, upon written request and on reasonable notice to Textron made to its principal office, Textron shall permit any duly authorized representatives of the Commission access, during office hours and in the presence of counsel, to inspect and copy all books, ledgers, accounts, correspondence, memoranda and other records and documents in the possession or under the control of Textron and to interview officers or employees of Textron relating to any matter contained in this order.

X.

It is further ordered, That, Textron shall notify the Commission at least thirty (30) days prior to any proposed change in the corporation that may affect compliance obligations arising out of this order such as dissolution, assignment or sale resulting in the emergence of a successor corporation, the creation or dissolution of subsidiaries or any other change.

Commissioner Azcuenaga dissenting.

APPENDIX A

**AVDEL CORPORATION
MONOBOLT ASSETS**

MANUFACTURING EQUIPMENT

A. Headers

	<u>Name</u>	<u>Model</u>	<u>Machine No.</u>
1.	MALMEDIE	QPB 41	16
2.	SACMA	250	39
3.	SACMA	250	40
4.	Tooling for Headers		

B. Threadroll Machines

	<u>Name</u>	<u>Asset #</u>	<u>Machine No.</u>
1.	HARTFORD	200	60
2.	HARTFORD	10-400	62
3.	Tooling for Threadroll Machines		

C. Assembly Machines

	<u>Name</u>	<u>Machine No.</u>
1.	1/4" Assembly Machine	2
2.	3/16" Assembly Machine	3

D. Accessory Equipment

1. Avtect Tool Protection Device for Malmedie Header
2. Avtect Tool Protection Devices (2) for SACMA Headers
3. Dynapure AS-5 Oil Mist Collector for Malmedie Header
4. PHC Parts Feeder EB-142 for Hartford
5. Dynapure AS-5 Oil Mist Collector for Hartford
6. Rame Hart Feed Wheel for 1/4" Assembly Machine
7. FMC Parts Feeder for 1/4" Assembly Machine

**CHERRY DIVISION OF TEXTRON INC.
MONOBOLT SERIES**

I. MANUFACTURING EQUIPMENT

A. Headers

	<u>Name</u>	<u>Size</u>	<u>Asset #</u>	<u># of Dies</u>
1.	SACMA	5/16	2559	4
2.	SACMA	5/16	2541	5
3.	SACMA	5/16	2927	4
4.	SACMA	5/16	1879	5
5.	NATIONAL	3/8	4312	4
6.	Tooling for Headers			

B. Threadroll Machines

	<u>Name</u>	<u>Asset #</u>
1.	ROY	2519
2.	ROY	4140
3.	ROY	4359
4.	Tooling for Threadroll Machines	

C. Final Assembly Machines

	<u>Name</u>	<u>Type</u>	<u>Asset #</u>
1.	WARREN	wra 2000	4661
2.	WARREN	wra 2000	4662

D. Wire Draw Machines

	<u>Name</u>	<u>Serial #</u>
1.	FASTENER ENG.	790/6561
2.	FASTENER ENG.	387/6224
3.	FASTENER ENG.	887/6249

II. MONOBOLT INSPECTION EQUIPMENT

<u>Equipment</u>	<u>Quantity</u>
1. 80286 Computers with monitors	4
2. Calipers	2
3. Micrometers	2
4. Concentricity Gauges	2
5. Head Pop Gauges	2
6. Go/No Go Gauges	8
7. Installation tools	4
8. Test Plates	3 per order

APPENDIX B

**AVDEL CORORATION
EXCLUDED MONOBOLT ASSETS**

1. SACMA Header Modifications For Machine 40 on Exhibit A.
2. SACMA 5 Die Header
3. Ranshoff Parts Washing Machine
4. Linberg 850 Belt Conveyor Furnace
5. Barret 402WD Centrifugal Dryer
6. SPC Retention Tester
7. SPC Equipment, consisting of:
 - a. Booth
 - b. PCW/Monitor
 - c. Micrometer
 - d. Gagetalker
 - e. Sylvac
 - f. Diatest
 - g. Probes, set rings
 - h. Miscellaneous SPC equipment

**CHERRY DIVISION OF TEXTRON INC.
EXCLUDED MONOTOBLT ASSETS**

<u>Item</u>	<u>Asset #</u>
1. Bellows Albair Arbor Press	12672
2. Ronci Speed Dip Spinner	2760
3. Break Load Tester	2297
4. Steel Washer	SP29
5. Globe Tumbler	NONE
6. New Holland Spinner Dryer	NONE
7. McKenzie Chip Separator	2741
8. Turnkey Furnace	1197 & 1242
9. American Gas Rotary Furnace	2658
10. Automatic Ipsen Heat Treat Unit	1261 & 1249
11. Dispatch Furnace	4257
12. Customer-owned special tooling	

APPENDIX C

AGREEMENT TO HOLD SEPARATE

This Agreement to Hold Separate (the "Agreement") is by and between Textron Inc. (Textron), a corporation organized and existing under the laws of the State of Delaware, with its principal office and place of business located at 40 Westminster Street, Providence, Rhode Island, and the Federal Trade Commission (the "Commission"), an independent agency of the United States Government, established under the Federal Trade Commission Act of 1914, 15 U.S.C. 41, *et seq.* (collectively, the "Parties").

PREMISES

Whereas, Textron has acquired the capital stock of Avdel PLC ("Avdel") (hereinafter the "Acquisition"); and

Whereas, United States District Judge John H. Pratt for the District of Columbia entered a Preliminary Injunction Order in Civil Action No. 89-0484 on March 2, 1989, as modified by the further order of the Court on March 20, 1989, appointing an independent trustee for Avdel and enjoining Textron from assuming or exercising any form of direction or control over Avdel except as provided by that order; and

Whereas, Textron and Avdel have been operating pursuant to the United States District Court orders entered on March 2, and March 20, 1989, in Civil Action No. 89-0484; and

Whereas, the Bureau of Competition of the Federal Trade Commission and Textron intend to execute an Agreement Containing Consent Order ("consent agreement") as to which this Agreement constitutes Appendix C, which, if finally accepted by the Commission, would settle the Commission's complaint issued in Docket No. 9226; and

Whereas, if the Commission accepts the consent agreement to which this Agreement is attached (the acceptance for comment), the Commission must place it on the public record for a period of at least sixty (60) days and may subsequently withdraw such acceptance pursuant to the provisions of Section 2.34 of the Commission's Rules; and

Whereas, the Parties intend that within seven (7) business days after the Commission's acceptance for comment of the consent

agreement, they will jointly petition the Court to lift the United States District Court orders entered on March 2, 1989, as modified by order dated March 20, 1989, in Civil Action No. 89-0484 and to terminate the Voting Trust Agreement ordered thereunder; and

Whereas, a purpose of this Agreement is to maintain Avdel as an independent business pending the granting of the Monobolt license and the divestiture of the Monobolt Assets identified in the consent agreement; and

Whereas, a purpose of the consent agreement is to remedy the lessening of competition in the Monobolt/MagnaLok Type Structural Blind Rivet market resulting from the acquisition of Avdel by Textron as alleged in the Commission's complaint; and

Whereas, Textron entering into this Agreement shall in no way be construed as an admission by Textron that the Acquisition is illegal; and

Whereas, Textron understands that no act or transaction, other than those contemplated by this Agreement or the consent agreement, shall be deemed immune or exempt from the provisions of the antitrust laws or the Federal Trade Commission Act by reason of anything contained in this Agreement.

Now, therefore, upon understanding that the Commission has determined that it has reason to believe the acquisition may substantially lessen competition, and in consideration of the Commission's agreement that, unless the Commission determines to reject the consent agreement, it will not seek further relief from Textron with respect to the effects of the Acquisition, except that the Commission may exercise any and all rights, and other relief, to enforce this Agreement and the consent agreement to which it is annexed and made a part thereof, the Parties agree as follows:

1. Textron agrees to execute and, after acceptance by the Commission for comment, to be bound by the consent agreement to which this Agreement is attached.

2. Paragraph 4 of this Agreement shall become effective immediately upon the lifting of the United States District Court order entered on March 2, 1989, as modified by order dated March 20, 1989, in Civil Action No. 89-0484.

3. Textron agrees that from the date of the lifting of the United States District Court order entered on March 2, 1989, as modified by order dated March 20, 1989, in Civil Action No. 89-0484, until the

first of the dates listed in subparagraphs 3.a and 3.b, it will comply with the provisions of paragraph 4 of this Agreement:

- a. If the complaint in Docket No. 9226 is dismissed, either pursuant to action by the Commission or appeal of any Commission Decision and order, the day following dismissal of the complaint; or
- b. If a final order to divest and or license is issued by the Commission, either pursuant to the consent agreement or pursuant to further adjudication, the day after all licensing and divestitures required by such final order have been completed.

4. Textron will hold Avdel as it is presently constituted separate and apart on the following terms and conditions; provided, however, that nothing contained in paragraph 4 shall prohibit Textron from taking those actions that are necessary to comply with the consent agreement:

- a. As used in this Agreement, the following terms shall have the prescribed meanings:

(1) “*Textron*” means Textron Inc., its predecessors, successors and assigns, subsidiaries, divisions, groups and affiliates controlled by Textron, and their respective directors, officers, employees, agents and representatives, and their respective successors and assigns.

(2) “*Avdel*” means Avdel PLC, its predecessors, successors and assigns, subsidiaries, divisions, groups and affiliates controlled by Avdel, and their respective directors, officers, employees, agents, and representatives, and their respective successors and assigns.

(3) “*Assets*” means all assets, tangible and intangible, including, without limitation, manufacturing and production facilities and plants, inventory, finished goods, brand names, technology, together with all associated titles, properties, interests, rights and privileges, all buildings, machinery, equipment, customer lists, patents, rights to use any patents, know-how, trade secrets, intellectual property, trade names, trademarks, and other property of whatever description, together with all additions and improvements thereto.

- b. Textron and Avdel shall continue to compete, exercising their respective best business judgments without regard to the Acquisition or any agreement or understanding between Textron and Avdel, as if

Textron and Avdel were in all respects separate and independent business entities.

c. For the term of this Agreement Textron shall not exercise any voting power, influence, or control, directly or indirectly, with respect to the conduct of Avdel or the shares of Avdel held by it. All rights to exercise voting power with respect to the Avdel shares acquired by Textron shall be vested in Patricia P. Bailey, as trustee, who shall act in accordance with the Voting Trust Agreement that is part of the Preliminary Injunction Order entered in Civil Action No. 89-0484 and which is made a part of this Agreement. The Trustee shall not be liable for her execution of this trust except for conduct as specified in paragraph 7(d) of the Voting Trust Agreement and the consent order. The Trustee shall use the Trustee's best business judgment in exercising such voting trust power during the term of this Agreement in a manner consistent with the purpose and requirements of this Agreement and the consent agreement. The Trustee shall remain independent of and unrelated to any current or prospective participant in the manufacture and sale of aerospace blind rivets or blind bolts or non-aerospace structural blind rivets in the United States or abroad, throughout the term of this Agreement. Provided, however, the Trustee may remain a member of Avdel's Board of Directors in execution of this trust. The Trustee shall be entitled to reasonable compensation and reimbursement of actual expenses. Textron shall pay for all compensation and reimbursement of actual expenses to which the Trustee is entitled.

d. Textron shall not exercise or attempt to exercise direction or control over, or influence or attempt to influence directly or indirectly, the conduct of Avdel's business during the term of this Agreement. Avdel shall be maintained as a separate corporate entity with an independent Board of Directors. In no event shall any director, officer, employee, agent or representative of Textron become or remain a member of Avdel's Board of Directors or become or remain an officer of Avdel. Nor may any director, officer, employee, agent or representative of Avdel become or remain a member of Textron's Board of Directors or become or remain an officer of Textron. The independent Avdel Board of Directors shall maintain separate corporate books and records for Avdel. Textron and Avdel shall not transfer assets between them, except for the purchase and sale of commercial products at arms' length in the ordinary course of business, nor engage in any joint activity, during

the term of this Agreement except with the prior approval of the Commission. Textron and Avdel shall not extend any existing contract or agreement between them, or change the terms of such agreements in any way, during the term of this Agreement except with the prior approval of the Commission; provided, however, that Textron may take those actions necessary with respect to Avdel (after approval by the Trustee) that will enable Textron to carry out its obligations under the consent agreement. The Trustee shall provide the Commission with prior written notice of the Trustee's intention to approve an action by Textron, including a complete description of the proposed action and copies of all documents related thereto. If staff of the Commission notifies, in writing, the Trustee of its objection to the proposed action within three (3) business days of receipt of such prior notice from the Trustee, the Trustee may approve the proposed action, and Textron may proceed with the proposed action, only upon obtaining the prior approval of the Commission. In the event the Trustee fails to approve an action with respect to Avdel requested by Textron, Textron may request the Commission to approve such action denied by the Trustee, and the Commission's decision will be final and binding on Textron and the Trustee. The Commission shall also be promptly provided with copies of Avdel's separate quarterly and annual financial statements and capital spending reports, and other financial information upon request, during the term of this Agreement.

e. Textron shall not seek or obtain, directly or indirectly, any of Avdel's customer lists, trade secrets, unpublished price lists, non-public financial and accounting books and records, or other confidential competitively sensitive information including, without limitation, information, data, prototype or other experimental devices from Avdel concerning the operation or design of Avdel's fastener equipment, systems, controls or other components, other than that in the public domain, nor shall Textron obtain the rights to use any patents, trade secrets, know-how or other technical information concerning the operation or design of Avdel's fastener equipment, systems, controls or other components, other than those in the public domain or that which was in the possession of Textron prior to the purchase of any shares of Avdel by Textron; provided, however, that up to ten (10) Textron executives who have no direct decision making responsibility in Textron's Monobolt production or sales operations, who are approved by the Trustee, may receive such

information, approved by the Trustee, as is necessary to enable Textron to carry out its obligations under the consent agreement. Textron may also obtain from Avdel, after the approval of the Trustee, such other information as Textron shall demonstrate it needs to acquire; provided, further, that such information shall only be disclosed to individuals approved by the Trustee. Any request for information with respect to Avdel by Textron shall be made to the Trustee (and approved by the Trustee) and shall be carried out under the supervision of the Trustee. The Trustee shall provide the Commission with prior written notice of the Trustee's intention to approve a request for information by Textron, including a complete description of the requested information and the information to be provided in response thereto. If staff of the Commission notifies, in writing, the Trustee of its objection to the request, within three (3) business days of receipt of such prior notice from the Trustee, the Trustee may approve the request for information, and Textron may obtain the information, only upon obtaining the prior approval of the Commission. In the event the Trustee fails to provide the information requested, Textron may request the Commission to approve the request for information denied by the Trustee and the Commission's decision will be final and binding on Textron and the Trustee.

f. Textron may seek and obtain, upon application to the Trustee and 30 days notice to the Commission with a copy of the application, and the Trustee shall provide Textron with, such financial information from Avdel as is necessary for Textron to prepare and file financial and tax reports to the extent required by law, provided that (i) Textron's application shall specify in detail the need for the information requested; (ii) for purposes of tax reports Textron shall not seek or obtain information at a level of detail greater than necessary to prepare and file tax reports required by law, and shall certify to the Trustee that its request for information is so limited; and for purposes of financial reports (*i.e.*, SEC reports and quarterly and annual reports to shareholders), Textron shall seek and obtain only the following items on an aggregated company-wide basis: revenues; cost of goods sold; general and administrative expenses; income before interest; interest expense; income before taxes; tax expense; and net income; (iii) the Trustee shall provide only such information that it determines is necessary for the preparation of such financial and tax reports; (iv) information required for tax reports shall be provided or disclosed only to designated individuals within

Textron's tax department who are responsible for the analysis of the information and preparation of the required tax reports; and information required for financial reports shall be provided or disclosed only to designated individuals within Textron's controller department; (v) each designated individual in the tax department and controller department shall submit to the Trustee an affidavit in the form appended as Attachment B or Attachment C to the Preliminary Injunction Order entered in Civil Action No. 89-0484, whichever is applicable; and (vi) Textron shall use such information only for the preparation and filing of such required financial and tax reports and not for any other purpose whatsoever.

g. Textron shall not make available to Avdel, directly or indirectly, any of Textron's customer lists, trade secrets, unpublished price lists, non-public financial and accounting books and records, or other confidential competitively sensitive information including, without limitation, information, data, prototype or other experimental devices from Textron concerning the operation or design of Textron's fastener equipment, systems, controls or other components, other than that in the public domain, nor shall Textron make available to Avdel, directly or indirectly, the rights to use any patents, trade secrets, know-how or other technical information concerning the operation or design of Textron's fastener equipment, systems, controls or other components, other than those in the public domain.

h. Neither outside counsel for Textron nor any in-house counsel of Textron may have an attorney-client relationship with Avdel or Avdel personnel for purposes of ensuring compliance with this Agreement or the consent agreement.

i. During the term of this Agreement, the Trustee and the independent Board of Directors shall use their best efforts to maintain the value of Avdel's assets and shall not sell, transfer, encumber, or otherwise impair their marketability, other than in the normal course of business, without the prior approval of the Commission and upon reasonable notice to Textron. Nothing in this Agreement shall preclude Avdel from redeeming its 10 percent Cumulative Preference Shares or Textron from purchasing from the employees of Avdel their rights under options to purchase shares in Avdel. The Trustee and the independent Board of Directors shall also use their best efforts to protect and preserve the confidential, competitively sensitive information of Avdel. Textron shall not seek or accept, directly or indirectly, any part of the earnings and profits of Avdel,

except such sums as the Trustee may authorize from cash dividends. Nor shall Textron seek or accept, directly or indirectly, the proceeds of any debt incurred by Avdel, except in connection with Avdel redeeming its 10 percent Cumulative Preference Shares. Textron shall not hire any person who is currently an employee of Avdel or who was an employee of Avdel at the time Textron began purchasing stock of Avdel or transfer any employees between Textron and Avdel.

5. For purposes of ensuring compliance with this Agreement, and subject to any legally recognized privilege, any authorized representatives of the Commission shall be permitted (subject to the statutes and rules and regulations that restrict access to classified information) on reasonable notice to Textron or Avdel, as the case may be, (a) access, during office hours of Textron or Avdel, to inspect and copy all ledgers, books, accounts, correspondence, memoranda and other documents in the possession or under the control of Textron or Avdel relating to any matters contained in this Agreement and reasonably related to Textron's compliance with this Agreement, and (b) depose or interview at the option of the Federal Trade Commission appropriate officers and employees of Textron or Avdel at their place of employment, or at another mutually agreeable site, regarding matters that are reasonably related to compliance with this Agreement. If, at any time, information or documents are furnished by Textron or Avdel and are identified as "Confidential," such documents or information shall be handled pursuant to Section 21 of the Federal Trade Commission Act.

6. This Agreement shall not be binding until approved by the Commission.

DISSENTING STATEMENT OF COMMISSIONER MARY L. AZCUENAGA

To resolve concerns about the anticompetitive effects of the acquisition by Textron Inc. of Avdel PLC, the Commission today issues an order that imposes a licensing requirement in one of the two markets at issue and obtains no relief at all in the second market. The order is inadequate in both markets, in my view. Textron and Avdel are significant competitors in the design, manufacture and sale of two products, aerospace blind rivets and a specialized non-aerospace

blind rivet,¹ each of which is a market under Section 7 of the Clayton Act. Anticompetitive effects from the acquisition are likely in both markets, and the Commission's order should provide an effective remedy in both markets. Full divestiture is the appropriate remedy, and nothing impedes the Commission from imposing that remedy immediately.

Since all that remained to be done in the final adjudication of this case was the issuance of a Commission opinion and decision,² the decision of the majority to accept a weak settlement is incomprehensible. A negotiated consent order offers advantages at the pre-trial stage of a case, when the record is incomplete and when uncertainty about the likelihood of obtaining a remedy provides a sound basis for compromise.³ After the trial, as here, the completed record in the case enables us to resolve the issue of liability. Because a negotiated consent order offers few, if any, advantages at this stage, there is no reason for the Commission to agree to any major concessions (assuming liability).⁴ Presumably, then, the limited relief provided in the consent order is close to optimal from the majority's point of view. To the extent this is true, the selection of this remedy represents either a troubling change in long-established and well-founded practice or an unexplained and troubling aberration from that practice.

On the merits, the licensing remedy the Commission has chosen is unlikely to cure the competitive problem in the Monobolt/Magna-Lok market. The evidence in support of liability seems to me even stronger in the aerospace blind rivet market, in which the Commission imposes no remedy at all.

¹ Blind rivets are fasteners that join two or more sheets of material with access to only one side of the join. Aerospace blind rivets are used in aircraft; Monobolt/Magna-Lok (non-aerospace) blind rivets are used in heavy duty land transportation vehicles.

² The complaint issued in February 1989. In March 1989, Textron assented to entry in federal district court of an order requiring that Avdel be maintained under separate management pending the outcome of the Commission's proceeding.

³ In March 1990, almost eight months before the commencement of the trial in this case, Textron offered to settle the case in the Monobolt/Magna-Lok market on terms substantially similar to those contained in the proposed consent order. *See* Joint Motion of Complaint Counsel and Respondent Textron Inc. To Withdraw this Matter from Adjudication (March 9, 1990). The Commission rejected the proposal. *See* Order Denying Joint Motion To Withdraw Matter from Adjudication (May 23, 1990).

⁴ At this stage of the proceeding, the Commission should not impose any remedy unless it first finds liability based on a preponderance of the evidence in the record. *See* my statement dissenting from Order Withdrawing Matter from Adjudication in Textron Inc. (April 14, 1993).

Monobolt/Magna-Lok Market

The consent order requires Textron to grant a license to manufacture the Monobolt. The proposed license may provide some price competition in the Monobolt/Magna-Lok (non-aerospace) blind rivet market,⁵ depending on the capabilities and experience of the licensee. Indeed, Textron itself began production of the Monobolt under a license from Avdel. Whether the licensee will be able to compete with Textron and Huck, the two remaining firms in the market, remains unknown. The only firms that have succeeded in the Monobolt/Magna-Lok market -- Avdel, Textron and Huck -- have been aerospace blind rivet firms. These are the firms that have the technological expertise to participate in the Monobolt/Magna-Lok market as low cost, innovative competitors. The history of failed attempts to enter the Monobolt/Magna-Lok market by firms that lack aerospace rivet experience is evidence of the need for specialized expertise.

After Textron's acquisition of Avdel, two of the three remaining aerospace blind rivet firms, Textron and Huck, will be the only firms in the Monobolt/Magna-Lok market. Huck is excluded under the order from obtaining the Monobolt license from Textron. The remaining aerospace blind rivet firm (Allfast⁶) may lack the ability as well as the interest to compete in the Monobolt/Magna-Lok market. Based on information in the record after a full trial of the case, it seems unlikely that a licensee under the order will have the design and technological capabilities to provide effective, low cost, long term competition in the Monobolt/Magna-Lok market.

Aerospace Blind Rivet Market

The decision of the majority not to order relief in the aerospace blind rivet market is perhaps even more perplexing, because

⁵ Monobolt/Magna-Lok rivets are similar to aerospace blind rivets but differ in strength and other characteristics from other commercial rivets and from their aerospace counterparts. There is no dispute that Monobolt/Magna-Lok rivets constitute a relevant product market. I.D.F. 324. Avdel developed the Monobolt in England in 1975 and licensed it to Textron in 1977; Huck developed the Magna-Lok in 1983.

⁶ Allfast entered the aerospace blind rivet market by substantially copying Textron's product, *see* I.D.F. 128-30, and subsequently acquired the aerospace blind rivet business of another firm. I.D.F. 148 & 175. Insofar as the record discloses, Allfast has not attempted to enter the Monobolt/Magna-Lok market.

anticompetitive effects from the acquisition appear to be even more likely in this than in the Monobolt/Magna-Lok market. Textron is the dominant firm in the industry in the United States and the world (based on sales). Only three firms, including Avdel, compete with Textron, and with this acquisition, Textron reduces the number of its aerospace blind rivet competitors from three to two.

Aerospace blind rivets are complex, specialized fasteners used to join aircraft components when access for installation is limited to one side of the join. Aerospace blind rivets differ in their materials, dimensions, installation tooling and performance characteristics, such as shear strength, fatigue resistance and spindle retention, and they must be produced to very narrow tolerances in order to meet military or industrial performance and design specifications and qualification tests. Aerospace design engineers specify or “call out” particular aerospace blind rivets, depending on the performance and design requirements of the aircraft.

Competition in the aerospace blind rivet market occurs principally at the design stage of aircraft that use aerospace blind rivets. Firms in the blind rivet industry compete to have their blind rivets, with their particular performance characteristics, specified for an aircraft design.⁷ Once a particular blind rivet has been designed into an aircraft, the possibilities for substitution to other blind rivets (with different design and performance characteristics) are limited, and competition for sales of blind rivets at the procurement stage (when an aircraft manufacturer is buying the parts that have been specified for the aircraft) is similarly limited.

Design stage competition also is important to constrain prices at the procurement level. A firm that seeks to exploit its success in winning an aircraft design competition, by, for example, raising the price of its blind rivets after the design has been completed, may find a less favorable reception for its future bids. Its customers, the aerospace manufacturers, will have incentives in the next design competition to avoid doing repeat business with a price gouger.

Avdel’s aerospace blind rivet is a relative newcomer to design stage competition in the United States, having obtained the necessary national industry specification only in 1987.⁸ In the United States, in

⁷ See *FTC v. PPG Industries, Inc.*, 628 F. Supp. 881, 884 (D.D.C.), *aff’d*, 798 F.2d 1500, 1505 (D.C. Cir. 1986) (design stage competition).

⁸ Industry specifications document the performance characteristics of the various aerospace blind rivets and are used by aerospace design engineers to identify and select rivets. Obtaining industry specification is a critical first step to overcoming reputational barriers with aircraft manufacturers.

the relatively brief period reflected in the record of this case, Avdel demonstrated that its product could compete successfully with Textron's at the design stage, by participating in and winning aircraft design competitions.⁹ The record shows that Avdel has been second only to Textron in design competition wins since the late 1980's in the United States and the world. Avdel's success in aerospace design competitions is not yet reflected in its sales in the United States, because of the significant time lapse, often years, between the design and the building of an aircraft. As a result, Avdel's share of sales in the United States understates its competitive significance. Focusing narrowly on Avdel's sales in the United States exalts market share over market realities as a predictor of competitive effects, places unwarranted emphasis on competition at the procurement stage and ignores the more significant competition that occurs when blind rivets are incorporated in aircraft designs.

Even without these facts that limit the predictive weight of Avdel's market share of sales in the United States, the unadorned market share and concentration data, under the government's current guidelines, preliminarily indicate that Textron's acquisition of Avdel is likely to affect competition adversely in the aerospace blind rivet market. Textron is the dominant firm in the industry, with approximately 64% of sales in the United States and a lesser but still dominant share in the world.¹⁰ Avdel, one of only three firms that compete with Textron in these markets, obtained 0.5% of U.S. sales within two years after obtaining certification.¹¹ Even if Avdel's competitive significance is measured solely by its sales in the United States, the acquisition "raise[s] significant competitive concerns" in a highly concentrated market.¹² In world markets, where Avdel has

⁹ A firm need not win the design stage competition to affect competition in the market. *See, e.g., FTC v. Elders Grain, Inc.*, 868 F.2d 901, 907 (7th Cir. 1989) ("The possibility of such [competing] offers keeps the existing relationships from becoming exploitative."); *Grumman Corp. v. LTV Corp.*, 665 F.2d 10, 13 (2d Cir. 1981) ("Unsuccessful bidders are no less competitors than the successful one.").

¹⁰ The market share and concentration data cited in the text are derived from the Initial Decision, I.D.F. 169-77.

¹¹ Huck and Allfast are the other firms in the aerospace blind rivet market.

¹² Using the sales figures cited in the Initial Decision, the pre-acquisition HHI is 4617, and the acquisition would increase the HHI by 64 points. The 1992 Horizontal Merger Guidelines define markets in which the Herfindahl-Hirschmann Index ("HHI") is above 1800 as highly concentrated, and mergers that produce an increase in the HHI of more than 50 points in such markets "potentially raise significant competitive concerns," depending on other relevant facts. 1992 Horizontal Merger Guidelines Section 1.51(b). The other relevant facts (which have now been established on a full trial record), including the ability to exercise market power and conditions of entry, show that anticompetitive effects are likely as a result of the acquisition.

competed with Textron for a longer period of time,¹³ the increase in concentration from the acquisition is in the range “presumed . . . likely to create or enhance market power.”¹⁴ A third approach to assessing the likely competitive significance of the merger on the basis of market shares would acknowledge the importance in this industry of competition at the design stage of aircraft by assigning equal shares to the market participants.¹⁵ Using this approach, Textron, Huck and Avdel each would have one-third of the market, and the acquisition would increase the HHI from 3333 points to 5000 points.¹⁶ None of these approaches can be regarded as exclusive in this case,¹⁷ but, individually and in the aggregate, they reflect the serious potential of the acquisition to have anticompetitive effects and demonstrate the need for careful analysis of other characteristics of the market.

Textron’s arguments in defense of the acquisition rest almost entirely on the alleged lack of competition between Textron and Avdel at the procurement stage and the size of Avdel’s sales in the United States. As we have seen, however, design competition, not procurement competition, is the appropriate focus. Competition at the design stage is reduced by the elimination of Avdel as an independent firm.¹⁸ As we also have seen, the sales that Avdel achieved within the first two years after having obtained certification

¹³ Textron claims that Avdel’s success in Europe reflects some difference in demand, but the argument is undermined by the fact that Textron is the dominant firm in Europe, as it is in the United States. In 1987, Textron/Europe acknowledged that Avdel’s product “is steadily pro[gr]essing to become an established blind rivet in the aerospace industry.” CX-407-W.

¹⁴ The world aerospace blind rivet market is highly concentrated, and the acquisition would increase the HHI by more than 100 points. In this range, mergers are “. . . likely to create or enhance market power or facilitate its exercise.” 1992 Horizontal Merger Guidelines Section 1.51(c).

¹⁵ See 1992 Horizontal Merger Guidelines Section 1.4 n.15.

¹⁶ If we include Allfast at the design stage, Textron’s acquisition of Avdel would increase the HHI from 2500 points to 3333 points. Only Textron, Avdel and Huck have developed blind rivet designs and competed in aircraft design competitions. Allfast substantially copied Textron’s blind rivets and participates primarily at the procurement stage of aircraft construction, not the design stage. See note 17 below.

¹⁷ None of these approaches, for example, reflects the ability to design aerospace blind rivets (as distinguished from the design of aircraft), a process that can take several years. Textron, Huck and Avdel appear to be the only firms that compete in designing blind rivets. Firms that do not design blind rivets (e.g., Allfast) tend to be second sources for the procurement of blind rivets, not participants in the competition to be included in aircraft designs.

¹⁸ The availability of a different, independently produced rivet at the design stage of aircraft also constrains prices at the procurement stage, because customers have incentives to avoid doing business with a price gouger. See p. 3 & note 9 *supra*.

in the United States do not reflect its significance in the market. Indeed, the record shows that Textron projected a similar level of sales in the years following the introduction of its own, new-generation product. New products, even Textron products, take time to win acceptance from aircraft manufacturers and to be included in aircraft designs before they can achieve substantial sales.

Other characteristics of the market support the need for a remedy in the aerospace blind rivet market. The record shows that entry is difficult and time consuming. Designing a product takes several years, production is demanding and difficult, and obtaining industry specification and acceptance from aerospace engineers who design aircraft can take additional years. Achieving sales takes additional time, because of the lag between the design and the building of an aircraft. With the acquisition of Avdel, three firms will have exited the market since 1988.¹⁹ After the acquisition, with only two firms competing to be included in new aircraft designs, the likelihood of collusion is enhanced. New aerospace blind rivet product design also is likely to be affected adversely. The record shows that Avdel has provided innovations for aerospace blind rivets and that Textron has responded with innovations of its own. The impetus that competition provides for innovation is diminished by this acquisition. Divestiture is the only effective remedy to prevent these anticompetitive effects.

Textron's acquisition of Avdel is likely substantially to reduce competition in both the aerospace and the non-aerospace blind rivet markets, and the consent order issued today is entirely inadequate to remedy those anticompetitive effects. The Commission should instead require full divestiture by Textron of Avdel.

I emphatically dissent.

¹⁹ Voi-Shan, a former Textron licensee, and Olympic exited the market in 1988 and 1989, respectively.

IN THE MATTER OF
JOCKEY INTERNATIONAL, INC.

CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATION OF THE
TEXTILE FIBER PRODUCTS IDENTIFICATION ACT AND
SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT

Docket C-3494. Complaint, May 10, 1994--Decision, May 10, 1994

This consent order requires, among other things, a Wisconsin-based manufacturer of underwear, hosiery, and sportswear to disclose the country where its clothing is made and to use the correct generic fiber name for clothing. The consent order also requires the respondent to distribute copies of the order to each of its employees, agents, licensees and other representatives who are selling or advertising any of its textile products through mail order catalogs and promotional materials.

Appearances

For the Commission: *Robert E. Easton.*

For the respondent: *Charlotte Shapiro*, in-house counsel,
Kenosha, WI.

COMPLAINT

The Federal Trade Commission, having reason to believe that Jockey International, Inc., a corporation, hereinafter referred to as respondent, has violated the provisions of the Federal Trade Commission Act and of the Textile Fiber Products Identification Act, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby alleges:

PARAGRAPH 1. Respondent Jockey International, Inc., is a corporation organized, existing and doing business under and by virtue of the laws of the State of Wisconsin with its office and principal place of business located at 2300 60th Street, Kenosha, Wisconsin.

PAR. 2. Respondent is now, and for some time past has been, engaged, directly or through licensees, by means of mail order catalogs, in the advertising, offering for sale, sale and distribution of a variety of products in or affecting commerce, including textile