

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

UNITED STATES OF AMERICA,)
)
 Plaintiff,)
)
 v.) Civil Action No. 99-005-SLR
)
DENTSPLY INTERNATIONAL, INC.,)
)
 Defendant.)

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OPINION

Dated: August 8, 2003
Wilmington, Delaware

ROBINSON, Chief Judge

I. INTRODUCTION

On January 5, 1999, plaintiff United States of America through the Department of Justice ("DOJ") filed this action against defendant Dentsply International, Inc. ("Dentsply") alleging violations of the antitrust laws. (D.I. 1)

Specifically, the DOJ has asserted violations of sections 1 and 2 of the Sherman Act, 15 U.S.C. §§ 1 and 2, and section 3 of the Clayton Act, 15 U.S.C. § 14. (Id.) At issue are two aspects of Dentsply's business policies: (1) its agreements with dealers that they will lose their Dentsply account if they add a competing brand of teeth; and (2) its agreements with new dealers to drop some, or all, competing tooth brands in order to obtain the Dentsply account in the first place. (D.I. 460 at 17)

The court has jurisdiction over this matter pursuant to 15 U.S.C. §§ 4 and 25, and 28 U.S.C. §§ 1331, 2201 and 2202. The following are the court's findings of fact and conclusions of law pursuant to Fed. R. Civ. P. 52(a).

II. FINDINGS OF FACT

A. Background

1. This case concerns the manufacture, distribution and sale of prefabricated artificial teeth in the United States. The relevant product market for purposes of this case is the sale of prefabricated artificial teeth in the United States. (GX 445 at 6-8)

2. Artificial teeth today are manufactured in either porcelain or plastic. In order to match the different characteristics of a person's mouth, they are made in thousands of different shades and moulds ("mould" is the correct spelling within the tooth industry). Teeth are made in different grades of quality, commonly known as "premium," "mid-line," "economy," and "sub-economy." (D.I. 417 at 81-84; D.I. 432 at 2101)

3. The shade of an artificial tooth is the coloring of the tooth. The mould of an artificial tooth is the actual form or shape of the tooth. Choosing the correct tooth mould is critical to ensuring that the denture patient chews correctly and maintains his or her proper bite. (D.I. 432 at 2100-03)

4. The market broadly classifies artificial tooth moulds as either "European" or "American." (Id. at 2125-26)

5. Premium artificial teeth combine superior aesthetics with extreme durability. Economy artificial teeth offer less wear resistance and aesthetics than premium artificial teeth and are priced significantly less. Sub-economy artificial teeth offer even less wear resistance and aesthetics. (Id. at 2105-06, 2115-16, 2250-51)

6. Artificial teeth are manufactured for use in dentures. A denture is a removable prosthetic device comprised of artificial teeth fixed in an acrylic or other base material to replace some or all of a person's natural teeth.

7. "Removable" appliances are ones that patients can remove from their mouth themselves, clean them and place them back in. This can include either full and partial dentures. (D.I. 425 at 1206; D.I. 417 at 85)

8. "Fixed" appliances, by contrast, include crowns, bridges, and implants. A crown is a single, individual tooth restoration. A bridge is a restoration of at least three units bridging a gap of at least one missing tooth. An implant case is where a device is actually screwed into the bone. (D.I. 417 at 85-86)

9. The term "combination case" refers to the use of both fixed and removable appliances. (D.I. 425 at 1208)

10. Dental laboratories purchase almost all of the artificial teeth sold in the United States and use the teeth to make dentures. Labs buy artificial teeth on cards containing six (for anteriors) or eight (for posteriors) teeth. A full denture, i.e., one that replaces all natural teeth, requires 28 teeth from a total of four tooth cards. When fabricating a partial denture, a dental lab may only use a portion of the teeth on a card. The remaining teeth on the tooth cards are known as "broken sets." (D.I. 368, Ex. 1, Stipulation ¶¶ 13-16)

11. Labs fabricate dentures according to the prescription, impression and any other information provided to the lab by the

dentist. (D.I. 417 at 81; D.I. 425 at 1211-17) A denture prescription may contain a number of parameters, including a shade designation, a mould designation, a specific brand or a combination of these three items. (D.I. 432 at 2141; D.I. 448 at 2332-33) However, only 10% of dentists specify by name the brand of teeth to be used. (Id.)

B. Distribution of Artificial Teeth

12. Participants in the artificial tooth market fall into one of four categories: (1) manufacturers; (2) dealers; (3) dental laboratories; and (4) dentists. (D.I. 417 at 80-81)

13. The manufacturers participating in the United States artificial tooth market historically have distributed their teeth into the market in one of three ways: (1) directly to dental labs; (2) through dental dealers; or (3) through a hybrid system combining manufacturer direct sales and dental dealers.

1. Manufacturers

14. There are currently 12-13 known foreign and domestic manufacturers of artificial teeth that sell their products in the United States. (D.I. 417 at 83; D.I. 432 at 2111-12) The manufacturers sell artificial teeth in some or all of the sub-economy, economy, mid-line and premium segments. (D.I. 417 at 82-84) For purposes of this case, eight manufacturers are particularly relevant.

a. Dentsply International

15. Dentsply International, Inc. ("Dentsply") was founded in 1899 and is headquartered in York, Pennsylvania. (D.I. 368, Ex. 1, Stipulation ¶¶ 1-2) Dentsply manufactures a range of professional dental products that are marketed, distributed and sold throughout the United States. (D.I. 368, Ex. 1, Stipulation ¶ 3) Dentsply's total net sales in 2001 were approximately \$1.1 billion. (D.I. 454 at 3447)

16. Dentsply's artificial teeth are developed, designed, sold, and marketed by its Trubyte Division ("Trubyte"), located in York, Pennsylvania. Dentsply manufactures artificial teeth in the premium (under the names "Portrait," "TruBlend," "Bioblend" and "Bioform"), mid-range ("Biotone") and economy ("New Hue" and "Classic") segments. (D.I. 368, Ex. 1, Stipulation ¶¶ 8-9; D.I. 432 at 2108, 2116-17) Dentsply does not compete in the sub-economy tooth segment. (Id. at 2250-51)

17. Dentsply sells 14 different full lines of artificial teeth in the United States. (D.I. 432 at 2100) Dentsply currently offers 16,000 tooth Stock Keeping Units ("SKUs"). (Id. at 2093)

18. Through its Trubyte Division, Dentsply also manufactures and markets professional dental products used by dental labs to make dentures and other removable dental prosthetics. (D.I. 368, Ex. 1, Stipulation ¶ 6) These dental

products include acrylics, dental equipment, gypsums and wax.

(D.I. 432 at 2080, 2093-94) Dentsply's complete Trubyte product offering currently totals 19,000 total SKUs. (Id. at 2093)

19. Dentsply manufactures 1.1 million individual teeth per week. (Id. at 2096-97) Dentsply manufactures approximately 10,000 shade and mould combinations. (Id. at 2101; D.I. 368, Ex. 1, Stipulation ¶ 10) In total, Dentsply manufactures 106,000 different types of tooth units. (D.I. 432 at 2101, 2114)

20. Dentsply sells its artificial teeth exclusively to independent dealers. Dentsply does not own the dealers it has authorized to distribute Trubyte teeth. (D.I. 368, Ex. 1, Stipulation ¶¶ 17-18)

21. Dentsply has been the dominant tooth manufacturer in the United States market for a long time. (D.I. 454 at 3447)

22. In 2001, Dentsply's gross tooth sales to dealers were \$60.6 million. Net sales, taking into account broken sets and other tooth returns, totaled \$40.4 million. (DX 1650; D.I. 432 at 2253-56) Dentsply also sells lab merchandise products through its Trubyte Division. Teeth, however, represent approximately 80% of the division's revenue.¹ (Id.)

¹For ease of reference, the court will refer to "Dentsply" when discussing corporate conduct, and will refer to "Trubyte" only when referring to corporate products at issue in this case.

b. Ivoclar Vivadent, Inc.

23. Ivoclar Vivadent AG, headquartered in Liechtenstein, is a manufacturer and marketer of dental restorative materials, including artificial teeth. (D.I. 423 at 982-83)

24. Ivoclar Vivadent's U.S. subsidiary, Ivoclar Vivadent, Inc. ("Ivoclar"), is based in Amherst, New York and is responsible for marketing Ivoclar teeth in the United States market. (Id.) Ivoclar's president is Robert Ganley. He has been involved in the sale of Ivoclar teeth in the United States market since 1986. (Id.)

25. Ivoclar sells a number of different lines of artificial teeth. Among its premium plastic teeth are the Antaris and Postaris teeth, which were introduced by Ivoclar in the 1990s. (Id. at 984, 1013)

26. Ivoclar is one of Dentsply's two primary competitors in the tooth market. (D.I. 450 at 2683-84; D.I. 454 at 3461; D.I. 432 at 2249-50)

27. Ivoclar has sold teeth directly to dental labs since at least 1986. (D.I. 423 at 983, 991, 1006) Indeed, except for two brief periods during the late 1980s and early 1990s in which Ivoclar experimented with two geographically limited wholesale arrangements, Ivoclar has distributed teeth directly to dental labs since 1978. Similarly, Ivoclar sells its crown and bridge

products and precious metals directly to dental labs. (Id. at 989)

28. Today, Ivoclar distributes its teeth to labs throughout the United States through a single distribution center located in Amherst, New York. (Id. at 1098) During the early 1990s, Ivoclar also distributed to labs from at least two other distribution centers in Sacramento, California and Atlanta, Georgia. (Id. at 1008) It consolidated its operation into Amherst after a couple of years. (Id. at 1009)

29. Ivoclar promotes and sells its artificial teeth through a company sales force of approximately 30 sales representatives. (Id. at 1079) Up to late 1998, the sales force handled Ivoclar's entire product line of teeth and crown and bridge products. (Id. at 987) In November 1998, Ivoclar hired a former Dentsply representative as its first sales representative devoted to removable products. (D.I. 489 at 4350) Today Ivoclar has five representatives and a regional manager dedicated to artificial teeth. (D.I. 423 at 1078-79) Its main crown and bridge sales force still sells teeth as well. (Id. at 1079)

30. Dental labs that wish to order Ivoclar artificial teeth, whether to restock their inventory or buy an SKU that they do not stock, can either place the order when the Ivoclar sales representative calls on the lab or by calling Ivoclar's toll free number. (Id. at 1085-86)

31. In 1994, Ivoclar sold and distributed artificial teeth to 3,700 different dental labs nationwide. (DX 752 at 2; DX 1435; DX 1436) In 1998, Ivoclar sold artificial teeth directly to approximately 2,886 dental labs. (DX 519-A) At the time of trial Ivoclar sold teeth and crown and bridge products to 6,000 labs on a direct basis. (D.I. 423 at 1082)

32. Ivoclar has consigned teeth to dental labs as an alternative to labs purchasing tooth stocks outright. (Id. at 1099) With a consignment, the lab gets a tooth inventory at no initial cost to the lab; instead, the lab pays for the teeth ordered to replenish the consigned teeth that it uses. (D.I. 419 at 345-46; D.I. 431 at 1985-86)

c. Vita Zahnfabrik; Vident

33. Vita Zahnfabrik ("Vita") is a German manufacturer of artificial teeth. (D.I. 419 at 221) Vita Zahnfabrik sells teeth in the United States through an affiliated importer and distributor named Vident. (Id. 288-89) Vident is a closely held California corporation owned, in part, by the same family that owns Vita. Vident's president is Wayne Whitehill, who has been involved in the sale of Vita teeth since they were first imported into the United States market in the 1970s. (Id. at 221-23)

34. Vident sells both porcelain and plastic (or "resin") teeth in the United States. The brand name of the resin teeth is "Vitapan." (Id. at 225) Vita manufactures teeth only for the

premium segment. (D.I. 419 at 226) Vita's artificial teeth are the European mould style. (D.I. 432 at 2126; D.I. 452 at 2924)

35. Vident has been the entity responsible for marketing the Vita Classical Shade Guide in the United States market since 1984. A shade guide is used by dentists to match the shade of an artificial tooth (or crown, bridge, etc.) with the shade of a patient's natural dentition. The Vita Classical Shade Guide is the most popular shade guide in the market, used by approximately 80-90% of the dentists in the United States. (Id. at 230-32)

36. Vita, through its importer Vident, is the other primary competitor to Dentsply in the United States tooth market. (D.I. 450 at 2683-84; D.I. 454 at 3461, D.I. 432 at 2249-50)

d. Myerson LLC

37. Myerson LLC ("Myerson") is a tooth manufacturer based in Chicago, Illinois selling premium (Myerson, Universal, Swissedent), economy (Kenson), and midline teeth. At one time, Myerson was a free-standing division within the Austenal Corporation ("Austenal"). In January 2002, Dentsply acquired Austenal, and Myerson became a wholly separate company. Myerson's president and chief operating officer is James Swartout, who has been with the company (and before that Austenal) since 1994. (D.I. 425 at 1291-95)

38. Myerson teeth have been sold in the United States market since the company was founded in Cambridge, Massachusetts

in 1917. Dr. Myerson was a Professor of Dentistry at Harvard Dental School, and hand carved almost all of Myerson's teeth. Myerson was a pioneer in cross-linked resin technology and in the move from using porcelain to plastic to manufacture artificial teeth. (Id. at 1293-95)

39. In fall 2001, Myerson acquired some select Universal Dental Company tooth lines, which Myerson now manufactures and sells under the Universal brand. (Id. at 1295, 1340-41)

40. Myerson distributes its artificial teeth both through dealers and directly to dental labs. (Id. at 1298-99) Dental labs place tooth orders via telephone. (Id. at 1301-02) Myerson ships its artificial teeth directly to dental labs nationwide from its Chicago, Illinois location. (Id. at 1343) Myerson also provides tooth consignments directly to labs. (Id. at 1351) Myerson also distributes its teeth through a network of 12 dealers. (Id. at 1298) These dealers include Dentsply's largest dealer, Zahn. (Id.)

41. Austenal engaged in efforts to make it more convenient for dental labs to purchase artificial teeth directly. (Id. at 1355) By 1999, approximately 85% of Austenal's artificial tooth sales were direct to lab customers. (Id. at 1351) Between 1990-1993, Austenal used no outside sales representatives to promote teeth. In 1994, Austenal used one or two representatives responsible for all product lines, including teeth. (Id. at

1359-60) Myerson's national sales efforts are the responsibility of five sales representatives and one manager. (Id. at 1292)

e. Other Manufacturers

42. American Tooth Industries ("ATI") manufactures a brand of teeth called Justi. (D.I. 420 at 540)

43. American Tooth Industries distributes artificial teeth directly to dental labs such as National Dentex, one of the country's largest lab chains, and through a network of Trubyte and non-Trubyte dealers. (D.I. 452 at 2899; DX 1599) ATI's dealers include Dentsply's largest Trubyte dealer, Zahn, another large Trubyte dealer, Atlanta Dental Supply ("Atlanta Dental"), and Arnold Dental Supply. (D.I. 420 at 620; DX 1599)

44. Universal Dental Company ("Universal") is a diminishing competitor in the market. (D.I. 432 at 2250) In the fall of 2001, it sold some of its tooth lines to Myerson. (D.I. 425 at 1295, 1340-42)

45. Universal distributes artificial teeth directly to dental labs from one location in Montgomeryville, Pennsylvania. (D.I. 489 at 4342) Universal also distributes artificial teeth to dental labs through a network of dealers. (DX 1599) Universal's direct sales represented 30% of Universal's total annual tooth sales. (Id. at 4340-41)

46. Heraeus Kulzer GmbH, a German company, manufactures artificial teeth. (D.I. 429 at 1834-35) Heraeus Kulzer GmbH

generates approximately \$7 billion in annual revenue. (Id. at 1870) Heraeus Kulzer GmbH has sold its artificial teeth in Europe since the 1960s. (Id. at 1835) These teeth are made utilizing European moulds. (Id. at 1839) In January 2000, Heraeus Kulzer GmbH introduced in the United States, through its subsidiary Heraeus Kulzer, Inc. ("Heraeus"), a mid-range tooth. (Id. at 1817-18) In recognition of the differences between European and American style artificial teeth, Heraeus Kulzer GmbH specifically designed and manufactured its JelDent tooth line based on U.S. preferences in moulds and shades. (Id. at 1837-39) In February 2002, Heraeus Kulzer GmbH introduced into the U.S. market its JelDent Premium tooth line, which it positioned as a premium tooth based on those same preferences. (Id. at 1841-42)

47. Heraeus Kulzer GmbH sells and distributes its JelDent tooth lines directly from its Armonk, New York location through Heraeus. (D.I. 429 at 1843) Heraeus entered the U.S. market with direct distribution in January 2000. (Id. at 1817, 1823) Prior to entry, Heraeus was fully aware of the functions tooth dealers perform in the U.S. market, and was unable to obtain distribution through Trubyte dealers. (Id. at 1818-23)

48. Heraeus sells and promotes its artificial teeth through a sales force of 15 sales representatives. (Id. at 1832) These sales representatives are also responsible for selling and

promoting the entire line of Heraeus's lab products, including porcelain and precious metal alloys. (Id. at 1832-33)

49. Heraeus has approximately 800 different lab customers for JelDent artificial teeth. (Id. at 1852-53) Dental labs that want to buy Heraeus Kulzer artificial teeth can place the order when the Heraeus sales representative calls on the lab, by calling Heraeus's telephone number or even using a Palm Pilot scanner. (Id. at 1844) Generally, the company will ship its artificial teeth overnight for next day delivery depending on when the order initially was received. (Id. at 1867-68)

50. In 2000, Heraeus' actual sales were \$470,000. (Id. at 1858-59) In 2001, Heraeus achieved U.S. tooth sales over \$730,000. (Id. at 1853) Heraeus' goal is to become the second leading tooth company in the United States. (Id. at 1869)

51. Heraeus also consigns its teeth to dental labs. In its first year in the U.S. tooth market, Heraeus placed 102 tooth consignments in dental labs. (Id. at 1859-60)

52. Davis Schottlander & Davis Ltd. is an English company that sells a premium, Vita-shaded tooth under the brand name "Enigma." It is distributed in the United States by Dillon Company, Inc, which is also referred to as Leach & Dillon. (D.I. 457 at 4079-88) Leach & Dillon began marketing teeth in the United States in January 2001. (D.I. 457 at 4079)

2. Dealers

53. Dental dealers fall into two major categories: laboratory dealers, which carry products for dental labs and primarily service that customer, and operatory dealers, which carry products for dentists exclusively or in combination with dental lab products. (D.I. 425 at 1313, 1373-74; D.I. 423 at 1138; D.I. 417 at 72; D.I. 432 at 2179-86) Both operatory dealers and lab dealers may carry and sell artificial teeth. (D.I. 432 at 2179-86; DX 1665.)

54. There are currently hundreds of dental dealers operating in the United States. (D.I. 425 at 1313) Over the past ten years, the market has experienced significant consolidation resulting in several large dealers and the geographic expansion of dealer territories as a result of the development of lower-cost, reliable overnight shipping, as well as the collateral emergence of mail order dealers. (D.I. 448 at 2577-78, 2597; D.I. 432 at 2186-87)

55. Dental laboratory dealers, like the ones to which Dentsply sells its teeth, are dealers carrying the full range of products that dental labs use. (D.I. 417 at 101-02; D.I. 427 at 1482-83) These products can include artificial teeth, metals, porcelains, acrylics, waxes, and anything else necessary to fabricate fixed or removable restorations. (D.I. 417 at 93)

56. Lab dealers that sell artificial teeth vary in the size and scope of their operations. In general, there are three main types of tooth dealers – national, regional, and local.

(a) National tooth dealers, such as Zahn Dental Supply (“Zahn”) and Patterson Dental (“Patterson”), sell teeth nationwide through a network of tooth stock inventories scattered throughout the country. (D.I. 417 at 244-45)

(b) Regional tooth dealers are those that are particularly strong in certain regions of the country and have multiple tooth stocks scattered throughout the states in which they sell. (Id. at 245)

(c) Local, specialty tooth dealers typically operate within a single state or single city. They almost always have just one tooth stock. They are much smaller organizations than national or regional dealers, carry a narrower range of products, and have fewer resources such as catalogues and sales representatives. (Id. at 245-46)

57. Due to the thousands of mould and shade combinations of artificial teeth, most tooth dealers carry large inventories of teeth. (D.I. 417 at 82) A dealer’s “tooth counter” is a separate part of a laboratory dealer dedicated almost entirely to handling teeth. (Id. at 104-05) Tooth counters are extremely labor-intensive operations, requiring the employment of friendly, detail-oriented customer service personnel. (Id. at 126-27)

3. Dental Laboratories

58. There are approximately 16,000 labs that perform fixed and/or removable work in the United States. Of these, approximately 7,000 fabricate dentures. (Id. at 86; D.I. 432 at 2247)

59. The 7,000 labs that fabricate dentures are a very heterogeneous group. (D.I. 432 at 2247) About 5,000 are full-service labs, while approximately 2,000-3,000 labs only fabricate dentures. (D.I. 420 at 511) The number of denture labs in the United States has decreased steadily over the past ten years, largely as a result of consolidation and the emergence of large lab chains. (D.I. 448 at 2597-98)

(a) The large labs are those employing 25 or more denture technicians. There are only approximately 500 labs of this size (or only 7% of the total) in the country. (D.I. 417 at 88)

(b) The mid-size labs employ between four and 25 technicians. There are approximately 700-800 mid-size labs (or 11% of the total) in the country. (Id.)

(c) The remaining 82% are small labs, defined as labs employing four or fewer technicians. (Id.)

60. Denture labs compete with each other on the basis of price and service. (Id. at 89) Patients and dentists value fast

service, particularly in the case of lost or damaged dentures.
(Id. at 89-90)

61. Labs are the relevant consumer for prefabricated artificial teeth because they choose the brand of tooth used in a denture in the majority of cases. (D.I. 431 at 1911) Dental labs represent the last purchaser of artificial teeth as teeth standing alone. (D.I. 448 at 2514; D.I. 432 at 2163; D.I. 452 at 2937-40) All of the manufacturers who testified at trial agreed that dental labs are the primary customers. (D.I. 448 at 2514; D.I. 423 at 987-88; D.I. 419 at 228, 241-42; D.I. 425 at 1351)

62. Dental labs maintain artificial tooth inventories for use in fabricating dentures. (D.I. 431 at 1970, 1979; D.I. 448 at 2336; D.I. 450 at 2827; D.I. 453 at 3256-57) If a lab has the brand of teeth in stock it needs to fabricate a denture, it will pull the tooth cards from the inventory. (D.I. 431 at 1970; D.I. 431 at 2038) If a lab does not have the teeth required in stock, it must place an order from a dealer or manufacturer. (D.I. 431 at 1970; D.I. 450 at 2865) Labs will also place periodic orders for teeth to replenish their tooth inventories. (D.I. 448 at 2336)

63. Generally, the dentist only prescribes the tooth shade and rarely specifies the tooth brand. (D.I. 425 at 1215-16; D.I. 448 at 2332-33)

64. Through a labor intensive process, dental labs transform the teeth into an integral component of a new product. Denture fabrication comprises three stages: bite rim and tray stage (2-3 working days); try-in or setup stage (3-5 working days); and the finishing stage (3 working days). (D.I. 431 at 1963-76) Artificial teeth enter the process during the setup stage. Dental labs generally do not set artificial teeth during the first three days of this process. (Id. at 1977-78)

65. On average a dental lab exchanges a denture case with a dentist 3-4 times and dental labs require about 8-9 working days to fabricate a denture, excluding shipping time. With the shipping time included, dental labs will fabricate a new denture within 14 days. (Id. at 1976-77)

4. Dentists

66. There are approximately 140,000 dentists in the United States. (D.I. 417 at 91) Of these, 40,000 work with dentures. (D.I. 432 at 2144) Dentists receive their initial training on dentures during dental school. (Id. at 2136) As the demand for dentures has declined over the past 30 years, the demand for that training has diminished. (GX 101 at DPLY-A 37304-05; DX 1659 at DPLY-A 200187-88)

C. Dentsply's Dealer Network Is Characterized By Intra-Brand Competition

67. Dealers compete with one another to sell Trubyte teeth to dental labs. (D.I. 417 at 94, 129, 137-38; D.I. 432 at 2189-90) Intra-brand competition is "common in the industry." (D.I. 425 at 1398-99) Dentsply dealers engage in price competition to gain dental labs' tooth business. (D.I. 432 at 2189-90) As a result of this competition, most dealers discount Dentsply's suggested lab price for artificial teeth. (Id. at 2189)

68. Thomas Cavanagh of Frink Dental Supply (Frink") testified that labs are "price sensitive," and Frink faced price competition from other Dentsply dealers. (D.I. 489 at 4365) As Mr. Cavanagh testified, these Dentsply dealers were "driving prices down on teeth" in the market. (Id. at 4367) Frink either had to match the price discounts offered by competitive Dentsply dealers or lose its lab customers' business. (Id. at 4366-67)

69. In addition to Frink, other market participants elaborated on the intra-brand competition that occurs among Dentsply dealers. Regis Vetrano of Dental Laboratory Discount Supply ("DLDS") testified that DLDS competes against multiple Trubyte dealers. (D.I. 425 at 1430-31) Sidney Nordhauser of Darby Dental Supply ("Darby") testified that "[e]very supply house that is out there is our competitor." (D.I. 453 at 3429-30) Gerry Mariacher of National Dentex testified that 33 of the 34 National Dentex labs across the country historically purchased

their Trubyte teeth from four or five different Dentsply dealers until National Dentex reached a favorable agreement with Zahn to supply all of their teeth. (D.I. 452 at 2951-52)

70. Price is one of the reasons that labs utilize more than one dealer. (D.I. 425 at 1432-33; D.I. 431 at 2005; D.I. 420 at 656-57; D.I. 453 at 3277-78, 3286; D.I. 489 at 4174-75, 4177, 4369, 4373-74) DLDS sells teeth to Lord's Dental Studio at a 20% margin in order to get that business. (D.I. 425 at 1433) Mr. Vetrano testified that if DLDS did not sell to Lord's at that price, he believes that Lord's would look to another dealer for its tooth purchases. (Id.) Price also constitutes a factor in Darby losing business to competitors. (D.I. 453 at 3427-28) Darby's competitors discount off Dentsply's suggested lab rate for artificial teeth; "to beat competition," Darby "discount[s] almost everything [it] sell[s]." (Id. at 3430) Atlanta Dental lost the tooth business of labs due to price competition from Darby and Thompson Dental Supply. (D.I. 420 at 654-55, 657) By offering National Dentex a 20% discount below Zahn's catalog price, Zahn was able to win all of National Dentex's Trubyte business, with the exception of one lab. (D.I. 452 at 2951-53)

D. Alternative Channels of Distribution

1. Selling Direct Is A Viable Method For The Distribution Of Artificial Teeth

71. The DOJ's expert economist, Dr. Reitman, concedes that direct distribution is a "viable" method of distributing

artificial teeth. (D.I. 427 at 1650) Dr. Reitman agreed that Dentsply's rivals are "not foreclosed completely" from the U.S. market for artificial teeth. (Id. at 1573) Dr. Reitman further conceded that Dentsply's rivals are "not foreclosed from a substantial share of those labs" which, he acknowledged, are the "immediate customers" in the artificial tooth market. (Id. at 1649-50)

72. Labs have expressed an interest in obtaining Trubyte teeth directly from Dentsply and not through dealers. (D.I. 448 at 2541-43) Dentsply held a total of seven lab advisory meetings between 1993-1999. (Id.) According to Dentsply's lab advisory groups, dealers did not provide sufficient services to warrant their profit margin. Additionally, the labs viewed themselves as Dentsply's primary customers - not the dealer. The labs also believed they could purchase Trubyte teeth at a cheaper price if they purchased directly rather than through a dealer. (Id. at 2532-33; DX 653)

73. Many of the lab witnesses who testified at trial and who were deposed in this case testified that they either prefer to purchase teeth directly from manufacturers because of the potential cost savings over purchasing through dealers or would consider purchasing direct if cost savings were available. (D.I. 448 at 2341, 2356-57; D.I. 431 at 2004; D.I. 450 at 2731-33, 2857; D.I. 452 at 2957-58; D.I. 453 at 3280-81; D.I. 489 at 4175-

76, 4184-85, 4190-93, 4213, 4219, 4224-24, 4232-33, 4246-47, 4257-58, 4266-67, 4277, 4279, 4281, 4287, 4296-97, 4304-05, 4314)

74. Some labs prefer to buy direct to avoid dealer "error" and "back orders," while others appreciate the technical assistance manufacturers provide. (D.I. 448 at 2356-57; D.I. 453 at 3280-81)

a. Tooth Manufacturers Do Not Require A Network Of Tooth Stocks To Sell Teeth To Labs

75. During the past 10 years, dealers have consolidated the number of tooth stocks from which they fill orders for teeth. (D.I. 432 at 2187, 2194; D.I. 448 at 2427-28, 2577; D.I. 417 at 105, 127-28; D.I. 420 at 492) Zahn has reduced the number of company tooth stocks it uses to service its nationwide customer base. (D.I. 420 at 477-478, 492; D.I. 432 at 2258-60) Darby has had eight different tooth stocks since 1990. At the time of trial, it had approximately 6 stocking locations, but primarily serviced the entire United States from one stock. (D.I. 489 at 4374-77; DX 25 at IVC 023966; D.I. 457 at 4107-08; D.I. 432 at 2180)

76. Dr. Reitman agreed that "with the current widespread availability of overnight express mail . . . dental labs can generally get teeth delivered the next day after placing an order with the manufacturer or a dealer, regardless of where the shipper is located." (D.I. 427 at 1687)

77. The advent of Federal Express and other similar delivery services facilitated this market consolidation. These types of delivery services have made a card of teeth a very transportable item, one that can be shipped over broad geographies relatively cheaply and quickly. (D.I. 448 at 2429-30, 2577-78; D.I. 450 at 2775; D.I. 423 at 1099; D.I. 419 at 250; D.I. 489 at 4321-22; D.I. 425 at 1289-90; D.I. 453 at 3267) These tools empowered dealers to service their lab customers' needs from strategically placed stocks. (D.I. 448 at 2577-78; D.I. 454 at 3490)

78. Dealers can service the tooth needs of their lab customers effectively throughout the United States with a limited number of tooth stocks, in many instances just one. (D.I. 420 at 504; D.I. 450 at 2770-71; D.I. 448 at 2426-27; D.I. 432 at 2276; D.I. 457 at 4107-08; D.I. 431 at 2070) Norman Weinstock - the President of Zahn, Dentsply's largest tooth dealer - testified that a dealer "can deliver anywhere in the United States out of one facility." (D.I. 420 at 503-04)

79. It makes financial sense for dealers to consolidate tooth stocks. The consolidation reduces expenses for overhead and labor (trained tooth counter specialists) associated with a tooth stock. (D.I. 448 at 2577-78) When Darby purchased Dental Technician's Supply ("DTS"), it consolidated DTS's New York stock with the existing Darby tooth stock in New York. (D.I. 489 at

4375-76) Zahn concluded that having multiple tooth stocks was inefficient. (D.I. 420 at 501; DX 1549 at ZD00015) Mr. Weinstock testified that he believes the consolidation of tooth stocks was a smart business decision because it allowed Zahn to reduce its inventory and increase the number of inventory turns annually. (D.I. 420 at 488-495) Zahn made acquisitions of several competitive tooth dealers during the recent past. (Id. at 495-501) In each instance, Zahn closed the acquired dealer's tooth stock and elected to service those new lab customers from Zahn's remote tooth distribution centers. (Id.)

80. With drop shipments, the lab places the tooth order with the dealer. The dealer, in turn, submits the order to Dentsply with the request to ship the order directly to the lab. The dealer bills the lab at the price set by the dealer, and Dentsply bills the dealer at the price set by Dentsply. The teeth used to fill the order, however, come from Dentsply's York, Pennsylvania facility, not the particular dealer's inventory. The number of tooth orders Dentsply drop-ships to labs has grown steadily during the relevant time period. (D.I. 432 at 2194-2195) Today, approximately 60% of orders for Trubyte teeth that Dentsply dealers place are drop shipped. (Id.; DX 1638) Patterson, which has more local tooth stocks than any Dentsply dealer, represents upward of 70% of Dentsply's drop shipments. (D.I. 432 at 2187, 2196-97)

81. Even labs that purchase through dealers testified that they would rather purchase teeth directly from manufacturers if they could obtain a price discount. (D.I. 489 at 4175-76, 4213, 4257-58, 4279, 4297, 4281, 4325-26) Labs prefer to buy direct because of potential cost savings attributable to elimination of the dealer middleman. (D.I. 448 at 2341, 2356-57; D.I. 431 at 2003-04; D.I. 450 at 2857; D.I. 452 at 2957-58; D.I. 453 at 3280-81) Betsy Harris of Atlanta Dental testified that "the majority" of labs that receive a better price from direct selling manufacturers will choose to buy direct instead of through a dealer. (D.I. 420 at 626-28) For that very reason, Atlanta Dental does not like to compete with ATI for the sale of ATI artificial teeth to labs. (Id.)

b. Manufacturers Have Replicated Or Could Replicate The Dealer Function

82. One perceived benefit of dealers the DOJ cites is local availability of teeth. (D.I. 460 at ¶¶ 63-64) Lab witnesses testified that they do not necessarily purchase teeth from the nearest dealer. (D.I. 425 at 1260, 1267-68; D.I. 452 at 2954) Dentsply tracks for each of its dealers the dollar value of tooth shipments from a particular dealer tooth stock in a report called "zip-to-ship." (D.I. 432 at 2187-2188; DX 1589) The data shows that there is no direct relation in terms of sales of artificial teeth between where a dealer maintains a tooth stock and where it does not have a tooth stock. (Id. at 2188) Zahn testified that

it sells \$829,000 worth of teeth in Pittsburgh, where it does not have a tooth stock. (D.I. 420 at 486) This is higher than the tooth sales for either Patterson or Benco Dental, two Trubyte dealers that do have tooth stocks near Pittsburgh. (Id. at 486-87; DX 1589 at 9-10)

83. Dentsply obtains monthly reports from its dealers reflecting the dealers' sales into each state where the dealers sold teeth. (DX 1674) Dentsply dealers make substantial sales in geographic areas remote from their tooth stock locations. (Id.) Zahn and Darby, Dentsply's fastest growing dealers, make substantial sales in states where they have no stocks. (D.I. 420 at 482, 506)

84. The DOJ also cites "one-stop shopping" as a purported benefit that dealers provide to dental labs. (D.I. 460 at ¶ 76) The benefit the DOJ identifies is reducing the number of vendors labs use (not eliminating all but one) by purchasing multiple products from vendors. (Id.) Other manufacturers offer this sort of one-stop shopping to their lab customers. With just one phone call, a lab can order from Ivoclar all materials necessary for crown and bridge and denture construction (including artificial teeth, porcelain, ceramics, precious metals, gypsum, waxes, stone, supplies and equipment). (D.I. 423 at 1084-85; D.I. 420 at 522; D.I. 453 at 3281) A lab also can call Vident directly and purchase porcelains, metals, equipment, artificial

teeth and implant accessories. (D.I. 419 at 221, 224)

Similarly, Heraeus offers one-stop for labs to purchase precious metals, teeth, porcelain, gypsum and investment. (D.I. 429 at 1851)

85. In any case, labs tend to purchase their dental products from multiple dealers and multiple direct selling manufacturers. (D.I. 431 at 2008-10; D.I. 448 at 2357-58; D.I. 453 at 3262-63, 3267, 3284-85; D.I. 450 at 2831; D.I. 452 at 2955-57; D.I. 420 at 511-12; D.I. 425 at 1270-72) Additionally, a Zahn-sponsored focus group revealed that Zahn's lab customers purchase from several other dealers. (D.I. 420 at 512-13)

86. Another service performed by dealers is handling accounts receivable. (D.I. 460 at ¶ 84) Some tooth dealers manage the accounts receivable for lab tooth purchases. (D.I. 417 at 134-35; D.I. 423 at 1134) The accounts receivable function involves invoicing the lab customer for teeth purchased, collecting payment, providing credit and at times extending credit terms. (D.I. 417 at 134-35)

87. Manufacturers already manage the accounts receivable for lab non-tooth purchases, i.e., crown and bridge materials and precious metal alloys. Ivoclar manages the receivables on all of its products for nearly 6,000 labs. (D.I. 423 at 1081-83) Until the creation of Myerson in 2002, Austenal sold crown and bridge materials directly to thousands of dental labs. (DX 1301; DX

1302; D.I. 425 at 1298-99, 1369-70) Heraeus also sells precious metals and porcelains directly to labs. (D.I. 429 at 1833, 1836) These manufacturers, therefore, already are responsible for managing voluminous accounts receivable.

88. The evidence shows that even the biggest tooth dealers do not carry precious metals because of the accounts receivable issue. (D.I. 420 at 509)

89. The DOJ also touts the management of dental lab inventories as a valuable dealer service. (D.I. 460 at ¶¶ 71-73) Some tooth dealers help manage the tooth inventories that labs keep on site. (D.I. 425 at 1309)

90. Many labs prefer to manage their tooth inventories in-house. (D.I. 429 at 1843; D.I. 453 at 3277-78, 3314-15) The labs that testified at trial on this issue all managed their own tooth inventories. (D.I. 453 at 3264, 3269, 3279-80, 3314-15; D.I. 452 at 2962; D.I. 450 at 2836-37; D.I. 431 at 1987-89, 1996-98; D.I. 448 at 2340-44)

91. Dentsply's largest dealer, Zahn, calls upon just 40% of its active accounts with 18 sales representatives. (D.I. 420 at 474-75) There is no evidence that the Zahn sales representatives service the tooth inventories of any of these accounts, much less the other 60% of Zahn's lab customers they do not call on. Darby manages approximately 28% of its lab customers' inventories. (D.I. 453 at 3422-23)

92. The DOJ also claims dealers offer "same day" delivery of artificial teeth. (D.I. 460 at ¶¶ 66-69) The evidence shows that labs generally do not require same day receipt of teeth. (D.I. 431 at 2015, 2061; D.I. 448 at 2394; D.I. 450 at 2774, 2834, 2866; D.I. 452 at 2953-54; D.I. 453 at 3325-26, 3288; D.I. 425 at 1284, 1439; D.I. 423 at 1171)

93. Mr. Weinstock testified that dental labs have a "mistaken perception" of the need to have local tooth stocks and that Zahn successfully has demonstrated that it can "deliver anywhere in the United States out of one facility." (D.I. 420 at 504) Many of Zahn's tooth customers receive teeth the day after they place the order. (Id. at 504-06) Zahn is unable to provide much of the country with same day delivery. (Id. at 479-81)

94. Tooth consignments placed in dental labs constitute a tooth stock from which labs can fulfill their daily tooth needs. (Id. at 488, 566-67) Many manufacturers offer tooth consignments to labs.

95. In "emergency" situations, when labs absolutely must have a tooth on a same-day basis, they sometimes choose to order their teeth from a dealer and pick those teeth up from a walk-up counter. (D.I. 457 at 4143; D.I. 425 at 1381) The only example provided at trial of an emergency-type situation was the repair of a denture. (D.I. 453 at 3288, 3311; D.I. 457 at 4096) In these situations, however, labs commonly find that they can

repair dentures with the teeth that they keep in stock. (D.I. 453 at 3326; D.I. 431 at 2012)

96. Labs pick up teeth a very small percentage of the time. (D.I. 450 at 2772-73; D.I. 420 at 479-80, 539; D.I. 453 at 3289, 3322-23, 3429)

97. The DOJ identifies the handling of tooth returns as another dealer service. (D.I. 460 at ¶ 79) Approximately 30% of all lab tooth purchases are returned for exchange/credit, either in full cards (for less popular SKUs) or partial cards called "broken sets" (where the lab fabricates a partial denture and does not use all the teeth on a particular card). (D.I. 452 at 2168; D.I. 419 at 366; D.I. 417 at 81) Although the terms of their respective policies vary, all manufacturers except Vita accept tooth returns. (D.I. 432 at 2167-68, D.I. 431 at 1941-42; D.I. 423 at 998; D.I. 425 at 1298; D.I. 419 at 366-67) Vita does not permit Vident to return teeth that it accepts from labs and its sub-dealers. (Id. at 366)

98. The DOJ notes that dealers offer prompt, accurate and reliable delivery. (D.I. 460 at ¶¶ 74-75) Direct-selling manufacturers currently offer overnight delivery on tooth orders. (D.I. 419 at 250; D.I. 423 at 1099; D.I. 429 at 1867-68; D.I. 457 at 4094)

c. Ivoclar And Vident Have Made Business Decisions To Sell Directly To Labs

i. Ivoclar

99. Ivoclar acknowledges that selling directly to dental labs is an effective method of distribution that provides Ivoclar with "some advantages" versus dealer distribution. (D.I. 423 at 1006-07, 1119-20)

100. The dental lab owners who testified at trial purchase artificial teeth directly from Ivoclar and generally indicated that they are satisfied with this method. (D.I. 453 at 3319-20, 3325; D.I. 452 at 2913, 2959; D.I. 448 at 2344)

101. Ivoclar, for a brief period, appointed Frink Dental as an Ivoclar dealer.

(a) At the time, Ivoclar was selling its teeth to labs at one price. Contemporaneously with its appointment of Frink as a tooth distributor, Ivoclar "instituted a price increase" across all of its tooth lines. (DX 17 at 27, D.I. 423 at 1032) Ivoclar recognized that it would need to share its profit margin with Frink and, thus, in order to maintain profitability, Ivoclar needed to increase its prices for artificial teeth. (Id. at 1032-34; DX 17 at 27)

(b) On January 26, 1989, Ivoclar representatives met with Tom Cavanagh, President of Frink, to discuss Mr. Cavanagh's concerns regarding Frink's agreement with Ivoclar. (DX 9 at 1; D.I. 423 at 1039-40) Mr. Cavanagh was concerned that promises

made three months earlier (when Ivoclar appointed Frink) by Mr. Kevin Dillon, President of Ivoclar NA at the time, would not be honored now that Mr. Dillon had left Ivoclar. (DX 9 at 1; D.I. 423 at 1040)

(c) Ivoclar had made a number of promises to Mr. Cavanagh in order to commit Frink to taking on the Ivoclar line of teeth. Ivoclar had promised Frink that Ivoclar would, among other things: (1) advertise heavily and include the Frink name and telephone numbers in a byline in the advertisements; (2) provide Frink with various advertising and promotional materials; (3) send twenty Williams (Ivoclar's precious metals and removable products company) and Ivoclar sales representatives to Frink's tri-state area to support the promotion of Ivoclar teeth; (4) hire a technical representative for the Chicago area; (5) provide free unlimited shade guides; (6) invite Frink's sales force to Liechtenstein for one week if Ivoclar sales in the first year exceeded \$1 million; (7) provide a battery-powered hand piece for demonstrating the grinding qualities of Ivoclar teeth; (8) expand Ivoclar's dealer network through other regional dealers; (9) offer clinics and seminars; (10) pay legal fees relating to Frink's investigation of "the Dentsply antitrust situation"; (11) pay for local and regional advertisements; and (12) guarantee payment if a customer's credit failed. (DX 9 at 1-3) Ivoclar believed it was necessary to make these commitments in order to

help Frink build and promote Ivoclar's artificial tooth business. (D.I. 423 at 1041; DX 9)

(d) Ivoclar recognized that it lacked enough employees to fulfill the commitments made to Frink. (DX 15) Mr. Ganley shared that view and attributed some of Ivoclar's problems to a lack of personnel and a sales organization dedicated to artificial teeth. (D.I. 423 at 1047-48; DX 17 at 41)

(e) Ivoclar recognized that the "effectiveness of Frink" as a dealer "is largely dependent upon the support which Ivoclar USA provides." (DX 17 at 41) Nevertheless, after the January 1989 meeting, Ivoclar did not commit expressly to Frink that it would provide the requested support. (DX 9 at 3; D.I. 423 at 1042) At trial, Mr. Ganley could not recall whether many of the items promised to Frink, in fact, were implemented. (D.I. 423 at 1042-44)

102. In July 1989, Ivoclar commissioned a task force to establish a strategic marketing plan for its denture products. (Id. at 1026-27) The task force found that Ivoclar unit sales were "steadily decreasing" and had taken a "regressive" position in the U.S. marketplace due to the lack of a General Manager and sales representatives in the field. (DX 17 at 3-4; D.I. 423 at 1027) In fact, Ivoclar had "no sales representatives in the field." (DX 17 at 14) Further, it lacked the "customer service

to support growth.” (Id.) Ivoclar recognized that “customers do not receive their orders in a timely fashion.” (DX 17 at 11)

103. In 1995, Ivoclar had a business relationship with DTS. (D.I. 453 at 3385) DTS, at the time, did not carry Trubyte teeth. (Id. at 3397-98)

104. Ultimately, the business relationship between DTS and Ivoclar deteriorated and ended by the mid-1990s. (D.I. 453 at 3388-98)

105. DTS was the only non-Dentsply dealer that Ivoclar contacted regarding the distribution of its artificial teeth between 1990 and 2002. (D.I. 423 at 1058) Ivoclar concluded as early as 1989 that “dealers do not really provide sales support, but only act as a distribution center and service to tooth stocks.” (Id. at 1031; DX 17 at 12)

106. In 1990, less than a year following the Frink experiment, Darby sought to become an Ivoclar dealer. Darby proposed adding four distribution points to the stocking locations that Ivoclar already had at the time. These points were located in New York, Boca Raton, Dallas and Chicago. In its analysis of Darby’s proposal, Ivoclar determined that it was more profitable to sell directly to dental labs. (D.I. 423 at 1101-03; DX 25 at IVC 023970) By selling directly to the customer, Ivoclar concluded that it would “guarantee continuity and distribution methods.” (Id.) Ivoclar ultimately rejected

Darby's proposal and chose instead to continue with direct distribution. (Id.; D.I. 423 at 1061-65)

ii. Vident

107. In 1997, Vident analyzed the feasibility of adding a large dealer, specifically Patterson, as a sub-dealer. Vident's calculations took into account the need to give Patterson the support that a national dealer requires, including "at least" a 30% margin on Vita teeth that Patterson would re-sell, marketing support, technical support and educational programs. (D.I. 419 at 339-40, 350) All of these programs would have been in addition to what Vident was currently offering its distribution network. (Id.) Vident took into account the added expenses associated with this incremental support. (Id.) Vident determined that it would not sell teeth directly to dental labs if it distributed Vita teeth through Patterson. As a result, its gross profit margin would decrease due to the additional layer of dealer margin. (D.I. 423 at 340-42)

108. Vident also determined that it would need to offer a large dealer like Patterson a volume discount year-end bonus. (Id.) Because Vident would offer a bonus to Patterson and do away with direct sales, it expected its gross profit margin on artificial teeth to decrease if it sold teeth through a national dealer like Patterson. (Id.)

2. Very Few Tooth Manufacturers Distribute Their Teeth Exclusively Through Tooth Dealers

a. Dentsply

109. During the early to mid 1990s, Dentsply sold artificial teeth through 35 to 40 dealers. Some of these dealers had one location, while others had multiple locations. (D.I. 448 at 2576-77) Today there are 23 authorized dealers. (D.I. 432 at 2178-79; DX 1665)

110. Dentsply does not have a contractual arrangement with its authorized tooth dealers. (D.I. 423 at 1184-85; D.I. 448 at 2585; D.I. 450 at 2631) If Dentsply's dealers do decide to take on the teeth of a rival, they can either sell their Dentsply tooth inventory or send it back to Dentsply for full credit. (D.I. 420 at 700; D.I. 489 at 4346)

111. There is no dispute that when Dentsply authorizes a dealer to carry its teeth, that relationship operates on a purchase order basis. Thus, an authorized Dentsply dealer is free to stop buying Trubyte teeth at any time without penalty from Dentsply. (D.I. 448 at 2585; D.I. 423 at 1184) Mr. Weinstock acknowledged that Zahn could "stop selling Trubyte teeth altogether . . . tomorrow." (D.I. 420 at 543)

112. Dentsply has analyzed the advisability and feasibility of selling its Trubyte teeth directly to labs. (D.I. 448 at 2534; D.I. 454 at 3471)

113. In 1996, there were market factors that caused Dentsply to question whether its Trubyte business could continue to "grow or be stable long term." (D.I. 448 at 2593) Christopher Clark analyzed these market factors, and the Trubyte Division's Strategic Options, in the 1996 Trubyte Division Long Range Plan. Mr. Clark authored and submitted the Long Range Plan to Dentsply's senior management in spring 1996. (Id. at 2592; GX 101)

114. Mr. Clark's Long Range Plan identified five "key trends" that were "negatively impacting" the Trubyte Division's "ability to protect [its] business long term." (GX 101 at DPLY-A 37304-05) First, Dentsply faced price pressure from direct selling manufacturers "whose distribution system does not require a 35% dealer margin." (Id.) As a result of this price pressure, larger labs sought to purchase Trubyte teeth at lower prices. (D.I. 448 at 2595) Second, dentists exhibited a reduced interest in dentures due, in part, to "decreased denture training in schools" and "lack of perceived profitability." (GX 101 at DPLY-A 37304; D.I. 448 at 2595) Third, dealers showed a declining interest in the tooth business "due to low perceived profitability." (GX 101 at DPLY-A 37305; D.I. 448 at 2596) Dealer disinterest represented a "significant business risk" to Dentsply because dealers potentially could return the estimated \$15 million in dealer tooth inventories to Dentsply, which would

mean negative sales and negative gross margin. (Id.) Fourth, there was increasing consolidation in the market among dealers and labs. (GX 101 at DPLY-A 37305) As a result of the lab consolidation, Dentsply "felt the competitive pressure" from its larger lab customers. (Id.; D.I. 448 at 2597) Fifth, denture patients held a "negative view" of dentists and of dentures. (GX 101 at DPLY-A 37305; D.I. 448 at 2597) Dentsply's research showed over 60% of denture wearers experienced problems with their dentures. (GX 101 at DPLY-A 37305) Yet, these patients exhibited "little to no interest in ongoing dental care" and did not seek to replace their dentures. (Id.)

115. In his 1996 Trubyte Division Long Range Plan, Mr. Clark considered and analyzed strategic options for the Trubyte Division in light of these market factors. (GX 101)

116. The first strategic choice was to maintain the status quo. (GX 101 at DPLY-A 37305-06) The Long Range Plan recommended against this strategy and recognized it as a "SIGNIFICANT BUSINESS RISK TO DENTSPLY." (Id.) The Plan concluded that if Dentsply did not address the market conditions and invest in the future, the Trubyte business would "begin trending down." (Id.; D.I. 450 at 2605)

117. The second strategic choice was to protect, defend, and enhance the Trubyte Division. (GX 101 at DPLY-A 37306-13; D.I. 450 at 2610) The second choice was actually a combination of

various strategies, all designed to ensure "the long-term health of the tooth business." (Id.) This option included Dentsply ultimately moving to a "[d]irect-[s]elling" relationship with its lab customers. (GX 101 at DPLY-A 37310)

118. The Long Range Plan further concluded that the services dealers provided to labs "certainly [were] replicable." (D.I. 450 at 2611) The Plan acknowledged that in switching to a direct-selling distribution system, Dentsply would have to overcome five hurdles by: a) writing-off \$15 million in dealer inventory; b) learning more about its lab customers and creating a database of this information; c) examining sufficiency of field sales coverage and likely increasing the size of the sales force; d) addressing the impact of increased accounts receivable; and e) anticipating competitive reaction from tooth companies who would approach Dentsply's dealer network. (GX 101 at DPLY-A 37344; D.I. 450 at 2611-14) The potential dealer backlash Dentsply's other divisions would face if it opted to sell teeth direct served as another "significant concern." (D.I. 450 at 2614-15)

119. Notwithstanding these hurdles, the Long Range Plan concluded that it would "ultimately be necessary to take the business direct." (GX 101 at DPLY-A 37343)

120. Upon review of the 1996 Long Range Plan, Dentsply's senior management commissioned a more detailed analysis of whether Dentsply should take its tooth business direct. (D.I.

454 at 3472; D.I. 450 at 2615) This analysis, which Mr. Clark also managed, was called Project Black Jack. (D.I. 450 at 2616; D.I. 454 at 3472; DX 460-A) Project Black Jack studied the feasibility and advisability of taking all Trubyte's business (teeth and merchandise) direct. (DX 460-A; D.I. 450 at 2616-17; D.I. 454 at 3476)

121. Project Black Jack confirmed the action points in the 1996 Long Range Plan, i.e., the necessary infrastructure for distribution, accounting and sales, and better information about the labs and their tooth needs. (D.I. 454 at 3476-78) Project Black Jack also analyzed in detail the financial viability of going direct. It determined that after the initial \$15 million write-off of returned inventory, selling direct would be very profitable and provide for a good return on investment for Dentsply. (D.I. 450 at 2612, 2618) Assuming a price reduction of 10% below its suggested lab rate (which would come from the 35 margin points that Dentsply would regain from its dealers), Dentsply could lose nearly 14% of its tooth volume and still maintain its current profitability on tooth sales. (Id. at 2618-20; D.I. 454 at 3519-20; DX 460-A at DPLY 107402)

122. Dentsply's Chris Clark testified that Dentsply "did not expect to lose market share by going direct." (D.I. 450 at 2708) If anything, he agreed, Dentsply would "gain market share

by being able to sell directly and satisfy the needs of [Dentsply's] customers directly." (Id.)

123. Project Black Jack also identified dealer retaliation as an additional risk underlying a change to a direct distribution system. Retaliation would come in the form of dealers converting lab customers to non-Dentsply dental consumable products. In 1996, Dentsply sold through its dealers approximately \$300 million in dental consumables manufactured by Dentsply's divisions other than Trubyte. (D.I. 454 at 3479) Dentsply feared that dealers would do everything possible to convert this business in retaliation for Dentsply competing against them for tooth sales. (Id. at 3479-80)

124. Dentsply's concern reflects the experience of other manufacturers that have distributed one product through dealers and competed against those dealers with another product. Kevin Dillon, president of Leach & Dillon, testified that, based on his prior experiences, he faced this exact concern in selling Enigma teeth directly. (D.I. 457 at 4092-93)

125. In light of these risks and the needed infrastructure improvements, Dentsply management concluded that the Trubyte Division was not prepared to go direct in 1996-1997. (D.I. 454 at 3478, 3480)

126. Dentsply's largest dealer, Zahn Dental, has for years recognized the possibility of Dentsply taking its business

direct. (D.I. 420 at 554) Several times Zahn has asked for assurances from Dentsply's senior management that it would not take the business direct. (Id. at 555-57; DX 1590) "[E]ven today" Zahn recognizes the "possibility" that Dentsply might take the tooth business direct. (D.I. 420 at 557, 559; D.I. 455 at 3826-27)

127. Dealers like Zahn consider direct selling manufacturers as competitors. (D.I. 420 at 553) Zahn will not distribute a manufacturer's teeth and also compete with that manufacturer for tooth sales. (Id. at 549-53)

128. Although most of the risks associated with taking Trubyte teeth direct have been resolved, Dentsply believes one major issue remains. Dealer retaliation is still a real threat. (D.I. 454 at 3484, 3504) Dealer retaliation on the dental consumables side has become more daunting because now Dentsply sells approximately \$400 million in non-Dentsply dental consumables through its dealers, instead of \$300 million. (Id.) Mr. Miles testified that the threat of dealer retaliation requires that a decision on direct sales involve all of Dentsply's Divisions, not just Trubyte. (Id. at 3485)

b. Vita/Vident

129. Vita has distributed its teeth exclusively through a national dealer since at least 1968 by way of a contractual arrangement - first with Unitech from 1963-1984 and then Vident

since 1984. (D.I. 419 at 289-93) In its contract with Vident, Vita committed that it will not appoint any other distributor for Vita artificial teeth in the United States. (Id. at 290-91) In consideration for this commitment, Vident agreed that it would not distribute any products that compete with Vita products.

(Id.)

130. Vident's President considers the exclusivity agreement Vident has with Vita beneficial because it permits Vident's sales representatives to focus completely on the Vita line of products.

(Id. at 291-92)

131. Vident carries a large inventory of Vita teeth. (Id. at 329) Vident sells and distributes artificial teeth directly to dental labs from its Brea, California location. (Id. at 241-42, 248, 254, 288, 375-76; D.I. 453 at 3361-62) Vident offers overnight delivery from this single stock. (D.I. 419 at 329, 376) Like other dealers, Vident has a "long-standing relationship" with dental labs. (Id. at 342)

132. Vident sells artificial teeth through a sales force of 15-16 people and a telemarketing department whose responsibilities include Vita teeth. (Id. at 229-30, 296-98, 328) Vident also consigns teeth to dental labs. (Id. at 253, 346)

133. Vident differs from other tooth distributors in that Vident has appointed a number of sub-distributors, in effect

creating a network of sub-dealers. (Id. at 302-03) These firms purchase Vita teeth through Vident at prices established by Vident. (Id. at 327) None are permitted to buy teeth directly from Vita. (Id. at 302) According to Vident's President, Wayne Whitehill, this network currently encompasses 18 sub-dealers each with its own inventory of Vita teeth. (Id. at 303) From 1985 until 1990 Vident did not utilize sub-dealers. (Id. at 301-02)

134. Vident reserves the right in agreements with sub-dealers to sell to dental labs directly in the dealers' sales areas. These sub-dealers encounter direct competition from Vident for the sale of Vita artificial teeth. (Id. at 247, 348) Vident has a reputation for taking its sub-dealers' customers, and selling to them directly. (D.I. 457 at 4089-90) By doing so, Vident effectively has precluded its sub-dealers from selling to certain large labs, such as Dental Services Group ("DSG"). (DX 508 at 19/3) Mr. Whitehill admitted in his testimony that this hybrid distribution system has created conflict between Vident and the Vident sub-dealers. (D.I. 419 at 348)

135. The geographic distribution of Vident, its sub-dealers and their respective tooth stocks closely mirrors the tooth distribution locations of Zahn. (Id. at 328-332; DX 1588) In fact, Mr. Whitehill of Vident testified that Vident is just like Zahn in a lot of ways: both sell teeth to dental labs through a sales force; Vident sells teeth through its telemarketing

division; both Vident and Zahn distribute catalogs to dental labs promoting teeth; both carry large inventories of teeth; and both offer overnight delivery of teeth. (Id. at 328-330) Mr. Weinstock of Zahn agreed with the comparison. Like Zahn, Vident is a distributor and not a manufacturer of teeth; both Zahn and Vident purchase from a manufacturer and sell to somebody else. (D.I. 420 at 524-25) Additionally, both Zahn and Vident do not sell precious metals; thus a lab that needed to purchase teeth and precious metals could not purchase both products from either Zahn or Vident. (Id.)

c. Schottlander

136. Since it entered the United States tooth market in 2001, Schottlander has distributed its Enigma artificial teeth in the United States through Dillon Company, Inc. ("Dillon" or "Leach and Dillon"), a manufacturer and distributor of dental lab products located in Rhode Island . (D.I. 457 at 4079-88) Prior to entry, Schottlander and Dillon attempted to gain distribution for Enigma teeth through Dentsply dealers, but were unsuccessful. Schottlander decided to enter the market, nonetheless, with Dillon as its exclusive importer and distributor. (Id.)

137. As Schottlander's national distributor, Dillon sells and promotes Enigma artificial teeth directly to dental labs. (Id. at 4090-92) Dillon also provides consignments of Enigma teeth to dental labs. (Id.) Offering labs consignments is an

effective way to market teeth to dental labs, according to Kevin Dillon of Leach and Dillon. (Id.) Leach and Dillon uses consignments to compete effectively against Dentsply. For instance, Leach and Dillon used a consignment to displace Trubyte teeth that Zahn placed with Yankee Dental Lab. (Id. at 4087-91)

138. Additionally, Lincoln Dental Supply takes orders for Enigma teeth and has them drop-shipped from Leach and Dillon to the end-user lab. (D.I. 450 at 2785) Lincoln's sales of Enigma teeth doubled from 2000 to 2001. (Id. at 2788)

d. Other Manufacturers

139. Austenal/Myerson, ATI, and Universal all use dental dealers in addition to their respective direct sales. Some of Dentsply's largest dealers, Zahn, DLDS, and Atlanta Dental, all carry these brands. (D.I. 425 at 1342-44; D.I. 420 at 620, 622, 625; D.I. 425 at 1413, 1420; DX 1599; DX 1665; GX 160)

3. There Are Many Dealers Available To Manufacturers

140. There are hundreds of dental dealers in the United States. (D.I. 425 at 1313) Many of these dealers want to add artificial teeth as a product line. (D.I. 448 at 2581-82; D.I. 432 at 2190; D.I. 450 at 2776-77; D.I. 453 at 3343-44)

141. Dentsply has rejected many dealer applicants requesting to become authorized Trubyte tooth dealers during the relevant time period. (D.I. 448 at 2581-82) During Mr. Clark's tenure at Dentsply as Director of Sales and Marketing, 1992-1996, and then

as Vice President and General Manager, 1996-1998, he received at least one such inquiry each month. (Id.) Steve Jenson, the Trubyte Division's current Vice President and General Manager, testified that when he took over for Mr. Clark in 1997, he received 4-6 requests monthly. At the time of trial, according to Mr. Jenson, Dentsply received 1-2 requests each month from dental distributors seeking to become an authorized Dentsply dealer. (D.I. 432 at 2190; DX 1607; DX 1202, DX 1204)

142. There are no geographic or technological barriers that limit available dealers to particular areas in the country. (D.I. 432 at 2189) Dealers today have the capability to serve broad geographic areas. Dealers that testified at trial and in depositions on this issue demonstrated the capability and willingness to ship teeth anywhere in the United States. (D.I. 450 at 2773-74; D.I. 448 at 2429-30; D.I. 431 at 2061-62; D.I. 417 at 104-05; D.I. 420 at 481, 504, 641-42; D.I. 425 at 1429-30, 1438-39)

143. For example, Jeff DiBlasi, Vice President and Sales Manager of Lincoln Dental Supply ("Lincoln"), testified that Lincoln is a national, full service dental lab supply house headquartered in Cherry Hill, New Jersey. (D.I. 450 at 2756, 2758, 2762) Lincoln sells merchandise, equipment and artificial teeth. (Id.) Lincoln employs 35 people, 16 of whom call on accounts to sell products. (Id. at 2762) In 2000, Lincoln's

total sales in dollars exceeded \$9 million. In 2001, Lincoln's sales exceeded \$10 million. Lincoln projected its sales to exceed \$12 million in 2002. (Id. at 2759-60) Lincoln's customers are primarily dental labs, dentists with in-house labs and denturists (someone who performs the work of both a laboratory and a dentist). (Id. at 2761) Lincoln generates demand through its sales representatives, catalogue and sales flyers. (Id. at 2764-67; DX 1612, DX 1613)

144. Lincoln currently distributes two lines of economy artificial teeth - the New Shade Plus and Dual Form V-Line. It also sells the Enigma line of teeth. It has distributed artificial teeth for over 20 years and finds the sale of teeth profitable. (Id. at 2767-68) Lincoln has about 400 tooth accounts located throughout the United States. (Id. at 2773) Lincoln's customers for teeth are full service dental labs, denture centers and partial denture labs. (Id. at 2768-69) In 2001, Lincoln sold approximately \$800,000 worth of teeth, accounting for approximately 8%-10% of its total sales. According to Mr. DiBlasi, Lincoln's tooth sales are growing. (Id.) Lincoln started selling the Enigma line of teeth around 2000. Lincoln has approximately 50 customers for Enigma teeth located throughout the United States. (Id. at 2787) Leach and Dillon is Schottlander's exclusive United States distributor for Enigma teeth; Lincoln forwards orders for the teeth to Leach and

Dillon which drop-ships the teeth to the lab. (Id. at 2767-68, 2785-86)

145. According to Mr. DiBlasi, Lincoln is capable and available to sell other lines of artificial teeth, including premium lines of teeth. (Id. at 2775-76) Lincoln already sells its products to high-end labs. It is equipped to sell premium teeth to these customers as well. (Id.) Lincoln wants to expand its tooth offerings, with particular interest in Trubyte and Vita teeth. (Id. at 2776-77) Dentsply has not authorized Lincoln because Lincoln has not demonstrated that it can provide Dentsply with incremental business. (Id.) Mr. DiBlasi testified that he nearly reached an agreement with Vident to become a Vita sub-dealer, but backed out when he determined that Lincoln could only obtain a 20% net margin on teeth, rather than the standard 30%-35% margin that tooth dealers receive. (Id. at 2782-83)

146. Jack Silcox, Ltd. is one of "hundreds of small statewide dealers" available to sell artificial teeth. (D.I. 431 at 2045; D.I. 429 at 1810) Mr. Silcox testified at trial. Jack Silcox, Ltd. distributes artificial teeth, among other products, to dental labs and to dentists with in-house labs from its location in Central Ohio. (D.I. 431 at 2045-46) Jack Silcox, Ltd. has about 700 active and semi-active dental lab customers. (Id. at 2044-47) Most customers are located in Ohio, but Jack

Silcox, Ltd. sells to customers located throughout the United States. (Id. at 2059)

147. Jack Silcox, Ltd. began selling artificial teeth in the 1990s when ATI offered it a consignment of teeth. It has been selling artificial teeth ever since and has found it to be profitable. Jack Silcox, Ltd. currently distributes Justi, Dentorium, Coral and Universal teeth. (Id. at 2048-50) Mr. Silcox testified that he was in discussion with Vident in 1996-97 to become a sub-dealer of Vita teeth. (Id. at 2062-64) According to Mr. Silcox, an important part of that discussion was a commitment by Vident that it would not undersell Jack Silcox, Ltd. on Vita teeth. Mr. Silcox ended the discussion because he believed that a lab account was buying Vita teeth from Vident at a price close to what Jack Silcox, Ltd. would have had to pay Vident for the same teeth. (Id.)

E. Dentsply Innovation In Artificial Teeth

1. Dentsply's History Of Innovating Artificial Tooth Products

148. Throughout its history, Dentsply has introduced advancements in the artificial tooth market. (DX 119; D.I. 448 at 2525-26) Mr. Miles believes this "product innovation" has been "one of the most important things" that has allowed Dentsply to "initially develop and ultimately maintain" its market share. (D.I. 454 at 3447-48)

149. At the turn of the 20th century, one of the founding partners of Dentsply invented a way to fasten porcelain teeth to dentures. (Id. at 3448) After that, Dentsply proceeded to invent the first mould guide. (Id.) The mould guide was important because it allowed a lab technician to use "exact measurement[s]" when setting artificial teeth in a denture to ensure that the teeth would fit the patient's jaw line. (Id.) Dentsply later introduced fluorescence into its artificial teeth. Fluorescence makes artificial teeth appear more "lifelike" and "translucent." (Id. at 3448-49)

150. Dentsply's next major innovation was moving the artificial tooth market away from porcelain and towards plastic. (Id. at 3449) Dentsply later developed an occlusion system that made it easier to bring artificial teeth into articulation (the bite between the upper and lower teeth). (Id.)

151. In 1981, Dentsply invented IPN (interpenetrating polymer network), which increased significantly the wearability of plastic teeth and remains the "industry's standard worldwide" for premium artificial teeth. (Id. at 3449; D.I. 432 at 2106-08) Dentsply introduced IPN to improve the wear resistance of its product offering. (D.I. 489 at 2489; D.I. 432 at 2107) It was a significant advancement relative to conventional plastic teeth. (D.I. 448 at 2489-90; D.I. 432 at 2107) The "big difference" was that IPN "totally changed the physical properties while giving a

more aesthetic tooth.” (D.I. 432 at 2106) IPN lines have a strong surface hardness. (D.I. 425 at 1229-30) The Bioform tooth line was the first line Dentsply introduced in IPN material. Bioform IPN teeth are easy to set because they adhere well to the acrylic used as the denture base. (D.I. 432 at 2110)

152. Dentsply introduced TruBlend SLM in fall 1992. (D.I. 448 at 2488) This too was introduced as a “superior wear-resistant denture tooth.” (Id.) A study performed by Dr. W.H. Douglas of the University of Minnesota demonstrated that TruBlend SLM was 75%-90% more wear resistant than Ivoclar and Vita. (Id. at 2489-90)

153. With TruBlend SLM, Dentsply became the first tooth manufacturer to offer a lifetime guarantee on a tooth for stain resistance, wear resistance and for fracture. (DX 119; D.I. 448 at 2491) At the time, Dentsply provided a five-year guarantee on its IPN lines. Dentsply’s competitors did not offer any wear guarantees for artificial teeth. (D.I. 448 at 2491) Ivoclar now offers a seven-year warranty. In response, Dentsply extended its guarantee on IPN teeth to ten years. (D.I. 432 at 2128)

154. TruBlend SLM became the “tooth of choice” for a segment of dentists interested in “superior wear resistance.” (D.I. 448 at 2491-92) These users tended to be dentists who did more implants and high-end dentistry. (Id.) Thus, TruBlend became “more niched” in its acceptance, rather than mainstream. (Id.)

2. Development Of Dentsply's Portrait IPN Tooth Line

155. Christopher Clark, then the Trubyte Division's newly hired Director of Marketing, decided to figure out why TruBlend was a niche product. He commissioned market research to help him understand the brand equities that existed in Trubyte's product lines. (Id. at 2493-94) The first study, performed in fall 1993, was the image and attribute study. (Id.) Dentsply conducted a mail survey of 276 labs and asked the labs to evaluate the artificial teeth of Dentsply and its rivals for a number of attributes, including wear resistance, aesthetics, dentist demand, value and shade/mould selection. (Id.; GX 71) Trubyte IPN teeth "came in at or near the top of virtually all of those attributes." (D.I. 448 at 2494-95) In particular, dentists ranked IPN very highly for wear resistance, ease of setup, mould selection, and value for money. (Id.) Yet, Trubyte's Bioform and Bioblend IPN teeth ranked slightly below Vita and Ivoclar for aesthetics. (Id.; GX 71 at 4) Based on the overall results of the image and attribute study, Dentsply concluded that Trubyte had very strong brand equity. (D.I. 448 at 2495)

156. Within months after completing the initial survey, Dentsply conducted another survey isolated to measure just the aesthetics of Trubyte teeth. Dentsply tested its own teeth as well as its rivals on unmarked cards. (Id. at 2495-96) The

research showed Dentsply that Trublend SLM and Trubyte's economy teeth rated near the top for aesthetics, superior to Vita and Ivoclar teeth. (Id. at 2496) In contrast, Trubyte's mainstream premium plastic tooth, the Bioform IPN, rated below Vita and Ivoclar. (Id.; GX 71 at 3)

157. Dentsply conducted additional research on Vita shades. More specifically, Dentsply looked at whether it should offer a tooth line in Vita shades. (D.I. 448 at 2497) The Vita Classical Shade Guide is the most popular shade guide in the market for fixed prosthetics (crown and bridge work). (Id. at 2380, 2497) Mr. Whitehill testified that between 80-90% of dentists have Vita Classical Shade Guides in their offices and use it frequently. (D.I. 419 at 231-321; D.I. 448 at 2497) The Vita shade guide gained prominence only as recently as the early 1990s. (D.I. 417 at 98; D.I. 420 at 527) About 30-40% of dentists use the new 3D shade guide. (D.I. 419 at 233)

158. Dentsply discovered that while 21% of dentist prescriptions for dentures in 1993 were written using Vita shade designations, 73% of these prescriptions were cross-matched to Trubyte teeth. (D.I. 448 at 2498-99) The research further showed a fair degree of dissatisfaction with the shade cross-matching capability of Trubyte's Bioform line. (Id.)

159. Dentsply's additional Vita shade research revealed that dentist prescriptions for Vita shades in removable cases were

growing by 10% annually. (GX 71 at 6) Mr. Clark explained that in 1994 dentists were beginning to prescribe more Vita shades for the growing number of partial and combination cases. (D.I. 448 at 2498) To an increasing degree, denture wearers no longer needed to replace all of their natural teeth with a full denture because they were keeping their natural teeth longer. Partial dentures or combination cases are placed in the mouth next to a crown and bridge restoration, which is usually in a Vita shade. (Id.)

160. Dentsply concluded that the combination of the increase in Vita shades coupled with the disappointment that some labs expressed about Dentsply's cross-matching to these shades would "become[] more injurious as partials, implants and combination case usage grows." (GX 71 at 10) Dentsply believed it needed a new aesthetic tooth line in Vita shades to address the growing partials market. (D.I. 448 at 2497-2500)

161. Dentsply created a prototype of a new tooth. Research showed the aesthetics of the Trubyte prototypes to be superior to existing competitive teeth. (D.I. 454 at 3452; GX 71) For example, the Trubyte prototype rated first in aesthetics, over all other brands of teeth. (GX 71 at 3, 5; D.I. 448 at 2508-09) The studies "showed laboratories preferred [Trubyte's] prototype tooth to all other competitors." (D.I. 454 at 3452)

162. Once satisfied with the results of the market research, Dentsply senior management approved funding to construct a new line. (D.I. 448 at 2504-11) Within one year after initiating this technical work on the new prototype, Dentsply completed construction of Portrait, which it launched in fall 1995. (Id. at 2513) Dentsply named the tooth Portrait because the tooth was synonymous with the highly aesthetic image Dentsply was trying to create with the brand. (Id. at 2513-14)

163. Portrait improved aesthetics and, according to industry participants at all levels, matched the Vita shade guide even better than Vita's teeth. (D.I. 448 at 2335, 2381, 2513; D.I. 420 at 528)

164. Portrait was a commercial success. Dentsply sold in excess of \$3 million of Portrait teeth by the end of 1995, exceeding its target by over \$600,000. (D.I. 448 at 2521-22) In the first six to nine months, Dentsply also converted at least 75 lab customers to Portrait teeth. (Id. at 2522) Christopher Clark, former Vice President and General Manager of the Trubyte Division, believes Dentsply "hit the nail on the head" with its introduction of Portrait, having introduced the first highly-wear resistant, aesthetic Vita shaded tooth. (Id. at 2523)

165. Dentsply invested approximately two years and \$1.3 million in the development of Portrait. At the time, Trubyte's sister division, Detech, had just introduced a Vita shaded IPN

line in Germany called BioPlus. Dentsply considered and rejected the suggestion to bring BioPlus to the United States because of the higher manufacturing costs in Germany and BioPlus's European moulds. (D.I. 448 at 2500-01) The investment in Portrait included funding for tooth moulds, a CAD/CAM design station, shade guide tolling, upgrade of a rotary moulding unit and injection moulds to bring out the new tooth line. (Id. at 2510-12; DX 1572) Additionally, Dentsply invested in research and development and introductory marketing sales support. (D.I. 448 at 2512)

3. Dentsply's Recent Innovations In The Tooth Manufacturing Process

166. Aside from product innovation, Dentsply has invested in new manufacturing equipment to produce higher quality and lower priced artificial teeth. (DX 1596 at DPLY-A 200006, 200012) For example, around 1990 Dentsply developed the CAD/CAM concept for producing tooth moulds. Dentsply has continued to upgrade the CAD/CAM technology every three or four years. (D.I. 454 at 3454-55)

167. Dentsply spends more than \$1 million dollars annually maintaining and/or producing new moulds. (Id. at 3455) Dentsply also manufactures and designs new internal moulding machines, called rotary moulding machines. (Id.) The rotary machines have helped to automate the moulding process for teeth and have

reduced the cycle time by about one-half that of a traditional moulding table. (Id.)

168. Dentsply also has made innovations in the manufacturing process for teeth. The most recent example is the development of the automatic knockout, a robotic piece of equipment designed to remove artificial teeth from moulds. This innovation allows for significant reduction in cycle time for moulding teeth, thus lowering production costs. (Id. at 3456-57; DX 1596 at DPLY-A 20006; DX 1627 at DPLY-A 200388)

F. Dentsply's Dealer Criterion 6

1. Exclusive Dealer Policy

169. Dentsply's Dealer Criterion 6 ("Dealer Criterion 6") states, "[i]n order to effectively promote Dentsply/York products, dealers that are recognized as authorized distributors may not add further tooth lines to their product offering." (GX 31)

170. In 1993, David Pohl, Dentsply's National Sales Manager at the time, formalized Dentsply's existing criteria governing its dealers and reduced them to writing. (D.I. 431 at 1902-03; GX 31) The decision to create a finite set of written criteria was based, in part, on "numerous inquiries from companies seeking to become" dealers of Trubyte Division products. (GX 31 at DS22520) Dentsply distributed its written dealer criteria to all

its dealers by letter dated February 16, 1993. (GX 31 at DS22520)

171. In all, Mr. Pohl put ten criteria in writing. (GX 31 at DS22521) These criteria required dealers or prospective dealers to: (1) provide Dentsply with their financial statements; (2) place an initial minimal order of \$50,000 in teeth and \$10,000 in merchandise; (3) place initial orders of \$10,000 if they are merchandise-only dealers; (4) place orders via the Bar Code Entry Order System; (5) submit a written plan which indicates that incremental business will be gained by Dentsply; (6) not add further tooth lines to the product offering; (7) make payment within terms Dentsply specified; (8) resell Trubyte products only to end-users such as dental labs, dental schools and dentists; (9) report end-user sales by zip-code on a monthly basis; and (10) limit drop shipments to 10% per quarter. (GX 31 at DS22521)

172. Dentsply required dealers seeking initial recognition to comply with all ten criteria. (GX 31 at DS22520) Dentsply required its existing dealers to comply with Dealer Criteria 6 through 10. (GX 31 at 22520) Though Mr. Pohl reduced Dealer Criterion 6 to writing, he did not formulate the policy, does not know why it was adopted in the first place, and does not know when the policy started within Dentsply. (D.I. 431 at 1902-03)

173. Mr. Miles, who served as Dentsply's President and Chief Operating Officer in 1990, testified that he does not know who came up with the idea for Dealer Criterion 6, but knows only that it originated within the Trubyte Division. (D.I. 454 at 3509) Mr. Weinstock of Zahn testified that Dentsply did not have a policy similar to Dealer Criterion 6 in place in 1982-83. (D.I. 417 at 141) According to Mr. Weinstock, the absence of such a policy in 1982-83, when Zahn first became a Dentsply dealer, is the reason Zahn is able to carry so many competitive tooth brands today. (Id.)

174. In 1988, Dentsply terminated Frink Dental of Elk Grove, Illinois as both a tooth and merchandise dealer when it began selling Ivoclar teeth. (D.I. 420 at 700-01; D.I. 429 at 1720)

175. In publishing Dealer Criterion 6 in February 1993, Dentsply expressly stated its refusal to do business with dealers that added its rivals' tooth lines. (GX 31) Dentsply permitted dealers to keep selling any competing brands, commonly called "grandfathered" brands, they were carrying as of the date Dealer Criterion 6 was formally announced. (D.I. 457 at 3942)

176. The express purpose of Dealer Criterion 6 is to "block competitive distribution points" and "[t]ie up dealers." (GX 171 at DPLY-A 004360; D.I. 450 at 2608)

177. In at least the recent past, no dealer has agreed to walk away from its Trubyte tooth business to take on a competitive line. (D.I. 432 at 2287; D.I. 450 at 2631)

2. Dentsply's Agreements with New Dealers

178. On several occasions, Dentsply has required dealers to drop some, or all, competing tooth brands in order to obtain the Trubyte tooth line in the first place.

a. Jan Dental Supply Company (Vita, Kenson, Dentoium, Justi)

179. In 1992, Dentsply recognized Jan Dental in exchange for its agreement to stop selling Vita, Kenson, Dentorium, and Justi teeth. (GX 24, 26; D.I. 431 at 1908-1910)

b. Darby Dental (Vita, Odipal, Darby's House Brands)

180. Dentsply authorized Darby as a dealer upon Darby's agreement not to add the Vita tooth line. (GX 82 at DS 015663; D.I. 450 at 263-36)

181. Darby had lost its Trubyte tooth line when it purchased a company called Nordent, which sold Nordent's house brands of competitive teeth. (D.I. 457 at 4102-03, 4112-13) Darby wanted to regain the Trubyte tooth line, and Mr. Nordhauser tried several times to negotiate with Dentsply, but Dentsply demanded that Darby give up all its teeth other than Dentsply in order to get the Dentsply line back. (Id. at 4117, 4120) At one point Mr. Nordhauser offered to give up selling a number of brands of

teeth, including, inter alia, Justi, Myerson, and Kenson, but Dentsply still refused to re-open Darby as a dealer. (Id. at 4119-21, 4125-27, GX 434) When Darby sued Dentsply to get the Dentsply line back, Dentsply settled the dispute by allowing Darby to sell Trubyte teeth through Kent, a dental dealer that Darby had purchased and that sold Trubyte teeth. (D.I. 457 at 4113, 4115) But even though Darby owned Kent and Kent sold Trubyte teeth, this was ultimately an unsatisfactory arrangement for Darby. Kent was smaller and a separate unit from Darby, and Darby was not permitted to sell Trubyte teeth through its several locations, or advertise or promote them on Kent's behalf in any way. (Id. at 4115-16, 4130-31)

182. When Darby made plans to take on the Vita tooth line, however, Dentsply finally agreed to reinstate Darby. (D.I. 457 at 4127-32) Dentsply and Darby agreed that Darby would regain the Trubyte tooth line in return for agreeing to the following conditions: (1) Darby agreed that it would not carry the Vita line; (2) Darby agreed to cancel its plans to sell, and its initial order for, the Odipal line of teeth; (3) Darby agreed to discontinue selling all teeth priced higher than \$1.75 per card within six months and, as a result, Darby stopped carrying and selling Kenson, Justi, Ortholux, and Duratone and every other Darby house brand that was priced above the sub-economy level; (4) Darby agreed not to advertise its remaining tooth lines as

Dentsply's competitors or promote them in the same printed or telephone specials because Dentsply did not want Darby to compare Trubyte teeth to Darby's in any way, so Darby would not push its teeth in a flyer at the same time it pushed Dentsply's; and (5) Darby agreed that it would "conduct business in a manner consistent with" Dealer Criterion 6. (D.I. 457 at 4106, 4121-25, 4131-35, 4159-60; GX 82)

c. DTS (Ivoclar, Vita)

183. DTS was a laboratory dealer with locations in New Hyde Park, New York; Kansas City, Missouri; Denver, Colorado; and Orlando, Florida. (D.I. 423 at 1144-45; D.I. 453 at 3377) DTS had been a Dentsply dealer selling Trubyte teeth and merchandise since the mid-1980s, but in 1990 Dentsply terminated DTS as a tooth dealer. (D.I. 423 at 1147-49; D.I. 457 at 3405) In approximately 1991, DTS began selling Vita and Ivoclar teeth at all its locations, and between 1991 and 1995 sales of Vita and Ivoclar teeth increased at all DTS locations. (D.I. 423 at 1149-56; D.I. 453 at 3400; D.I. 419 at 259-60; D.I. 423 at 1002; GX 19)

184. In subsequent negotiations over those years regarding reinstating DTS as a dealer, Dentsply consistently maintained that, as a condition of reinstatement, DTS would be required to stop selling Vita and Ivoclar teeth. (D.I. 423 at 1157; D.I. 453 at 3407-09)

185. DTS finally reached an agreement with Dentsply at a meeting in York, Pennsylvania in June 1995. (D.I. 423 at 1157-59) Under that agreement, in return for being reinstated as a dealer, DTS dropped Vita and Ivoclar teeth from the Kansas City, Denver, and Orlando locations, and in New York, DTS agreed to remove the Ivoclar line and to limit its Vita sales to existing customers in the Northeast. (D.I. 423 at 1159-65; GX 93 at DPLY-A 18372-79; GX 158 at DS 015783-91) One of Dentsply's "considerations" in recognizing DTS was that it would "fully eliminate the competitive threat that [DTS locations] pose by representing Vita and Ivoclar in three of four regions." (GX 86 at DS 015805-06)

3. Dentsply Has Required Dealers to Drop, or Not Add, Competing Tooth Brands

186. In enforcing Dealer Criterion 6, Dentsply has done more than announce its intent to terminate a dealer found to be in violation. It has monitored compliance with the criterion. (D.I. 432 at 2290) When a violator is found, Dentsply's practice has been to talk to the dealer, give them an opportunity to comply, and try to persuade the dealer to comply. (D.I. 429 at 1719)

a. Frink Dental (Ivoclar, Myerson)

187. In 1988, Frink was a dealer selling Trubyte teeth. (D.I. 420 at 673) Cavanaugh decided to start selling Ivoclar's

teeth because he saw "advantages with the aesthetics of them, anatomical detailing of them." (Id. at 689)

188. When Dentsply found out about this, three of Dentsply's high-level executives, including its President Burt Borgelt, flew out to Cavanaugh's Illinois office to talk him out of taking on the Ivoclar tooth line. (Id. at 694-95)

189. When Cavanaugh went forward with his plan to sell Ivoclar teeth, he was terminated not only as a tooth dealer but as a dealer of other Trubyte merchandise as well. (Id. at 700-01) Dentsply terminated Frink as a merchandise dealer "to make a strong point." (D.I. 429 at 1720)

190. Dentsply then started threatening Cavanaugh with the loss of even more business. Cavanaugh heard from Dentsply's Caulk and Ash Divisions that Dentsply was "very unhappy" with him and that he might be terminated as a dealer from those other divisions as well. (D.I. 420 at 708-10)

191. Other dealers provided teeth and other Trubyte products to Frink at cost after Dentsply terminated Frink. (D.I. 420 at 701-05) For example, after Frink was cut off by Dentsply, Atlanta Dental sold Trubyte teeth to Frink for around a year. (Id. at 589-94, GX 1) Atlanta Dental charged Frink the same price that it paid Dentsply and did not make any profit from selling Trubyte teeth to Frink. (D.I. 420 at 593) Atlanta Dental stopped selling Trubyte teeth to Frink when Dentsply

threatened to pull the Trubyte tooth line from Atlanta Dental. (Id. at 595-98) Over time, Dentsply tracked down all but one of the dealers and threatened to cut them off if they continued to supply Frink and, as a result of these threats, these dealers stopped supplying Frink. (Id. at 705-07)

192. After consulting with his sales force, Mr. Cavanaugh gave up the Ivoclar tooth line, and when he told Mr. Brennan he was dropping Ivoclar and returning to Dentsply, Mr. Brennan told him he would be re-established as a dealer from the day Frink stopped selling Ivoclar. (Id. at 712-14)

b. Zahn Dental (Ivoclar, Enigma, Hereaus Kulzer, Vita)

193. In 1988, Norman Weinstock of Zahn Dental met with Kevin Dillon, then the President of Ivoclar, and discussed the possibility of Zahn taking on the Ivoclar tooth line and becoming Ivoclar's national dealer, with Frink Dental servicing the Midwest. Weinstock initially felt Zahn would take on the line. (D.I. 417 at 149-51) However, Bob Brennan, then head of the Trubyte Division, and Gordon Hagler, then Sales Manager, told Weinstock about the Dentsply policy later embodied in Dealer Criterion 6, and stated that if Zahn took on the line of Ivoclar teeth, Dentsply would not allow Zahn to distribute Trubyte teeth. In several telephone calls and personal meetings over a two-month period, including a very heated discussion with Hagler, Weinstock learned that Dentsply would not allow Zahn to take on a competing

product line. Dentsply management explained that they felt they had to protect their business and were not going to allow Zahn or anybody else to take on competing premium lines of teeth. (Id. at 149-52)

194. After these discussions -- and after he saw how unfavorably Ivoclar's \$1.2 million in projected U.S. sales compared to Zahn's annual Trubyte tooth sales of around \$8 million -- Weinstock decided to keep his Trubyte line rather than replace it with the much smaller amount of Ivoclar sales. Consequently, Weinstock told Mr. Dillon about Dentsply's threat, that Zahn could not afford to lose the Trubyte line, and that Zahn would not carry Ivoclar teeth. (Id. at 152-53; D.I. 423 at 1001)

195. In mid-2000, Mr. Dillon of Leach & Dillon asked Norman Weinstock if Zahn would be willing to bill lab customers for Enigma teeth if Leach & Dillon handled shipping the teeth to customers. (D.I. 417 at 171-74; D.I. 432 at 2295-96) Mr. Dillon did not ask that Zahn simply carry Enigma teeth, because he was familiar with Dentsply's treatment of Frink. (D.I. 417 at 171-74) Mr. Dillon requested that for Enigma orders that Leach & Dillon received from customers that also dealt with Zahn, Zahn bill the customer so that Leach & Dillon would not have the credit function, and the teeth would be shipped from Leach &

Dillon's inventory, not from Zahn. (Id. at 171-74; D.I. 432 at 2296-97)

196. Knowing the Dentsply criteria, Mr. Weinstock felt that even simply billing for Enigma teeth would be an extremely gray area, and he turned Dillon down. Weinstock also instructed Zahn employees to make sure that Zahn didn't get involved in doing this because he did not want to jeopardize Zahn's relationship with Dentsply -- and sales of \$22-23 million in Trubyte teeth -- for a company that Weinstock believed would not generate more than one hundred or two hundred thousand dollars a year in teeth sales. (D.I. 417 at 174-75) Weinstock's concerns were valid, as Dentsply viewed the proposal as a violation of Dealer Criterion 6. (D.I. 432 at 2296-97)

197. In April 2001, Heraeus Kulzer executives George Romero, Regional Manager, and Warren Rogers, National Sales Manager, contacted Mr. Weinstock to see if Zahn would handle their tooth lines. In the fall of 2001, Horst Becker of Heraeus Kulzer also spoke with Zahn's president and its director of marketing about Zahn carrying Heraeus Kulzer teeth. (D.I. 429 at 1818-20; D.I. 417 at 177-80) Zahn turned down these requests, because it had agreed with Dentsply not to take on competitive teeth and because it did not think it was a good business move to jeopardize its \$22-23 million in sales of Trubyte teeth in return for "maybe

hundreds of thousands" of dollars in sales of these new lines.
(D.I. 417 at 177-80)

198. About three years ago, and at almost every dental meeting since, including in March 2002, Vident has approached Zahn about carrying Vita teeth. Brian Binnie, Vident's National Sales Manager, and Vident's General Manager, who came out and spent a half day at Zahn in Melville, New York, have spoken with Zahn, but Mr. Weinstock has declined to even discuss taking on Vita teeth, given Zahn's agreement with Dentsply not to sell additional tooth lines. Mr. Weinstock understands that Zahn is not allowed to take on any tooth lines that it did not have when Zahn took on the Trubyte line back in 1982 or 1983, and that the only type of teeth Zahn can take on is a sub-economy tooth, which is not something that Dentsply sells. This agreement prevents Zahn from adding additional teeth in competitive lines as long as Zahn carries Trubyte teeth. As a result, if Zahn took on the Vita line, it would be giving up \$18 million of Trubyte tooth sales for a company's line that sells only a million dollars. (D.I. 417 at 180-85) Mr. Weinstock testified, "I don't think anybody in their right mind would opt for taking a million dollars in sales opportunity versus giving up \$18 million in sales." (Id. at 184)

c. Atlanta Dental Supply (Vita)

199. In the early 1990s Atlanta Dental considered adding Vita teeth to its product offering after Betsy Harris, manager of Atlanta Dental's tooth department, received requests from current and potential customers asking whether she could carry Vita teeth. (D.I. 420 at 599-600, 615) Ms. Harris believed that these customers were interested in buying Vita teeth from Atlanta Dental rather than from Vident in California because Atlanta Dental sold them locally. (Id. at 599-600) Ms. Harris had initial discussions with Vident about taking on the Vita line, and they planned further discussions, after Ms. Harris had a chance to review Vident product information and a sample contract. (Id. at 601-03; GX 296) Ms. Harris later met with Vident representatives, and they decided to draw up a contract for Atlanta Dental to acquire a \$30,000 stock of Vita teeth. (Id. at 603-04)

200. Ms. Harris then talked to Bill Yacola of Dentsply to find out what the consequences would be if Atlanta Dental put in a competitive line -- in particular, because of her experience with Frink, Ms. Harris was concerned that she ran the risk of losing her Trubyte line. (Id. at 606-07) After checking with others at Dentsply, Mr. Yacola replied that if Atlanta Dental took on Vita teeth Atlanta Dental would no longer be able to sell Trubyte teeth. (Id. at 607-08)

201. Atlanta Dental decided not to put in the Vita line, in order to avoid jeopardizing its Trubyte business. (Id. at 608-10) At that time, its sales revenue for artificial teeth was one million dollars a year, and Trubyte teeth comprised 90% of that revenue. (Id. at 615) "I had no way of knowing what our Vita sales would be at that time, so losing that much business was -- this is my livelihood, this is what I do, and I didn't want to jeopardize my company or myself in that way." (Id. at 616)

d. DLDS (Universal, Vita)

202. DLDS sought to add Universal and Vita teeth in 1994 to fulfill customer demand. (D.I. 425 at 1423-24) However, a week after DLDS introduced the teeth to its customers, Dentsply informed DLDS that if it carried the teeth it would lose the entire Trubyte line of teeth and merchandise. (Id. at 1426-27) As a result, DLDS did not take on the Universal and Vita teeth. (Id.; GX 58; GX 66)

e. Marcus Dental (Kenson)

203. In the spring of 2000, Marcus Dental, a Dentsply dealer in Minneapolis, had taken on the Kenson tooth line because of an out of stock problem with Trubyte teeth. (D.I. 432 at 2291) For several months during 2000, Dentsply was having problems supplying teeth to dealers. (Id. at 2292) The service problems started in the spring but continued into October 2000, and in August 2000 Dentsply's success rate for fulfilling one-day

shipments dropped to an all-time low of 80.5% (Dentsply's goal was 97%). (Id. at 2292-93) That rate of order fulfillment by Dentsply caused concern among dealers such as Marcus. (Id. at 2292) Due to these problems with Dentsply's service levels, some of Marcus' lab customers had switched to Kenson teeth and Marcus was reportedly trying to retain its customers by selling them Kenson teeth. (Id. at 2291-92) Dentsply, however, enforced Dealer Criterion 6 against Marcus, and Marcus returned the Kenson teeth to Myerson. (Id. at 2293; D.I. 425 at 1314-15)

f. Thompson Dental (other tooth lines)

204. In his November 2000 monthly report to his superior, Mr. Roos, Mr. Jenson reported that Thomson Dental, a Dentsply dealer, was exploring competitive tooth lines. (D.I. 432 at 2297) Mr. Uthus, Trubyte's Director of Sales, explained Dentsply's "agreement" with Thompson on competitive teeth and faxed Thompson a copy of Dealer Criterion 6. (Id. at 2297-98)

g. Patterson Dental (other tooth lines, Kenson)

205. Dentsply discouraged Patterson's consideration of adding a rival line in fall 2000, when Patterson inquired about carrying competitive tooth lines. (Id. at 2298) Mr. Jenson told Mr. Easty of Patterson that the Dealer Criterion 6 would be enforced. (Id. at 2298)

206. In 2001 Patterson bought a Dentsply dealer in Los Angeles named Guggenheim, which carried Kenson teeth. Patterson

itself did not carry Kenson teeth, and so Dentsply asked Patterson to comply with Dealer Criterion 6 and drop the competing tooth lines from the Guggenheim locations. (D.I. 432 at 2289-90) Patterson complied and dropped the Kenson teeth that Guggenheim had been selling. (Id. at 2291)

h. Darby (Vita)

207. Darby acquired DTS in 1998. (D.I. 457 at 4101) As a part of that acquisition, Darby acquired the Vita tooth line that DTS had been selling out of its New York office. (Id. at 4104-05)

208. Dentsply considered Darby's acquisition of this Vita tooth stock to be a violation of Dealer Criterion 6. (D.I. 432 at 2289) As Sidney Nordhauser of Darby Dental testified, "[Dentsply] made it very clear, when we bought DTS, that we cannot promote or give to the rest of our customers Vita teeth. We can only, for a very short period of time, sell it to the customers we have." (D.I. 457 at 4106, 4135-37, 4150-51) Even though Dentsply had earlier permitted DTS to keep the Vita tooth stock in New York, and Darby agreed not to expand the Vita business beyond the customers already buying Vita teeth, Dentsply still insisted that Darby drop the Vita tooth line. (Id. at 4139)

209. Because Darby did not immediately agree to drop the Vita tooth line, lengthy negotiations ensued. Chris Clark and

Steve Jenson of Dentsply both met with Sidney Nordhauser of Darby Dental, then had a separate telephone conversation with Darby's Rita Acquafredda. (GX 130 at DARBY 001120-21) In a November 5, 1998 follow-up letter to Nordhauser, Clark and Jenson stated that Dentsply "want[ed] to work with Darby" and agreed to give Darby a six-month transition period to work the Vita tooth stock out of the New York location. (Id.) This period lasted more than six months, however, because at the time of Mr. Nordhauser's deposition in December 1999 Darby was still selling Vita teeth. (D.I. 457 at 4106-07)

210. Eventually, Darby complied with Dealer Criterion 6 and dropped the Vita tooth stock in New York. (D.I. 432 at 2289-90)

i. Pearson Dental Supply (Vita)

211. In 1993 or 1994, Pearson Dental Supply of Sylmar, California, displayed Vita teeth at its tooth counter after a visit from the local Vident sales rep. (D.I. 425 at 1386) When Dentsply found out, it informed Pearson that it would lose the Trubyte tooth line if it continued to sell Vita teeth. As Keyhan Kashfian, the president of Pearson Dental testified, "based on the recommendation [of the] representative of Dentsply, we sent them a letter that, you know, we are not going to carry Vita and, therefore, the episode ended by returning the tooth consignment to Vita Company." (Id. at 1387)

4. Dentsply's Exclusive Dealing Practices

212. Dealers selling Trubyte teeth are independent businesses, selling under their own name and not Dentsply's, and offering thousands of different products that are made by hundreds of different manufacturers. (GX 160; D.I. 417 at 102; D.I. 425 at 1410-11)

a. Both Dentsply and the Dealers Selling Trubyte Teeth Consider Dealer Criterion 6 to Be an Agreement Between Them

213. Dentsply considers Dealer Criterion 6 to be an agreement between Dentsply and dealers selling Trubyte teeth. As acknowledged by Chris Clark, who was Trubyte's General Manager for many years, a dealer must "agree to the Trubyte dealer criteria" in order to be recognized as an authorized tooth dealer. (D.I. 448 at 2578; D.I. 420 at 692-93; D.I. 432 at 2296-98)

214. Dealers consider Dealer Criterion 6 to be an agreement as well. (D.I. 417 at 179; D.I. 453 at 3432; D.I. 448 at 2475-76)

b. Dentsply's Reputation in the Industry

215. Dentsply has had a reputation among many labs and dealers in the industry of being nonresponsive to the concerns of dealers or labs.

(a) In 1993, Dentsply was viewed as "dictatorial and arrogant" among most of its lab customers. (DX 653 at DS 005170)

(b) In a June 1995 memorandum Ronald Zentz wrote that there was a feeling among Dentsply customers "that Dentsply does not care much about them, except when they will be placing their next order." (GX 91 at DPLY-A 053290)

(c) In a March 1997 Project Max/Black Jack document written by Dentsply's James Mandell and Chris Clark, it was noted that the Ceramco and Trubyte Divisions were viewed differently - while Ceramco was "user friendly," Trubyte was seen as the "evil empire." (GX 108 at DPLY-A 110081)

(d) Similarly, dealers selling Trubyte teeth testified that Dentsply, in imposing Dealer Criterion 6 upon them, exerts too much control over the products they are able to sell. (D.I. 420 at 593-94; D.I. 417 at 156-57)

5. Dentsply's Intent Has Been Exclusionary

216. The express purpose of Dealer Criterion 6 has been exclusionary - to block competitors from dealers selling Trubyte teeth by tying up those dealers. In a document entitled, "Sales/Distribution Principles for Cash Cow Business," Chris Clark identified Dealer Criterion 6 as one of five principles for running the Trubyte tooth business. Clark's "reiteration" of Dealer Criterion 6 stated:

- Block competitive distribution points. Do not allow competition to achieve toeholds in dealers
- Tie-up dealers
- Do not "free up" key players

(GX 171 at DPLY-A 004360; D.I. 450 at 2608)

217. According to Gordon Hagler, Trubyte's Director of Sales and Marketing from 1989-93, the sole purpose of the policy was to exclude Dentsply's competitors from the dealers:

Solely. You don't want your competition with your distributors, you don't want to give the distributors an opportunity to sell a competitive product. And you don't want to give your end user, the customer, meaning a laboratory and/or a dentist, a choice. He has to buy Dentsply teeth. That's the only thing that's available. The only place you can get it is through the distributor and the only one that the distributor is selling is Dentsply teeth. That's your objective.

(D.I. 423 at 1178-84)

218. Dentsply's exclusionary intent is evident from its termination of Trinity Dental.

(a) In 1993, Trinity Dental, located in Geneva, Illinois, was a dealer selling Trubyte merchandise, but not teeth. Trinity decided to add the Vita tooth line. As a result, it was terminated as a Trubyte merchandise dealer. (D.I. 431 at 1903-06; GX 36)

(b) This interpretation of Dealer Criterion 6, that it prohibited merchandise-only dealers from adding competing tooth brands, was in effect for at least the 2 ½ years in which David Pohl was Dentsply's National Sales Manager. (D.I. 431 at 1901, 1906)

(c) Dentsply's alleged "free riding" justification for Dealer Criterion 6 cannot justify the termination of Trinity,

given that Trinity was not a Trubyte tooth dealer. (D.I. 457 at 3976; D.I. 429 at 1888) Nor is there any evidence that preventing Trinity from selling competitive brands of teeth would somehow enhance its ability to sell Trubyte merchandise. (D.I. 429 at 1707)

219. Dentsply's intent is also apparent from its use of Trubyte merchandise as additional leverage in coercing dealers to agree not to add competing tooth brands.

(a) When terminating Frink Dental for adding the Ivoclar tooth line, Dentsply terminated Frink as a Trubyte merchandise dealer as well. It did so not because Dentsply believed that Frink would not be an effective merchandise dealer after adding the Ivoclar tooth line, but because it "wanted to make a strong point." (D.I. 429 at 1720)

(b) Similarly, when DLDS sought to add the Universal and Vita tooth lines, Dentsply threatened it with the loss of not only the Trubyte tooth line but its merchandise business as well. (D.I. 425 at 1426-27)

220. In October 1992, Dentsply recognized Jan Dental as a Trubyte tooth dealer for exclusionary reasons. In order to obtain the Trubyte tooth line, Jan was required to stop selling Vita, Kenson, Dentorium and Justi teeth. (GX 24, 26) As David Pohl wrote in an October 6, 1992 memo to his superiors, Robert Brennan and John Weiland, "[o]pening Jan with teeth will increase

our presence within the laboratory market and eliminate several competitors." (GX 26 at DS 016474; D.I. 431 at 1909)

221. Darby Dental was recognized as a tooth dealer in the mid-1990s in order to block Vita from a competitive distribution point.

(a) In June 1994, Dentsply turned down Darby's request to sell Trubyte teeth, stating that it had adequate distribution in Darby's area. (GX 63) Indeed, at that same time, Dentsply internally concluded that it did "not need additional distribution points." (GX 77 at DS 015926)

(b) Shortly after receiving this letter, Darby was visited by its local Vident representative. As a result, Sidney Nordhauser, the General Manager for Darby Dental, became interested in selling Vita teeth. (D.I. 457 at 4128)

(c) When Dentsply learned of Darby's interest in selling Vita teeth, its position changed. Mr. Nordhauser told the local Dentsply sales rep, Holly DeFalco, that he was "seriously considering taking on Vita teeth." (Id. at 4129-30)

In response, Ms. DeFalco said:

'Wait a minute,' and she got on the phone right there and then, and I am not sure who she spoke to, and she said, 'Don't do anything, we will see you next week,' or something like that. So we did nothing, we waited, and their people came to us and it was a different story.

(Id.) Whereas during the earlier discussions, Dentsply "really didn't listen to us too much," these negotiations were different

because of "the fact that we had Vita thrown in. It made a difference." (Id. at 4118, 4130)

(d) Dentsply then authorized Darby as a Trubyte tooth dealer upon Darby's agreement not to add the Vita tooth line. (GX 82 at DS 015663; D.I. 450 at 2636)

(e) A December 12, 1994 memo written by Chris Clark, Director of Sales and Marketing for the Trubyte Division, shows that Dentsply's primary motivation for recognizing Darby was to block Vita from a key competitive distribution point. Clark was concerned about Vita gaining "a major distribution point (a third major one after DTS and Lincoln)." (GX 77 at DS 015926) Clark was also concerned about the fact that Kent, an affiliate of Darby, was already a Trubyte tooth dealer and that if Darby added Vita teeth, "our dealer criteria becomes a sham for others to poke at." (Id.) However, the "key issue" for Clark was "Vita's potential distribution system. They're having a tough time getting teeth out to customers. One of their key weaknesses is their distribution system." (Id. at DS 015927)

(f) Robert Brennan, Clark's boss who received this memo, agreed during his testimony that Darby was recognized as a tooth dealer "because it prevented Vita from getting a dealer." (D.I. 429 at 1743) Brennan believed that Darby would have increased Vita's market share at Dentsply's expense. (Id. at 1743-44)

222. In 1995, Dentsply recognized DTS as a tooth dealer to “fully eliminate the competitive threat they pose by representing Vita and Ivoclar in three of four regions [in which DTS operated].” (DX 86 at DS 015805) DTS was a lab-focused dealer that had taken business away from Dentsply by selling Vita and Ivoclar teeth. (D.I. 450 at 2639-40) Dentsply’s regional manager in the Midwest was concerned that Dentsply would have to compete even harder in that region if DTS was not recognized: “Should our decision be not to open DTS, I will have significant new competition to allocate time and resources against.” (Id.)

223. The recognition of Jan Dental, Darby and DTS in the early-to-mid-1990s is significant in light of Robert Brennan’s, Trubyte’s General Manager from 1986 to 1996, belief that Dentsply had more dealers than needed to properly distribute its teeth. (D.I. 429 at 1710)

G. Pricing, Profit Margins And Market Share In The Artificial Tooth Market

1. Pricing

224. Since 1996, the first full year of its introduction, Trubyte’s Portrait tooth line consistently has been priced approximately midway between Vita’s and Ivoclar’s premium tooth lines. (DX 511; DX 512; DX 513) In 1996, the lab price of an anterior 1x6 tooth card for Vita Vitapan was \$29.85, Trubyte’s Portrait was \$26.95, and Ivoclar Vivodent PE Hardened Acrylic was \$24.05. In 1997, Vita Vitapan was priced at \$30.45, Trubyte’s

Portrait was priced at \$27.75, and Ivoclar Vivodent PE Hardened Acrylic was priced at \$25.05. In 1998, Vita Vitapan was priced at \$31.65 and Trubyte's Portrait was priced at \$28.45. In 1999, Vita Vitapan was priced at \$32.91, Trubyte's Portrait was priced at \$29.15, and Vivodent PE Hardened Acrylic was priced at \$26.60. (DX 511; DX 512; DX 513)

225. Between 1992 and 1995, prior to Dentsply's introduction of Portrait, Trubyte's Bioform IPN was priced closely to Vita's and Ivoclar's hardened plastic teeth. (DX 511; DX 512; DX 513) In 1993, the suggested lab price for a Bioform IPN 1x6 anterior tooth card was \$21.05, which was just slightly above Ivoclar Vivodent PE 1x6 anterior at \$20.76, and below Vitapan 1x6 anterior at \$21.59. (DX 511; DX 512; DX 513) Since 1996, subsequent to the introduction of Portrait, Bioform IPN has been priced at parity with Ivoclar's comparable Vivodent PE tooth line, and between \$4.00 and \$5.00 below Vita's comparable Vitapan tooth. (DX 511; DX 512; DX 513)

226. William Turner, who was the Senior Product Manager for Trubyte's tooth products, described the process by which he believed Dentsply established prices in the market: "As the price leader, Dentsply usually sets the prices in the marketplace and everyone else contributes or competes under that broad umbrella." (D.I. 420 at 401-03, 456) The current General Manager of the Trubyte Division, Steve Jenson, testified that

Dentsply's pricing of its premium teeth offers an opportunity for other tooth brands to come in underneath what they would consider the right price. (D.I. 432 at 2217-18)

227. In setting prices, Dentsply consults the consumer price index for medical and dental materials, or possibly other indexes of inflation. (D.I. 420 at 456-57) Since 1997, Dentsply has typically increased its prices by a point, to a point and a half, over inflation. (Id. at 457-58)

228. Mr. Turner believes Dentsply has not set its own prices by referencing the prices of competitors. (Id. at 456) Competitors' prices have been consulted "just to be aware what the marketplace was doing." (Id.)

229. Dentsply has not reacted with lower prices when others have not followed its price increases. As Myerson's president James Swartout testified, Myerson's prices have remained unchanged in the past two to three years. And yet Dentsply has not "changed [its] behavior because of my failure to raise prices." (D.I. 425 at 1296)

230. Dentsply has had a reputation for aggressive price increases in the market. (D.I. 450 at 2650) In his July 1993 monthly report to David Pohl, Regional Sales Manager Edward Jilek stated that, "we need to moderate our increases - twice a year for the last few years was not good!" (GX 42 at DS 024274) This reputation persists today. Certain dealers selling Trubyte

teeth, including Dentsply's largest dealer Zahn Dental and its third-largest Darby Dental, perceive that Dentsply's prices create a high-price umbrella. (D.I. 432 at 2219-20)

2. Profit Margins

231. Mr. Clark introduced "cash cow" into Dentsply's lexicon to describe the Trubyte Division. Mr. Clark learned the term cash cow while attending business school. (D.I. 450 at 2605; DX 1595) The term is derived from a Boston Consulting Group ("BCG") analysis categorizing businesses utilizing two criteria: (1) relative growth of the market in which a business operates; and (2) the business's market share relative to competition. (D.I. 450 at 2605; DX 1595) Under the BCG analysis, a business that has achieved a relatively high market share in a low- or no-growth market is deemed a "cash cow." (D.I. 450 at 2606; DX 1595) Mr. Clark testified that, in accordance with his understanding of the BCG analysis, firms invest in cash cow businesses in order to milk them so that they continue to give profits back to the corporation. (D.I. 450 at 2606)

232. Mr. Clark analyzed the Trubyte Division relative to market conditions, and identified the "basic parameters upon which [the Trubyte Division] need[ed] to operate in order to continue to be as successful" as it had been. (Id. at 2607) Mr. Clark reduced these parameters to writing in a memorandum entitled "Sales/Distribution Principles for Cash Cow Business,"

which he used in connection with his quarterly operations review with John Weiland, Senior Vice President of Dentsply's North American operations. (GX 171; D.I. 450 at 2607) In the memorandum, Mr. Clark identified, among others, the following two principles necessary to the successful operation of Dentsply's artificial tooth business in a no growth market:

- Service is crucial - cannot allow competition to gain toehold via poor services (either from us or from dealers).
 - Implications for Trubyte service levels.
 - Reward/punish dealers based on their level of customer service?
- Block competitive distribution points. Do not allow competition to achieve toeholds in dealers.
 - Tie up dealers.
 - Do not 'free up' key players.

(GX 171 (emphasis original)) Mr. Clark testified concerning the by-play underlying these two principles. (D.I. 450 at 2607-09) Because the Trubyte Division operated in a cash cow situation (high market share business in a low or no growth market), Dentsply needed to fully leverage the investments it has made in the business. (Id. at 2608)

233. Dentsply's average margin on all of its tooth products is approximately 80%. Its margin on its premium anterior teeth is approximately 90%. (D.I. 427 at 1474-76; D.I. 432 at 2237-38)

High margins are expected in a market with substantial pre-sale promotion. (D.I. 454 at 3640-41)

234. Dentsply's tooth margins have been increasing over time. (D.I. 432 at 2237-38; DX 1625 at DPLY-A 200264)

235. Dentsply's tooth business has long been a highly profitable, "cash cow" business. (D.I. 432 at 2223) In 1996, the Trubyte Division's Long Range Plan stated that Dentsply/Trubyte was "first and foremost a denture tooth company, with the primary goal of protecting and defending this important source of profit and cash to the corporation." (GX 101 at DPLY-A 037303) It also noted that the division had "been very successful over the past several years operating the business as a cash cow. Profits since 1990 have increased 32% from \$16.8 million to \$22.2 million." (Id. at DPLY-A 037305)

236. By definition, the profits of a cash cow business are, at least in part, siphoned away from the Trubyte Division and used for other projects within the corporation. (D.I. 450 at 2606) Over the years, the Dentsply corporation has used the profits from the Trubyte "cash cow" to grow through acquisitions of companies outside the artificial tooth business. (D.I. 432 at 2221-23)

3. Market Share

237. For many years, the artificial tooth market has been stagnant in terms of unit growth and sales revenue has grown only by inflation. (GX 101 at DPLY-A 37304; D.I. 432 at 2304-05; D.I. 448 at 2560; D.I. 427 at 1581)

238. Dentsply has had a persistently high market share, between 75% and 80% on a revenue basis, in the artificial tooth market. (D.I. 427 at 1471-72)

239. Dentsply's market share is approximately 15 times larger than its next closest competitor. Ivoclar has the second-highest share at the market, at approximately 5%. (Id. at 1472; D.I. 423 at 984-85) The shares of Vita and Myerson are in the 3% range. (D.I. 427 at 1472; D.I. 419 at 239-40) ATI has a 2% share, Universal's share is between 1% and 2%, Heraeus Kulzer has a share of about 1%, and various other rivals have even smaller shares. (D.I. 427 at 1472)

240. The market share surveys commissioned by Dentsply demonstrate that it has held a share of approximately 80% for at least the past 10 years.

(a) Since 1989, the Trubyte Division, through Sam Thumim, its Manager of Market Research, has commissioned three surveys of tooth market shares performed by outside firms: the Market Dynamics survey in 1989; the Axxiom Research survey in

1991; and the Polk-Lepson survey in the mid-1990s. (D.I. 422 at 928-29, 943-44, 973)

(b) Mr. Thumim was involved in retaining these outside survey firms and believed that the survey results were reliable. Mr. Thumim was involved in both retaining Market Dynamics and in designing the survey. (Id. at 929) He described that survey as "by far, the most comprehensive, sophisticated and complex survey we have ever conducted." (GX 17 at DS 053918; D.I. 422 at 933) Similarly, Mr. Thumim was responsible for retaining Axxiom Research and described that firm as having "a proven track record of conducting Dentsply surveys." (GX 18 at DS 054027; D.I. 422 at 941-42) He was also involved, along with Chris Clark, then Trubyte's Director of Sales and Marketing, in retaining Polk-Lepson and in designing that survey. (D.I. 422 at 973-74)

(c) Mr. Thumim's analysis of the Axxiom survey results showed that Dentsply had a 80% market share. In November 1991, he reported his analysis of the Axxiom survey results in a series of charts dated November 20, 1991. (GX 20; D.I. 422 at 952-53) His analysis showed Dentsply's market share (by sales dollars) to be 80%. Vita's share was 2.4%, and Ivoclar's was 2%. (GX 20 at DS 053579; D.I. 422 at 958-61) He also concluded that Dentsply's tooth market share by units was 67%, and that Vita's unit share was 1.32%, and Ivoclar's was 1.32%. (GX 20 at DS 053583; D.I. 422 at 963-64) Dentsply's dollar market shares are higher than

its unit market share because sales of premium teeth, in which Dentsply has an even greater share, have a greater influence than sales of economy teeth, because premium teeth are priced quite a bit higher than economy teeth. (D.I. 422 at 962-63)

(d) A year later, Mr. Thumim prepared and distributed another analysis of tooth market shares, in a series of tables dated September 23, 1992 and charts dated September 25, 1992. (GX 23A; D.I. 422 at 965-68) He concluded that Dentsply's market share (by sales dollars) was 81%, and that Vita's share was 2.47% and Ivoclar's was 2.0%. (GX 23-A at DS 054129; D.I. 422 at 971-72)

(e) These surveys also showed that Dentsply's share of the premium tooth segment was at least 80% and, in some cases, close to 90%. In 1989, the Market Dynamics Survey showed that Dentsply's share of the premium tooth segment was 85% (for anteriors) and 81% (for posteriors). (GX 17 at DS 053928; D.I. 422 at 935-38) It also concluded that "since Dentsply dominates all segments and Dentsply's sales have been flat, this suggests that the overall market is currently relatively stable." (GX 17 at DS 053928; D.I. 422 at 938) In 1991, the Axxiom Research survey showed that Dentsply's premium segment share was 89%. (GX 14 at DS 054047; D.I. 422 at 942-49) The Polk-Lepson survey in the mid 1990s reported "comparable" results. (D.I. 422 at 975-77)

241. Knowledgeable industry executives concur in the view that Dentsply's market share is approximately 80%. (D.I. 419 at 240; D.I. 457 at 4145-46)

242. Dentsply's unit volume share is lower than its dollar volume share of the tooth market. (D.I. 427 at 1554) Dentsply's 2001 Trubyte Marketing Plan estimated its share of the artificial tooth market in units at 56.5%. (DX 1594 at DPLY-A 200191; D.I. 427 at 1554-55) Dentsply's share of the artificial tooth market not counting the sub-economy segment, a segment Dentsply does not compete in, is 67%. (GX 20 at DS 053583; GX 23-A at DS 054130)

243. Dentsply's unit share of the tooth market has declined recently due to increased competition. Mr. Jenson testified that Dentsply's tooth unit sales declined 4.2% between 2000 and 2001. (D.I. 432 at 2097-98; DX 1625 at DPLY-A 200254) He attributed this decrease in unit sales, in part, to the competitive entries in 2000 of Heraeus Kulzer and Leach and Dillon and to Ivoclar's "more aggressive" presence in the market. (D.I. 432 at 2098) As a direct response to Dentsply's loss of sales at the lab level, Dentsply increased its rebate to National Dentex by approximately 1% on purchases National Dentex makes as part of the Preferred Laboratory Program. (D.I. 432 at 2311-13; D.I. 452 at 2943-45;

DX 1213; DX 101) Additionally, Heraeus observed a "noticeable" increase of Trubyte advertisements in direct response to Heraeus's entry into the U.S. tooth market. (D.I. 429 at 1870-71)

H. The Level Of Success Of Vita and Ivoclar Is Due To Their Own Business Decisions

1. Marketing Focus On Crowns and Bridges, Not Teeth

244. Vident's stated sales focus during the 1990s was on porcelain products, not teeth. Vident's President acknowledged that the company philosophy has been "porcelain first." (D.I. 419 at 361, 370) As of December 1999, this philosophy resulted in: (1) no measuring system and lack of follow-up for artificial tooth sales leads; (2) inconsistencies in training levels and commitment; (3) minimal direct involvement by the denture product manager in telemarketing; and (4) minimal support for denture products by Vident management. (Id. at 361-63)

245. Vident always has lacked a dedicated tooth sales force. Vident's outside sales force consists of 15 to 16 sales representatives. (Id. at 296) Not one outside sales representative is dedicated to selling and promoting Vita's artificial teeth. (Id. at 296-97) Vident recognizes that requiring its sales force to handle multiple products constitutes a recurring weakness within its distribution system. (Id. at 298) Vident's President testified that Dentsply's Trubyte sales force that is dedicated to supporting artificial teeth provides

Dentsply with a competitive advantage over Vident. (Id. at 298-99) In 1997-98, during the short period when Vident directed its sales representatives to concentrate on teeth, it realized an increase in tooth sales. (Id. at 297-98) Nonetheless, Vident's sales representatives at the time of trial split their time among thousands of fixed and removable restorative products sold to dental labs. (Id. at 297)

246. For many years Ivoclar did not employ enough sales representatives to call on many labs and was perceived as having a small sales force. (D.I. 431 at 1996; D.I. 453 at 3320; GX 381) In 1988 and 1989, when Ivoclar experimented with selling teeth through Frink Dental Supply, Ivoclar did not have enough sales representatives to support tooth sales through Frink. (D.I. 423 at 1047-48; DX 15) As of July 1989, Ivoclar had no tooth sales representatives in the field, and no telemarketing staff. (DX 17 at IVC 23705) In addition, Ivoclar staffed its Customer Service Department in Buffalo, New York with just one full-time and one temporary representative. (DX 17 at IVC 23705)

247. Throughout the 1990s Ivoclar did not employ any sales representatives that were dedicated specifically to selling and promoting artificial teeth. (D.I. 423 at 1017-18) Instead, Ivoclar's sales representatives were responsible for selling both crown and bridge products and artificial teeth. (Id. at 1018; D.I. 454 at 3462) Ivoclar's President recognized in 1996 that

his sales representatives focused "most of their time" promoting crown and bridge products, such as Ivoclar's IPS Empress and Concept porcelain systems, due to the beneficial commission formula. (D.I. 423 at 1073-77; DX 296 at IVC 4697) Because of the way Ivoclar's sales representatives allocated their time, they had "very little time" to promote all other products, including teeth. (DX 296 at IVC 4697)

248. Those lab customers of Ivoclar who testified at trial agree that Ivoclar has marketed its crown and bridge products at the expense of artificial teeth. (D.I. 450 at 2731, 2842-45; D.I. 453 at 3268-69; D.I. 448 at 2351) Additionally, Ivoclar does not provide on-site technical training, technical assistance and educational programs to dental lab denture technicians. (D.I. 431 at 1996-97; D.I. 453 at 3269) Nor does Ivoclar co-sponsor on-site clinics or seminars. (D.I. 431 at 1997)

2. European Moulds/Poor Tooth Quality

249. Ivoclar's President testified that the European mould and full ridge lap design of its artificial teeth have been two of the chief obstacles to Ivoclar increasing its market share in the U.S. market for artificial teeth. (D.I. 423 at 1119-20; DX 1111 at IVO 100405) Ivoclar's ridge lap design represents a full lingual contour. The lingual contour is the inside of the tooth that has contact with the tongue. (D.I. 423 at 1090) Ivoclar teeth traditionally have been distinguishable from other tooth

lines due to their ridge lap design. (Id. at 1015, 1086-87) Ivoclar's "full" ridge lap, the portion of the tooth that is processed within the denture base, is larger and more extended than that of other tooth brands. (Id. at 1014-15) This full lingual contour was seen as not "desirous." (Id. at 1090; DX 1111 at IVO 100405) For years Gerry Mariacher of National Dentex told Mr. Ganley, Ivoclar's President, that Ivoclar did not have a suitable tooth to sell in the U.S. (D.I. 452 at 2910-11)

250. The full ridge lap design creates difficulties setting the Ivoclar teeth in the denture base material. (DX 1111 at IVO 100405) Labs must grind the ridge lap down to set the teeth. (D.I. 452 at 2907-08; DX 1111 at IVO 100405; D.I. 423 at 1015, 1087; D.I. 450 at 2854-55) Accordingly, this grinding adds additional labor for the denture technician and, in turn, additional cost to the consumer. (D.I. 423 at 1087-88; D.I. 450 at 2855) Labor is a lab's largest cost in fabricating a denture. (D.I. 450 at 2855; D.I. 452 at 2925) Additionally, a dental lab wastes more materials when it must grind on a tooth than when it does not. (D.I. 452 at 2925-26) It follows that the less time a dental lab spends grinding artificial teeth, the more profitable the lab will be. (D.I. 431 at 2000; D.I. 423 at 1088)

251. Finally, in 2002, Ivoclar introduced new artificial tooth moulds called Ortholingual and Orthoplane. (D.I. 423 at 1090-91) After examining the new lines, Mr. Mariacher of

National Dentex informed Mr. Ganley that Ivoclar finally had addressed the problem with its teeth. (D.I. 452 at 2905-06) This product introduction was a response to long-standing complaints by American lab technicians concerning Ivoclar's European tooth moulds. (DX 1111 at 100405; D.I. 423 at 1088) Mr. Ganley testified that the purpose of introducing these two lines was to participate in an aspect of the market that it did not previously participate in. (D.I. 423 at 1086, 1098)

252. These two new lines of Ivoclar teeth have been well received by labs. (D.I. 452 at 2911-14) In the first year alone, Ivoclar projects that its sales of Ortholingual and Orthoplane will increase its market share by 10%. (D.I. 423 at 1111-12) All other existing Ivoclar tooth lines, though, still are made utilizing European moulds. (Id. at 1091-92)

253. As early as 1995, Ivoclar recognized that dental schools were using flat plane and non-anatomical teeth to teach dental students, yet Ivoclar had only anatomical teeth as part of its tooth offering at the time. (Id. at 1094-96; DX 231) Ivoclar recognized it would have an "easier time within the university environment" if it offered a tooth suitable for use with the lingualized occlusion approach. (DX 231) In light of the long-recognized deficiencies of Ivoclar's tooth moulds, in 1999 Ivoclar's President Robert Ganley finally authorized development of Ivoclar's new lines. (D.I. 423 at 1090-91)

254. Ivoclar also is expanding its tooth lines further to include another artificial tooth that has been referred to internally as a "Dentsply knock-off" tooth because it mimics Dentsply's popular American mould offerings. (DX 1111 at 415; D.I. 423 at 1097-98) Ivoclar intends to employ the Vita shading system with its Dentsply knock-off tooth line. (D.I. 423 at 1114) Previously, Ivoclar teeth incorporated their own unique shading system that largely has been unpopular with dentists who are accustomed to Vita's shade systems. (D.I. 431 at 1995; D.I. 454 at 3463) Mr. Jaslow described Ivoclar's unique shade guide system as "confusing" because it uses the exact "opposite" of Vita's letter and number shade designations. (D.I. 431 at 1995) In his view, Ivoclar's shade system makes it difficult for dentists to prescribe Ivoclar teeth. (Id.; D.I. 429 at 1856-57) To date, Ivoclar is the only tooth manufacturer not to offer a tooth in Vita shades; even the two newest market entrants, Heraeus Kulzer and Schottlander, offer a Vita shaded tooth. (D.I. 429 at 1857; D.I. 457 at 4086)

255. Ivoclar teeth tend to "pop" out of denture acrylic. (D.I. 431 at 1993-95) As Mr. Jaslow explained, lab technicians have to drill mechanical retentions to keep the Ivoclar teeth in place, and even these are not foolproof. (Id.) Mr. Mariacher of National Dentex diagramed the bulky moulds that Ivoclar uses and

the difficulties of using those moulds in the denture fabrication process. (D.I. 452 at 2906-09)

256. Like Ivoclar teeth, Vita teeth require a substantial amount of grinding. (D.I. 452 at 2924) As a result, it is difficult for U.S. dental lab technicians to set Vita teeth when fabricating dentures. (Id. at 2924-25) Mr. Mariacher attributes this tooth grinding problem as well as a lack of advertising on Vident's part as the principal reasons why there exists limited demand for Vita teeth in the U.S. market. (Id. at 2925-26)

3. Failure To Promote Teeth

257. In the 1990s, some labs felt that Vident and Ivoclar did not adequately invest in promoting their respective artificial tooth lines. (D.I. 425 at 1395; D.I. 448 at 2350) Myerson, another rival of Dentsply in the artificial tooth market, also failed in the 1990s to market its brand. Myerson President James Swartout conceded that between 1990 and 1993, Myerson/Austenal used no outside sales representatives to promote teeth. In 1994, it used just one. (D.I. 425 at 1359-60) Reynolds Challoner of Lord's Dental Studio described Myerson's tooth promotional efforts as "almost nonexistent." (D.I. 450 at 2841; D.I. 431 at 1997-1998)

258. As a result of Vident and Ivoclar's lack of promotional efforts and other tooth related problems, dental labs and dealers do not experience demand for Vita and Ivoclar teeth in the

marketplace. (D.I. 420 at 549-550; D.I. 431 at 1993-94; D.I. 450 at 2730-31, 2784; D.I. 452 at 2924; D.I. 448 at 2350, 2358) Dr. Armstrong explained that Vita and Ivoclar, unlike Dentsply, do not “[i]nform [their] potential customers that [they] make a particular product,” nor do they “inform them as to why it is better . . . to use or buy [their] product than the one they are currently buying.” (D.I. 448 at 2349-50)

259. Throughout the 1990s, Vita Zahnfabrik hampered Vident’s ability to create and sustain market demand for Vita artificial teeth. For example, in 1993, Vident imposed on its lab customers a 15% restocking fee on returned broken sets because Vita would not accept back broken sets from Vident. (D.I. 419 at 367) This generated customer complaints. (Id.) In the early 1990s, Vita was unable to supply Vident with an adequate inventory of teeth. (Id. at 357-58) This created backorder problems for Vident, which resulted in lost consumer confidence in Vita teeth. (Id. at 358) Vident largely “ignored” the tooth product line due in part to these delivery problems. (Id. at 359)

260. Vident also created its own difficulties in increasing demand for Vita teeth. Vident initially committed to Vita to promote its products in order to drive demand for those products. (Id. at 312-13) But Vident’s President testified that one problem associated with this was the hybrid distribution system that it used to distribute teeth. (Id. at 370)

261. In 1995-1996, Vident implemented a "more aggressive marketing approach." (Id. at 368-69) This new approach coincided with Dentsply's introduction of Portrait. (Id.) Vident acknowledged in its 1997 Marketing Plan that this introduction caused its sales of Vita teeth to decline by 18% (representing approximately a \$500,000 decline) in the first full year that Portrait was in the market. (Id.)

262. In 1997, Vident discontinued tooth advertising and placed no tooth ads at all in 1998, prompting Vident's marketing manager to comment that there exists a perception among dental labs that Vident does not advertise. (Id. at 313-18, 370) Gerry Mariacher of National Dentex observed that Vident does not spend many dollars marketing its products in trade journals, and does not have anyone on the lecture circuit who speaks exclusively about Vita teeth. (D.I. 452 at 2925) During the same time frame that Vident discontinued all advertising, sales leads for its artificial teeth dropped to less than five per week. (D.I. 419 at 319)

263. Denture-focused labs perceived Vident's outside sales representatives to make infrequent sales calls on the labs. (D.I. 450 at 2845; D.I. 453 at 3264-65) When the Vident representatives do make sales calls on dental labs, they focus primarily on promoting Vita's crown and bridge products, not teeth. (Id.) The representatives do not provide on-site

technical training and educational programs to denture lab technicians, nor do they provide technical assistance to dental labs. (D.I. 432 at 1992; D.I. 453 at 3264) Mr. Jaslow summarized the difference between the services offered by his Trubyte sales representative and his Vident representative as "almost like night and day." (D.I. 432 at 1992)

264. Vident has used telemarketing sparingly to promote Vita artificial teeth. (D.I. 419 at 299-301) Vident recognized in 1999 that it had not fully utilized its telemarketing staff with respect to the sale of artificial teeth. (Id.)

265. Vident acknowledges that it is important to increase product awareness among dentists who prescribe dentures, and that a prime method of increasing this awareness is to focus on dental schools. (Id. at 320-26) Vident's documented efforts to court dental students have been "sporadic." (Id. at 324) Vident has never had a formal tooth consignment program for dental schools, and there is no evidence that Vident has placed a single tooth consignment with a dental school. (Id. at 324-25) Instead, Vident requires a dental school to pay for Vita teeth up front. (Id. at 324) As a result, dental students have minimal awareness of Vita teeth, and as recently as 1999 Vident has recognized that product awareness of Vita artificial teeth from the dentist's point of view has not been strong. (Id. at 325-26) Vident's President believes that Vident's "sales will stagnate until it

becomes better able to promote Vita teeth directly to dentists.”
(Id. at 326)

266. Like Vita and Vident, Ivoclar’s internal business decisions and tooth strategies have resulted in limited demand for Ivoclar artificial teeth in the U.S. market. As early as July 1989, an Ivoclar task force concluded that Ivoclar’s brochures, statement stuffers, clinical studies and additional support materials were not sufficient to promote Ivoclar’s artificial teeth. (D.I. 423 at 1027-28; DX 17 at IVC 23705; D.I. 431 at 1994-95; D.I. 452 at 2909) The task force also concluded that the lack of a functioning policy or procedure in place for Ivoclar to take back broken sets of teeth from dental labs constituted a “major disadvantage” for Ivoclar in terms of teeth sales compared to Dentsply. (D.I. 423 at 1029; DX 17 IVC 23705; D.I. 425 at 1398)

267. As a result of this disparity in the sales representatives’ promotional efforts, as early as 1996, Mr. Ganley considered hiring a dedicated artificial tooth sales force. (D.I. 423 at 1077-78; DX 296 at IVC 4697-98) Ivoclar did not begin to do so until nearly three years later in 1998-99, when it hired former Dentsply representative Herb Baird. (D.I. 423 at 1018-19) Ivoclar at the time of trial maintained five dedicated tooth sales representatives. (Id. at 1078-79)

268. Ivoclar is perceived as engaging in a "minimal" effort to create demand at the dentist level to drive sales of Ivoclar's teeth, despite recognizing the need to do so and specifically that labs use the brand of teeth dentists prescribe. (D.I. 450 at 2840; D.I. 423 at 1079-80) Ivoclar's President testified that Ivoclar for a long time has been aware of the need to raise dentists' awareness of Ivoclar teeth. (D.I. 423 at 1079-80) Nonetheless, Ivoclar sales representatives do not make sales calls on dentists to promote artificial teeth. (Id. at 1080-81; D.I. 450 at 2840) Ivoclar lost its position as the "primary tooth supplier" with 14 TERC labs because it failed to provide the necessary support to sell the teeth. (D.I. 448 at 2352-55) In 1999, Ivoclar's marketing budget for all products was \$4.5 to \$5 million. (D.I. 489 at 4384-86) Of that, Ivoclar earmarked only \$200,000 for marketing artificial teeth. (Id.)

I. Dentsply's Efforts To Generate Demand For Its Artificial Teeth At The Dental Lab, Dentist And Patient Levels

269. Dentsply generates demand for its artificial teeth through pull-through marketing at all three market levels (lab, dentist and patient). (D.I. 448 at 2543-44; DX 309-A) By creating demand at the lab level, Dentsply pulls volume from the dealer. By creating demand at the dentist level, Dentsply pulls the product from the lab and the dealer. (D.I. 448 at 2568; D.I. 420 at 468) Because of the influence labs have on tooth brand

selection for a majority of denture cases, Dentsply's primary demand-generation focus is on the lab. (D.I. 432 at 2140-42, 2165; D.I. 448 at 2543-44)

1. The Trubyte Dedicated Sales Force

270. The primary marketing vehicle that Dentsply uses to create demand for its Trubyte teeth is its Trubyte dedicated sales force. (D.I. 448 at 2544; DX 1627 at DPLY-A 200386) Dentsply markets to its customers by making sales calls on dental labs, dentists and dental schools. (D.I. 432 at 2139-40)

271. Since the early to mid-1990s, Dentsply has employed between 30 to 32 outside sales representatives. Dentsply had the largest removable-focused sales force among its competitors and, not surprisingly, called on more denture labs than its rivals. (D.I. 448 at 2543-44) Dentsply also has four Regional Managers who coordinate sales and marketing efforts in four regions of the United States. (D.I. 432 at 2079-80) The primary responsibility of a Regional Manager is to train, develop, coach and mentor the sales representatives. (D.I. 448 at 2545)

272. Until the mid-1980s, the Trubyte sales force spent most of its time making sales calls on dentists. (D.I. 420 at 466-67) The sales force was engaged in creating pull-through demand for Trubyte teeth primarily at the dentist level. (Id. at 468) Dentsply as a company was engaged in creating pull-through demand for Trubyte teeth. (Id.) Beginning around 1985, Dentsply began

changing the focus of its promotion from dentists more toward dental labs. (Id.) Similarly, Dentsply's sales representatives started calling more on dental labs instead of dentists. (Id. at 468-69) Since that time, the focus of Dentsply sales representatives has flipped, and they now call mostly on dental labs. (Id. at 469; D.I. 448 at 2545)

273. Dentsply's enhanced focus on the dental lab as its primary promotional target is due to dentists' declining interest in dentures. (GX 101 at DPLY-A 37304) Dentists, today, prescribe few teeth by brand, and instead provide dental labs with wide discretion to select the teeth used for any given denture case. (GX 101 at DPLY-A 37304)

2. Dentsply's Promotional Efforts With Dental Labs

274. Dedicated Trubyte tooth sales representatives generate demand at the lab level for Trubyte teeth by calling on dental labs. In 2000, 60% of all Trubyte sales calls were made to dental labs. (D.I. 432 at 2166) In 2001, dedicated Trubyte tooth sales representatives made over 20,000 personal sales calls on Trubyte customers. (Id. at 2139-40; DX 1650 at DPLY-A 200041, 200059) Ten thousand of these calls were to dental labs, or almost 48% of all sales calls. (D.I. 432 at 2165-66) Dentsply's general goal is to have approximately 65% of the dedicated tooth sales force's calls made to dental labs. (Id. at 2140, 2166) Mr. Weinstock of Zahn acknowledged that Trubyte sales

representatives call on "every dental lab" that they can find. (D.I. 420 at 469, 472) He agreed that Dentsply "provides the best marketing support of any manufacturer in the country." (Id. at 544)

275. Those lab representatives who testified regarding Dentsply's promotional efforts agree that Dentsply does "make a market" for its teeth. (D.I. 448 at 2349-50; D.I. 431 at 1980; D.I. 452 at 2938-39; D.I. 453 at 3272-76; D.I. 420 at 471)

276. During their sales calls to dental labs, Trubyte sales representatives spend time with lab owners, denture department managers and technicians. (D.I. 448 at 2545-46) Sales representatives perform hands-on product demonstrations of Trubyte products and help troubleshoot any technical problems the lab is experiencing with Trubyte products. (Id.)

277. One of the purposes of a lab sales call is to convert a lab using competitive artificial teeth to using Trubyte artificial teeth. (D.I. 432 at 2167) Dentsply accepts the return of competitive lines of teeth in exchange for Trubyte teeth only if a dental lab makes the commitment to market Trubyte teeth. (Id. at 2169-70) This practice, part of Dentsply's Competitive Tooth Stock Conversion Program, is known as a "tooth swap." (Id.; D.I. 448 at 2573-74)

278. Dentsply designed the tooth swap program to handle the objections of labs that are interested in using Trubyte teeth but

already hold inventories of competitive teeth. (D.I. 448 at 2573; D.I. 432 at 2169-70) To overcome the barrier of a competitive inventory, Dentsply will swap out a lab inventory of competitive teeth if the lab orders twice that amount in Trubyte teeth. (D.I. 432 at 2169-70)

279. Beginning in 1993, Dentsply established its Preferred Lab Group Program. (D.I. 448 at 2534-2537; DX 101; DX 121; DX 251-A) Through this program, Dentsply provides rebates to participants, in the form of free teeth, based on labs' purchases of Trubyte teeth compared to their prior year's purchase volume. (D.I. 448 at 2535-36; D.I. 452 at 2943-44) Dealers play no role in the Preferred Lab Group Program. (D.I. 448 at 2535; D.I. 452 at 2945) During the first year of participation in the Preferred Laboratory Group Program, National Dentex's Trubyte tooth purchases increased 40%, Dental Services Group's purchases increased 13% and Dental Arts Laboratory's purchases increased 25%. (D.I. 448 at 2539-40)

280. In addition to cooperative marketing, Dentsply seeks to stimulate lab purchases of Trubyte teeth by focusing marketing and promotional efforts on labs. Since 1994, Dentsply has offered the "Add-A-Drawer" Financing Program. (D.I. 448 at 2518-19; DX 223 at 29088; DX 1603 at 66068) This program, intended to persuade labs to trade up to the Portrait premium line, provides extended-term financing to labs that purchase at least one

incremental tooth cabinet drawer of Portrait teeth. (D.I. 448 at 2518-19) Also to promote lab trade up to the Portrait line, Dentsply developed the Portrait Spectacular Rebate Program. Under the program, Dentsply provides labs that purchase a Portrait tooth stock valued at \$1,000 or more with a 5% rebate, paid in teeth or merchandise products, on Portrait tooth usage during the six-month interval following the purchase of the stock. (DX 309 at DPLY-A 91807, 91811; D.I. 432 at 2171)

281. To streamline the tooth ordering process, Dentsply developed the Dentsply Order Network or DON system. (D.I. 432 at 2171; DX 341 at DPLY-A 99720) DON allows labs to order teeth via the internet or over phone lines using a bar code scanner with a computer or a portable data terminal. (D.I. 432 at 2171-74; DX 341) Without DON, or a similar system, labs manually review the inventory in their tooth cabinets, identify those teeth they need to order, place a telephone call or send the order via fax to a dealer. (D.I. 432 at 2171-72; D.I. 450 at 2836-37) The lab uses DON to refill its inventory by electronically sending its tooth order to the dealer. (D.I. 432 at 2172-73; DX 341) DON benefits labs by: eliminating errors made when ordering Trubyte teeth; saving time ordering, thereby increasing production; making ordering easier; reducing tooth out-of-stocks; and assisting with tooth stock inventory management. (DX 341 at DPLY-A 99718; D.I. 432 at 2172-73; D.I. 450 at 2837-38; D.I. 431 at 1986-87) DON

benefits dealers by: reducing errors from customers, thereby reducing customer call-backs; reducing time spent receiving orders because DON takes less time than phone orders and is more legible than fax orders; and reducing time spent fulfilling orders because orders are sorted by brand, upper or lower, mould, and shade. (DX 341 at DPLYA 99718)

3. Dentsply's Promotional Efforts Focused On Dentists

282. At the dentist level, Dentsply's sales representatives try to convince dentists to prescribe Trubyte teeth, thereby increasing the demand. (D.I. 448 at 2546) If the dentist prescribes teeth by brand, labs must comply with the prescription and use that brand in the fabrication of a denture. (D.I. 432 at 2141) Dentsply works toward this objective both through personal sales calls with dentists and a series of promotional programs geared specifically to dentists. (D.I. 432 at 2140-49; DX 1601)

283. In addition to the Preferred Laboratory Group Program, in 1993 Dentsply devised a formalized Laboratory Cooperative Marketing Program. (DX 223 at DS 29117; DX 309 at DPLY-A 91846; DX 367 at DPLY-A 70647; DX 1580-C at DPLY 1899; DX 1609 at DS 59517; DX 1611-B at DS 67568; DX 1664 at DPLY-A 200773) The objective of the program is to work jointly with the labs to create pull-through demand among dentists for Trubyte teeth in the form of prescriptions for Trubyte removable denture cases. (DX 223 at DS 29088) Through its Lab Cooperative Marketing

Program, Dentsply not only increases the volume of business for the lab, but it also increases the overall demand for Trubyte teeth.

284. Dentsply's Laboratory Cooperative Marketing Program, also includes the "Imprinting Program" in which Dentsply disseminates promotional material to dentists on behalf of labs. (D.I. 448 at 2519; D.I. 432 at 2134, 2165; DX 367 at DPLY-A 70650-51) Dentsply imprints the lab's name, address, telephone number, and even a logo on Trubyte's four color product literature which the lab can insert with the dentist's monthly invoice. (DX 367 at DPLY-A 70650) Dentsply also imprints Work Authorization Forms (i.e., prescription pads) with laboratory-specific and Trubyte product-specific information for dissemination to a lab's dentist accounts. (DX 367 at DPLY-A 70650-51) Information available for imprinting includes: the lab's name, address, telephone number and logo; the Trubyte teeth preferred; the desired Trubyte acrylic; and the shades and moulds appropriate for the patient. (DX 367 at DPLY-A 70650)

285. Over the years, Dentsply and dental labs have worked together in a variety of ways to drive the demand for Trubyte teeth at the dentist level. Customized telemarketing on behalf of individual labs has served as a mainstay of the Laboratory Cooperative Marketing Program. Dentsply's telemarketing efforts create demand for its premium teeth among dentists on behalf of

participating labs. (D.I. 448 at 2519; DX 223 at DS 29119; DX 309 at DPLY-A 91846-47; DX 367 at DPLY-A 70648-49; DX 1609 at DS 59517-18; DX 1611-B at DS 67573-74; DX 1664 at DPLY-A 200773-74)

286. There are five stated objectives underlying Dentsply's telemarketing efforts: (1) create pull-through demand for newly placed lab tooth stocks; (2) trade up dentists who use slower-moving product lines; (3) upgrade key dentists to premium Trubyte tooth lines; (4) convert accounts using competitive teeth; and (5) target key dentists for a high quality denture service message. (DX 223 at DS 29119) To achieve these objectives, Trubyte sales representatives obtain lists of 25 denture-doing dentist accounts from dental labs. (DX 223 at DS 29119; DX 309 at DPLY-A 91846-47; DX 367 at DPLY-A 70648-49; DX 1580-C at DPLY 1902; DX 1609 at DS 59517-18; DX 1664 at DPLY-A 200773-74) Dentsply's inside sales staff targets these dentist accounts with telemarketing customized on behalf of each participating lab. (DX 223 at 29119-20; DX 1580-C at DPLY 1902; DX 1609 at DS 59517-18; DX 1611-B at DS 67573-74) Dentsply follows up with each dentist account with direct mail product literature, coupons, special offers, prescription pads, in-office sales aids, and even in-person sales calls by the Trubyte sales force. (DX 223 at 29119-20; DX 309 at DPLY-A 91846-47; DX 367 at DPLY-A 70648-49; DX 1580-C at DPLY 1902; DX 1609 at DS 59517-18; DX 1611-B at DS 67573-74; DX 1664 at DPLY-A 200773-74)

287. Separate and apart from its telemarketing efforts, Dentsply's Cooperative Laboratory Marketing Program uses direct mail marketing to send dentists marketing literature, promotional offers, and in-office aids to support Dentsply's competitive conversions and premium trade up efforts. (DX 223 at DS 29122-23; DX 1609 at DS 59517; DX 1611-C at DS 67601) Dentsply also has assisted labs to develop their own sales plan to market their services to dentists. (DX 223 at DS 29134)

288. Dentsply, working with labs, identifies "heavy hitter," "must-see" and "key" dentist accounts to whom Trubyte sales representatives make in-office sales presentations. (DX 223 at 29119-20; DX 1580-C at DPLY 1902; DX 1611-B at DS 67573-74) Dentsply uses direct mail, on its own and in conjunction with labs, to send dentists marketing literature, promotional offers, and in-office aids to support Dentsply's competitive conversions and premium trade up efforts. (DX 223 at 29122-33; DX 1609 at DS 59517; DX 1611-C at DS 67601)

289. Each year, Dentsply devises direct mail programs to create pull-through demand for Trubyte teeth at the dentist level. For instance, in 1995, Dentsply implemented a focused direct mail promotional campaign to support its premium Trublend SLM tooth line. (DX 223 at DS 29122) With its "Mock Shade Guide Offer," Dentsply sent dentists "mock" shade guides with the most popular Trublend shades, thereby enabling them to prescribe their

first Trublend case without purchasing a Trublend shade guide. (DX 223 at DS 29122-23) With its "Try Trublend SLM for IPN Price" promotion, Dentsply sent preprinted (with individualized laboratory names) work authorization forms to dentists who owned a Trublend shade guide but did not regularly prescribe Trublend. (DX 223 at DS 29124-31) These forms permitted dentists to order Trublend dentures but pay the lower IPN tooth price, and Dentsply reimbursed labs the difference with free teeth. (DX 223 at DS 029124-31)

290. In 1996, Dentsply launched the "Portrait IPN \$5 Off Work Authorization Program." (DX 1580-C at DPLY 1907-12) The program subsidized a \$5.00 discount on Portrait teeth, or about 10% on the price of a card of anterior teeth and nearly 24% on the price of posterior teeth to the dentist. (DX 1580-C at DPLY 1907-08; DX 511)

291. The Denture Opportunity Program ("DOP"), the successor to Dentsply's Replacement Denture Program, is a "major initiative" to assist dentists with their practices and to expand the overall tooth market. (DX 86 at 36141-42; D.I. 432 at 2155-56; DX 367 at DPLY-A 70652) The ultimate goal of the DOP is to expand the overall denture market. (DX 367 at DPLY-A 70629)

292. The DOP contains three different facets: assist dentists and their staff with patient management; assist dentists to create better dentures through educational programs focusing

on technique; and assist dentists with patient retention. (D.I. 432 at 2155-56)

293. DOP is an example of a promotion that directly includes the patient. Under the American Dental Association's recommended 5 to 7 year life cycle for dentures, there are an estimated 20 million denture-wearers who, for a variety of reasons, should have their dentures replaced. (Id. at 2156-57; D.I. 448 at 2559) Accordingly, the patient component of the DOP is known as the "20 Million Smiles Program." (D.I. 432 at 2156) The goals of the program are to "[p]rovide patients with optimal care," "[e]ducate patients about replacement dentures," and "[t]each patients about premium denture options." (DX 367 at DPLY-A 70706)

4. Dentsply's Promotional Efforts Targeting Dental Schools

294. Dentsply has maintained a presence in the dental schools for decades. (D.I. 432 at 2138; DX 1611-A; DX 221-B) Dentsply has invested a considerable amount of time over many years penetrating the dental schools and trying to make the dental students familiar with Trubyte teeth. (D.I. 448 at 2546-47; D.I. 452 at 2936)

295. Dentsply's tooth sales representatives visit each dental school about once a month. (D.I. 432 at 2136) In total, roughly 5% of the dedicated tooth sales force's calls are made to dental schools and dealers. (Id. at 2140) This sales call activity level at dental schools has provided Dentsply with a

long-time strategic advantage. (D.I. 448 at 2546-47) During each visit, Dentsply's sales representatives usually spend a half day in a dental school with key academic contacts and the school's tooth counter manager. (D.I. 432 at 2136-37; D.I. 448 at 2550)

296. Dentsply consigns tooth stocks to dental schools. (D.I. 448 at 2547; D.I. 432 at 2137) There are 53 dental schools in the United States, and Trubyte teeth are used by all but one. (D.I. 448 at 2547; D.I. 432 at 2137) Dentsply's sales representatives manage these consigned inventories. (D.I. 432 at 2137-38) Dentsply's total investment in dental school tooth stock consignments is \$1.8 million. (Id. at 2137)

297. Dental schools use the teeth in clinics, which serve as the primary teaching vehicle for hands-on application in dental schools. (D.I. 448 at 2547-48; D.I. 432 at 2136-37) Dental students utilizing these teeth learn the Trubyte mould system as part of their dental school instruction. (D.I. 432 at 2137)

298. Dentsply's efforts in dental schools flow from the company's philosophy "what gets taught gets bought." (Id. at 2136) Once dentists learn and understand the benefits of a product, unless something is significantly better, they generally do not change to a different product. (Id.)

299. Dentsply's rivals recognize that Dentsply has well-established "relations with dental schools, old relations. And

each dentist going through school . . . prefers to use [Trubyte teeth] in his office later on [because that is] what he was taught on." (D.I. 429 at 1857-58)

5. Education And Training Activities

300. In connection with its product promotional efforts, Dentsply invests in an Education Department, responsible for training labs and sometimes dentists and familiarizing them with Trubyte products. (D.I. 448 at 2552-53) Certified Dental Technicians ("CDTs") staff the Trubyte Education Department. (Id. at 2552) The Trubyte Division, for a period, also staffed the Education Department with a dentist. (Id.)

301. In 1984, Dentsply opened the "Dentsply Educational Center" at its York, Pennsylvania location. (DX 331 at 2) The Dentsply Educational Center consists of a "fully-equipped, state-of-the-art dental laboratory." (Id.) Dentsply schedules courses that provide comprehensive training in removable prosthodontics. (Id.) These courses include the Trubyte E.P.F. Complete Denture Technique Course, Expanded Trubyte Complete Denture Workshop, and Introduction to Basic Procedures Course. (Id.) These educational courses are "technique-oriented" and focus on "how to take care of patients" or "do better dentures," whether Trubyte products are used or not. (D.I. 432 at 2153; D.I. 453 at 3273-74; D.I. 420 at 470-71; D.I. 452 at 2946-48)

302. In addition to the Educational Center courses, Dentsply offers condensed courses, co-sponsored by dental lab associations, throughout the United States. (DX 331 at 6) The Trubyte Division also provides educational and training programs jointly with other Dentsply divisions. (D.I. 432 at 2154-55) For instance, Dentsply has established "tie-in programs" with Dentsply's Caulk Division, to teach dentists techniques to make a better denture, such as improved impression making, more accurate shade matching, and how to select the right tooth for the patient. (Id.)

303. In 1996, Dentsply enhanced its Education Department with Regional Technical Consultants ("RTCs"). An RTC is a CDT who also functions as a sales representative. (D.I. 448 at 2553-54) Dentsply employs one Trubyte RTC in each of its four sales regions of the United States. (Id.) RTCs operate closer to the end-user than the York-based Educational Department staff. (Id.) RTCs spend up to 30% of their time in their sales region putting on clinics, courses or training, either formally or informally, and troubleshooting with labs that are having a difficult time with Trubyte products. (Id.)

J. The Wind Survey

304. The DOJ's survey of dental labs purports to show the effect of brand and distribution options on price. (GX 140) In theory, the survey is meant to predict the respondents' purchases

of artificial teeth over a three-month period. (D.I. 427 at 1607)

1. Prof. Wind's Lack Of Involvement In Design And Execution Of The DOJ's Survey

305. The DOJ retained Prof. Yoram Jerry Wind of Wind Associates to design and conduct a survey of dental labs. Prof. Wind relied on Dr. Reitman and the DOJ's lead trial counsel, William Berlin, as the principal questionnaire designers. (D.I. 422 at 812, 815-16) Dr. Reitman participated in designing the survey and formulated the survey questions. (D.I. 427 at 1539, 1601; D.I. 422 at 822-23) Dr. Reitman and Mr. Berlin provided Prof. Wind with pricing and distribution options that underlie the stimuli scenario cards. (D.I. 427 at 1602) They told him what brands of teeth to include on the cards. (D.I. 422 at 830) They also led him to omit a local dealer option for Vita teeth. (Id. at 860-62) At the time, Vident and 20 sub-distributors located throughout the country distributed Vita teeth.

306. Prof. Wind was not involved in the collection of survey data. Wind Associates subcontracted the collection of survey data to Guideline Research, which in turn subcontracted the work to a company called TMR. TMR conducted the actual telephone interviews of lab respondents. (Id. at 805-08) Prof. Wind did not train interviewers, create training materials or review written materials used for training. Guideline Research trained TMR's supervisors, and TMR trained the interviewers. (Id.)

307. Prof. Wind was not involved in monitoring the interview process. TMR monitored the interviews. (Id. at 809, 817) During the survey process, Prof. Wind did not know the percentage of lab interviews, if any, that TMR monitored. (Id. at 811) Prof. Wind did not review any completed questionnaires during the survey process, and performed no interview validation. (Id. at 809-811)

308. Prof. Wind was not involved with creating or analyzing the data set. Guideline Research compiled and input the response data to create cross-tabs and data tapes. (Id. at 809-10) Prof. Wind did not analyze the response data, nor did he analyze the survey data. Prof. Wind retained Abba Krieger, a university colleague, to run a PRIDEM model to analyze the survey data. (Id. at 805, 810)

2. The Design Of The Survey Was Far Too Complicated And Confusing

a. The Screening Questionnaire Failed To Identify Desired Respondents

309. The Wind survey contains a screening questionnaire. (Id. at 768-69; GX 140, App. D) The purpose of the screening questionnaire is "to identify the relevant respondents" by establishing each respondent's membership in the survey universe. (D.I. 422 at 768-69) The survey's parameters define the universe as "dental lab technicians responsible for the selection of plastic artificial teeth **purchased by the lab** for use in making

dentures.” (GX 140 at 4 (emphasis added)) However, the screening questionnaire does not identify respondents that make artificial tooth purchasing decisions. Instead of asking respondents whether they have “purchasing responsibility” for the lab, the screening questionnaire asks whether they are “responsible for selecting the plastic artificial teeth [the lab] will use.” (GX 140; D.I. 422 at 869)

310. In the normal course of fabricating a denture, denture lab technicians will select teeth the lab will use by taking them from the labs’ tooth inventories and removing them from tooth cards, without making purchasing decisions. (D.I. 431 at 1970-71) The survey’s screening questionnaire does not distinguish between those technicians who make purchasing decisions, and those who merely select teeth from the labs’ inventory for use in a particular denture case. (GX 140, App. D) Prof. Wind conceded that if the respondents were not responsible for purchasing teeth for their labs, then “there wouldn’t be a whole lot of significance to what they think” about the point allocations. (D.I. 422 at 869)

b. The Questionnaire’s Instructions Were Too Complex

311. The instructions given to the respondents for completing the conjoint exercise were far too lengthy, complicated and difficult to understand. (D.I. 452 at 3011-20) These flawed instructions impact the reliability of the survey

data because the respondents were unable to understand fully the task presented. (Id. at 3015-16) The survey procedure required the interviewer to read the questionnaire's instructions to the lab respondents over the telephone. (D.I. 422 at 789-90) Dr. Rossi demonstrated at trial, by reading aloud, that it would take an interviewer approximately 2-3 minutes to read the instructions to respondents. (D.I. 452 at 3012-13) The respondents were not provided with a written copy of the instructions. (Id. at 3011)

312. The elaborateness of the instructions may have confused the lab respondents. (Id. at 3014-16) The interviewers asked respondents to assimilate 55 pieces of information and then allocate 100 "points" across eight different stimuli scenario cards while on the telephone. (GX 140) The instructions do not explain whether the allocation of points is directed at preference or volume. (D.I. 452 at 3014-15) Confusion regarding the task to be performed contributes to measurement error which, in turn, makes survey data less informative. (Id. at 3016)

3. The Execution Of The Survey Did Not Meet Scientific Standards

313. The execution of the DOJ's survey did not meet the necessary research standards since there was no pre-test, the survey had a low response rate, and the respondents were unable or unwilling to devote the resources to completing the survey correctly. (D.I. 452 at 2999, 3021-22)

a. There Exists A Substantial Risk Of Non-Response Bias Due To Low Response Rate

314. It is incumbent upon the survey's proponent to prove that non-response bias does not exist where the response rate is below 70 percent. (Id. at 3040) The Research Manual for Scientific Evidence instructs that surveys with response rates below 50% should be regarded with "significant caution" as a basis for precise quantitative statements about the population. (Id. at 3041-43) A response rate below the 50% level serves as a "red flag" that the survey possibly is not projectable. (Id.) Dr. Rossi explained that "everything that we do in standard statistical inference from computing a simple proportion to these more complicated manipulations that we are doing here involve[s] the notion that what we have is really a random sample, so we can project it." (Id. at 3047) A low response presents a "significant risk" that the sample is not random. (Id.)

315. The response rate for the DOJ's survey is below 40%. (Id. at 3034-37) Before sending out the DOJ's survey, Prof. Wind obtained a list of 10,000 dental labs. (D.I. 422 at 768) Prof. Wind's team initially placed telephone calls to 2,520 of these labs. (Id. at 770-71) Of these calls, 702 people refused the initial screening or could not be reached. (Id. at 771) Of the remaining 1,818 eligible respondents, only 1,760 were actual dental labs and of these, only 674 labs actually fabricated dentures using plastic artificial teeth. (Id. at 771-72) 667 of

the respondents indicated they were responsible for selecting artificial teeth. (Id. at 772) 67 of these labs refused to participate in the study, leaving 600 potential labs to participate in the study. (Id.) Prof. Wind's staff mailed the surveys to the 600 labs. Of these, 274 labs actually responded. (Id. at 773) Only 261 labs completed the survey. (D.I. 452 at 3034)

316. "Any reasonable researcher has to calculate a response rate." (Id. at 3034) Prof. Wind did not calculate one. (Id.) Based upon the data provided, Dr. Rossi calculated that the response rate for the DOJ's survey was approximately 39%. It is likely that the response rate is even lower because some portion of the initial 450 labs that outright refused to participate could have been eligible for the survey. (Id. at 3035-36) The highest possible response rate for the DOJ's survey, 39%, raises a serious concern that the survey's sample universe is not representative. (Id. at 3037) A survey that suffers from non-response bias cannot be fixed by any other means than re-doing the entire survey. (Id. at 3050-51)

317. To dispel the risk of non-response bias, Prof. Wind had to establish both that (1) measurable characteristics of non-respondents are similar to those of respondents, and (2) these characteristics are predictive of, or related to, attitudes towards distribution options. (Id. at 3045-46) Prof. Wind could

have gathered information concerning the size (i.e., number of technicians) of the non-respondent labs and compared them to the size of the respondent labs, to show that the two groups are comprised of labs with similar characteristics. (Id.) Even if he did this, Prof. Wind also would have had to prove that a lab's size is related to its view on local dealer availability. (Id.) Prof. Wind failed to gather any information concerning the characteristics of non-responding labs. (D.I. 422 at 897-98; D.I. 452 at 3046-47)

b. The Failure To Conduct A Pre-Test Makes The Survey Unreliable

318. The lack of a pre-test to protect against non-response bias or confusion over terms used in the survey renders the results unreliable. A pre-test involves the use of the draft of the survey questionnaire, including instructions and stimuli. (D.I. 452 at 3022-23) The survey then is administered to a subsample of the target population, which in this case generally was defined as dental lab technicians responsible for selecting artificial teeth used to fabricate dentures. (Id.) The survey administrator then reviews the particular questions with the pre-test respondents, as well as definitions of key words. (Id.) The administrator also asks the respondents to paraphrase the survey's instructions in an effort to test the respondents' understanding of the instructions. (Id.) Based on this feedback, the wording and nature of questions and instructions

are revised. (Id.) As Prof. Wind testified, “[t]he major reason for a pre-test is to see whether the respondent understands the questions and can answer the questionnaire in a meaningful fashion.” (D.I. 422 at 824)

319. The DOJ’s survey was never pre-tested. (Id.) Pre-tests are “absolutely essential” in survey research. (D.I. 452 at 3023) At trial, Dr. Rossi read an excerpt on the critical nature of pre-testing written by Prof. Wind’s colleague, Dr. Paul Green, at page 271 of Research for Marketing Decisions:

Pre-testing. Pre-testing of questionnaires is a virtual necessity. The only way to gain real assurance that questions are unambiguous is to try them. Pre-testing is almost always done initially by asking proposed questions of associates. To be truly effective, however, pre-testing of questions should be conducted by asking them of a group of respondents who are similar to those who will be interviewed in the final example. It is the rule, rather than the exception, that questions will be revised as a result of pre-testing. Several versions of a question may need to be considered as a result of pre-testing before the final version is decided upon.

(Id. at 3024-25) Prof. Wind hired Dr. Green to assist with the DOJ’s survey. (D.I. 422 at 805) Design flaws in the DOJ’s survey could have been detected and corrected with a pre-test.

(Id. at 3023-26)

c. The Tasks Requested Of Respondents Were Too Complex And Confusing

320. The lack of variation among individual respondent’s completed stimuli scenario cards suggests that respondents were unwilling or unable to devote the time necessary to take the

survey seriously. The conjoint exercise involved allocating 100 points in each of eight stimuli cards. (D.I. 452 at 3052) Dr. Rossi found considerable evidence in the pattern of responses showing that the lab respondents were unable or simply unwilling to provide accurate responses. (Id. at 3051-52) For example, some respondents returned less than all eight scenario cards. (Id. at 3035) In half of the cards, labs did not seem to care about huge variations in price and distribution options. One-half of the respondents did not vary their points across the eight cards – even though prices declined dramatically on some of the cards. (Id. at 3052-53) Because these responses run counter to other evidence that labs are extremely price-sensitive, it is likely that the labs did not complete the requested task seriously. (Id. at 3052-55) Prof. Wind testified that even though 48% of respondents did not vary their market share allocation, he still used this data because it could reflect brand loyalty. (D.I. 422 at 886-88) Such extreme brand loyalty, i.e., respondents are so wed to particular brands regardless of price differences, would likely result in these respondents allocating a large fraction of points to a particular brand. (D.I. 452 at 3055-56) The fairly even distribution of points across brands by these respondents is inconsistent with Prof. Wind's extreme brand loyalty theory. (Id.)

321. Guideline Research engaged in the widespread practice of editing scenario cards that did not total 100 Points and using those edited cards as data. For those cards that did not add up to 100 points, a Guideline Research interviewer changed the points on the completed cards. (D.I. 422 at 888-89)

322. In total, Guideline Research changed the point allocations for approximately 38 questionnaires, so that about 15% of all completed questionnaires or 7% of all respondent cards had points changed. (D.I. 457 at 4066-67) All 38 scenario cards were used to compile the survey data. (D.I. 422 at 887-888)

323. Dr. Reitman admitted that since the model is based on input from the survey, if the inaccuracy of the survey data was "widespread," then the accuracy of the results would be problematic. (D.I. 457 at 4056-57) When questioned about the adjustments made to numerous cards, Dr. Reitman acknowledged that some of the reallocations constitute material adjustments and not merely scaling adjustments. He then admitted that if all of the changes resulted in a larger share shift for Vita and Ivoclar, then it could create a suspicion about his results. (Id. at 4069-71)

d. The Results Of The Analysis Of The Survey Data Are Not Replicable

324. A key aspect of any scientific approach is replicability. (D.I. 452 at 3061) Replicability is the ability of another person educated in the art of the area to replicate

the results of the analysis. (Id.) This enables the reviewer to inspect the analysis and critique it, which is the whole point of the scientific inquiry. (Id.) This allows other scientists to learn from the analysis. (Id.) The scientific method is every bit as applicable in survey research as it is in other scientific domains. (Id.)

325. Dr. Rossi was unable to replicate the PRIDEM software used to analyze the data derived from the DOJ's survey. (Id. at 3064-65) Prof. Wind regards PRIDEM as propriety software. Prof. Wind asserted that the only way to access PRIDEM is to hire Prof. Wind or one of his associates. (Id.; D.I. 422 at 900-01) The DOJ did not produce the source code for PRIDEM to Dr. Rossi. (D.I. 453 at 3242) He could not inspect the computer instructions underlying PRIDEM. (D.I. 452 at 3065) As Dr. Rossi pointed out, it was not necessary for the DOJ to utilize PRIDEM to undertake analysis of the survey data. (Id.) There are a number of standard statistical methods and packages available that can perform the analysis and that are fully replicable. (Id.)

**e. The Lack Of A Standard Error Calculation
Renders The Conclusions Meaningless**

326. Prof. Wind's and Dr. Reitman's failure to calculate a standard error measurement for the survey result has rendered the survey data uninformative. A confidence interval is a measure of percent of people who respond in a certain way. The measure is

used to help determine whether the estimate given is statistically significant. In common parlance, the estimate is sometimes referred to as "plus or minus a percentage." Thus, a confidence interval typically is presented as plus or minus x%. (D.I. 422 at 904) Prof. Wind did not calculate a confidence interval with PRIDEM, claiming that it was impossible to do. (Id. at 903-05) Dr. Rossi testified that Sawtooth, a commercial version of PRIDEM, provides confidence intervals, standard errors and other measures of reliability. (D.I. 452 at 3068-69)

327. Neither Prof. Wind nor Dr. Reitman calculated a sampling error for their estimates of share change and price change. (Id. at 3066-67) According to Prof. Wind, the important question is not whether estimations are statistically significant, but rather whether estimations are "managerially significant." (D.I. 422 at 905) In his opinion, the concept of statistical significance is not the same as managerial significance. (Id. at 905-06) Prof. Wind stated that his intention was to provide the court with an estimation and have the trier of fact determine whether the estimation is "managerially meaningful." (Id. at 906-07)

328. As Dr. Rossi testified, it is "absolutely incumbent upon anyone using a sample to make inferences about the population [to] produce some measure of statistical reliability." (D.I. 452 at 3061)

f. The Manipulation Of The Analysis Of The Survey Data

329. Dr. Reitman's model produced negative marginal costs. (D.I. 452 at 3079) In other words, the model produced a result that showed that, instead of incurring production costs, tooth manufacturers are paid to manufacture a marginal unit, i.e., their next unit, of teeth. (Id.) As Dr. Rossi explained, negative marginal costs in a production environment are not possible.

330. Dr. Reitman used parameters on price sensitivity for Dentsply and for other premium brands. (Id. at 3078-79) Dr. Reitman arbitrarily changed the price sensitivity parameter for the other premium brands. (D.I. 453 at 3210) This change allowed Dr. Reitman to obtain an economically plausible result. (D.I. 452 at 3081) There is no justification for changing the parameters of a model based on criteria other than the sample data. (Id. at 3082)

K. Dentsply Has Not Established That its Alleged Business Justifications Are Sufficient to Justify its Exclusive Dealing

331. Dentsply has failed to meet its burden to show that its exclusive dealing practices here are justified by a non-pretextual, pro-competitive rationale.

1. Dentsply's Alleged Business Justifications Are Pretextual

332. As shown above, the contemporaneous evidence is clear that Dentsply's express purpose in enacting and enforcing Dealer Criterion 6 was anti-competitive -- to "block" Dentsply's competitors from the dealers selling Trubyte teeth by tying up those dealers.

333. One rationale Dentsply has relied on is the need to "focus" its dealers on selling Trubyte teeth. This rationale is most explicitly set forth in an interrogatory response provided during the investigation that preceded the filing of this case:

In Dentsply's experience, the greater the number of competing tooth lines carried, the less likely that a dealer will be able to sustain all of the desired service and promotional elements at a high, competitive level. In short, service and promotional support for a particular line is likely to suffer the greater the number of lines carried. Recognizing the need for dealers to focus their efforts in order to effectively promote the company's teeth and service laboratory customers, the company formalized criteria in February 1993 for dealers to meet in order to be Trubyte teeth dealers. One of these criteria is that dealers that are recognized as authorized distributors of Trubyte teeth cannot add additional lines of teeth after becoming a Trubyte dealer.

(GX 157 at Interrogatory Response No. 13)

334. The former Dentsply executive responsible for promulgating Dealer Criterion 6, Robert Brennan, General Manager of the Trubyte Division, also provided this same "focus dealer services" rationale as an explanation for Dealer Criterion 6.

(D.I. 429 at 1719-20)

335. The "focus dealer services" rationale is not a valid justification for using exclusive dealing in the tooth industry because dealers have every incentive on their own to make sure that their level of service for any given tooth brand does not suffer. (D.I. 457 at 3927-28) If a dealer provides inadequate service, it risks losing customers, not only for teeth, but also all the other products the customer may buy from the dealer. (Id. at 3928) In fact, there is much greater risk to the dealer than to Dentsply. If a customer is dissatisfied with the service it receives from one Dentsply dealer, it will simply buy Trubyte teeth from another dealer. Dentsply's sales will stay the same but the dealer will lose that customer's business altogether. (Id.)

336. Testimony from, and the conduct of, Dentsply's own dealers undermines Dentsply's alleged concern over dealer "focus." Both Norman Weinstock and Betsy Harris testified that if they added another line of teeth, it would not affect their level of service or the amount of Trubyte teeth they stock. (D.I. 417 at 190-91; D.I. 420 at 605, 664) Dealers selling the "grandfathered" brands have shown no lack of focus on Trubyte teeth despite the fact that they sell these other products. (D.I. 425 at 1427-28; D.I. 420 at 664; D.I. 417 at 142) Indeed, Dentsply's own Chris Clark acknowledged that Zahn Dental, which sells Universal, Myerson, and other rival brands, is a more

effective dealer than some less exclusive dealers. (D.I. 450 at 2685)

337. Moreover, the "focus dealer services" rationale communicated by Dentsply is inconsistent with Prof. Marvel's efficiency rationale articulated in this case. (D.I. 457 at 3974) Prof. Marvel has not endorsed this particular rationale for exclusive dealing. (Id. at 3929) To the contrary, he stated in his 1982 paper that enhancing dealer services cannot be the justification for exclusive dealing. (Id. at 3929; D.I. 455 at 3704-06)

338. Instead of endorsing the contemporaneous rationale for Dealer Criterion 6, Prof. Marvel hypothesized a different rationale. Prof. Marvel later testified that he did not have an opinion on Dentsply's motive for adopting exclusive dealing and stated, "I don't much care about motive." (D.I. 455 at 3686-87)

2. Dentsply Has Failed to Demonstrate That Prof. Marvel's Free Riding Theory Applies to the Artificial Tooth Market

339. At trial, Dentsply put forward Prof. Marvel's hypothetical, purportedly pro-competitive "free riding" theory for exclusive dealing. However, this theory must be rejected for a number of reasons: (1) Prof. Marvel's alleged efficiencies from exclusive dealing are either not dependent on exclusive dealing or are mere speculation; and (2) required elements of Prof. Marvel's free riding theory are not satisfied here.

a. Prof. Marvel's Claimed Efficiencies Are Not Dependent on Exclusive Dealing and Are Unsupported by the Underlying Record

340. Prof. Marvel identified three consumer benefits from exclusive dealing. (D.I. 454 at 3655-59) When considering efficiencies, Prof. Marvel acknowledged that the focus should be on the benefits consumers receive and not on any benefits Dentsply or other suppliers receive. (Id. at 3656)

341. Dentsply's relevant promotions under Prof. Marvel's theory are those at the laboratory level. As Prof. Marvel admitted, "you wouldn't expect to see exclusive dealing at the dealer level to explain protection of the promotion at the dentist level or at the final consumer level, so if Dentsply were to be promoting there and saying you've got to give me the right to have exclusive dealing at the dealer level in order to protect that promotion, I would say that is not an answer . . . that I would find credible." (D.I. 455 at 3698-99) Dentsply does not "need to have recourse to exclusive dealing to be able to retain those customers that its efforts bring to the laboratories." (Id.)

342. Prof. Marvel's claim that exclusive dealing was necessary for Dentsply to introduce Portrait and other premium teeth hinges on his conclusion that without exclusive dealing, Dentsply could not do sufficient branded promotion to introduce new products. (Id. at 3657-59) Yet, Prof. Marvel admits that

nothing but theoretical expectations support his claim that branded promotion would be reduced. (D.I. 455 at 3727)

343. Prof. Marvel has "done no empirical analysis of what would happen if Dentsply abandoned its exclusive dealing." (Id. at 3727-29) He ignored a number of opportunities to do more than speculate:

(a) When he reached his opinion, 14 of the 30 dealers that carried Trubyte teeth, including the top 6 dealers, carried other lines of teeth as well. (Id. at 3729-30) Prof. Marvel could come up with only a single instance of what he believed to be "free riding" on Dentsply's efforts at an authorized dealer -- when Dentsply failed to supply teeth to Marcus Dental in 2000 because of manufacturing problems and Marcus sought to buy teeth from Kenson. (Id. at 3733) That incident, however, did not involve free riding. There is no evidence that the rival manufacturer, Myerson, reduced its promotion by offering Marcus a greater margin than Dentsply, or induced Marcus in any way to steer its customers.

(b) Many of Dentsply's dealers sell economy teeth, on which Dentsply charges a premium substantially higher than its rivals. (Id. at 3734-35) Prof. Marvel agreed that the absence of free riding in economy teeth at Dentsply dealers would have been a good test for his theory, but only if Dentsply and its rivals had economy teeth of comparable quality. (Id. at 3735-37)

Prof. Marvel chose not to determine whether Dentsply and its rivals had economy teeth of comparable quality. (Id.)

(c) Both Universal and Meyerson sold premium teeth through dealers at prices lower than Dentsply's. (Id. at 3737) Prof. Marvel looked, but could find no evidence of free riding on Dentsply's promotion of premium teeth. (Id. at 3737-38)

(d) A Dentsply dealer, DTS, carried both Dentsply and Vita teeth in New York. (Id. at 3738) Prof. Marvel did not look to see whether Vita offered DTS a margin difference to switch customers, as his theory predicts it should. (Id. at 3739-41) He conceded that if he had, he may have found evidence to support or refute his theory. (Id. at 3741)

b. The Necessary Elements of Prof. Marvel's Free Riding Theory Are Not Satisfied Here

344. There are several essential elements or conditions which must be satisfied in order for Prof. Marvel's theory to apply to any given market. (D.I. 457 at 3972-73, 3984) Several of the necessary elements are not satisfied in this case: (1) there is no evidence that dealers engage in "bait and switch" steering of lab customers; (2) most of the relevant promotions by Dentsply are not protectible by exclusive dealing because they are purely brand-specific and not free-ridable; and (3) Dentsply would increase, not decrease, its spending on promotions and marketing absent Dealer Criterion 6. (Id. at 3949, 3973)

i. Dealers Do Not Actively "Bait and Switch" Laboratory Customers to Steer Them from One Tooth Brand Carried by the Dealer to Another

345. An "essential element" or "linchpin" of Prof. Marvel's efficiency theory is that dealers will try to steer orders for Trubyte teeth to another brand by using a "bait and switch" strategy on their lab customers. (Id. at 3930-31, 3935, 3946; D.I. 454 at 3548-49) It is not plausible under the facts of this case, however, that dealers would steer labs from one tooth brand to another for several reasons: (1) labs (or sometimes dentists), not dealers, are the decision makers who determine what brand of teeth will be used in a particular denture case; (2) there is a significant downside risk to dealers who try to steer customers because if the dealer recommends an alternative brand and the lab does not like it, the dealer might lose the customer's business not only for teeth but also other products; and (3) there is no evidence in the record that, in fact, dealers are steering customers. (Id. at 3931-33; D.I. 423 at 1130-31)

346. Numerous dealers testified that they do not attempt to steer a lab ordering a particular tooth to order another brand.

(a) DLDS does not attempt to steer customers from one brand of a product to another. (D.I. 425 at 1417, 1419, 1428-29, 1436) The General Manger of DLDS, Regis Vetrano, testified that DLDS could lose customers if it tried to steer a customer to a product that did not work as well as the product the customer

preferred. (Id. at 1417) Moreover, DLDS's sales representatives are not in a position to switch orders from labs because they are not laboratory technicians and do not use the products. (Id. at 1417, 1437) Mr. Vetrano made clear that his representatives would "have a problem" with him if they tried to substitute teeth. (Id. at 1428)

(b) At Pearson Dental, the tooth counter specialist responds to "the demand of the customer." (Id. at 1384) If a customer calls and orders a particular item, "we don't challenge that. We just process the order." (Id.) Pearson does not "push somebody to buy whatever brand versus [an]other brand" unless "the customer asks for information that . . . he wants to do the change himself." (Id. at 1391-92) Pearson does not have any influence in determining which brand of teeth will be used in a particular denture -- that decision is made by the lab or the dentist. (Id. at 1402-03)

(c) Atlanta Dental does not steer its customers to one of the tooth brands that it carries over another. (D.I. 420 at 663) Ms. Harris sees the decision as the customer's -- she only provides them with her knowledge of different lines, answers questions about the specific tooth that they are inquiring about and checks on its availability. (Id. at 662-63) In any event, "Primarily, [customers] do know what they want when they call in." (Id. at 663-64)

(d) Mr. Nordhauser testified that Darby does not have a hand in choosing the teeth that the laboratory will buy and put into a denture: "We don't do that. The laboratory does that. We can just point out that we have economy teeth and we have regular teeth. So that's as far as we go. We don't in any other way have anything to do with what goes into that denture." (D.I. 457 at 4143-44)

(e) Zahn does not steer labs from one tooth brand to another. (D.I. 417 at 164-65) On a routine basis, Zahn simply takes orders and "whatever the customer is requesting is what we provide." (Id. at 103-04, 143) To do otherwise might antagonize its relationship with its vendors. Moreover, Zahn's everyday profit margins are basically the same for most of the lines that it sells, so it would not gain anything in percentage of gross profits from steering. (Id. at 165)

(f) Jack Silcox of Jack Silcox, Ltd. testified that, when a lab calls and orders a particular brand of tooth, he does not try to steer it to another brand. (D.I. 431 at 2067) Rather, the labs place their orders and he "give[s] them what they want." (Id.)

(g) AccuBite earns a 25-35% margin on its Trubyte tooth lines, except for Portrait, which is significantly below that. (D.I. 448 at 2468) Despite this margin difference, there

is no evidence that AccuBite steers customers away from Portrait and toward other lines that would earn a higher margin.

347. Labs agree that dealers do not attempt to determine or influence their choice of brands:

(a) Mr. Obst of DSG testified that his dealer, Zahn, never determines the brand of tooth DSG labs use in their dentures, and that this is true of dealers generally. (D.I. 450 at 2754) As far as Mr. Obst knows, the dealer is not involved in that decision making process in terms of what artificial tooth to use in a particular denture case. (Id.)

(b) Mr. Ryan of Sonshine Dental Lab testified that the dealer is "not involved in picking teeth at all for us." (D.I. 425 at 1227) Mr. Ryan testified that DLDS has never tried to persuade him or his lab to switch from the brand of tooth he was planning to buy to another. (Id. at 1227-28) When a dealer is out of stock on something, it calls the lab so the lab can pick a different mould or substitute a different tooth. (Id. at 1227) But in that circumstance, the lab -- and not the dealer -- is the one making the decision about what tooth to substitute. (Id.)

(c) Dr. Armstrong of Armstrong Laboratory could not recall a time during his 50 years of experience in the dental lab business when a dealer determined what line of teeth would be used by his lab in a denture case. (D.I. 448 at 2387)

(d) Mr. Challoner, former owner of Lord's Dental Studio, testified that when his lab ordered teeth from the dealer, he already knew which brand he wanted and the dealer had no role in determining his choice. (D.I. 450 at 2869)

348. If "bait and switch" steering were a valid concern in the artificial tooth market, there should be more examples of it actually occurring, given the presence for at least 25 years of grandfathered brands of rival teeth at dealers carrying Trubyte teeth. (D.I. 457 at 3941-42) As mentioned above, Dentsply and Prof. Marvel, the proponents of this theory, failed to investigate whether the grandfathered dealers were engaged in steering. There are "zero examples" in the record of these dealers steering customers from one brand to another. (Id. at 3943-44, 3946) The dealers selling grandfathered brands who testified at trial and in the deposition record consistently stated that they do not "bait and switch" or steer customers. (D.I. 417 at 103, 164-65; D.I. 420 at 662-64; D.I. 425 at 1384, 1391-92, 1417, 1419; D.I. 453 at 3296-98, 3306-07)

349. The grandfathered brands provide particularly compelling evidence that dealers do not steer customers because, if anything, dealers should be able to steer customers more easily from Dentsply to those brands than to Vita and Ivoclar. (D.I. 457 at 3944-46) This is because the grandfathered brands include Universal and Myerson, both of which are available in

premium lines with American moulds (in fact, copies of Dentsply moulds) and Dentsply shades, all of which is intended to make it easy for labs to switch from one to the other. (Id.) In contrast, Ivoclar and Vita teeth -- which are not among the grandfathered brands -- use largely European moulds and their own shading systems. (Id.; D.I. 432 at 2120-21) Thus, although one would expect to see more switching to Universal and Myerson for these reasons, no evidence has been presented of steering of lab customers to these brands. (D.I. 457 at 3946)

**ii. Much of Dentsply's Lab-level Promotions
Are Not Protected by Exclusive Dealing
Because They Are Purely Brand Specific**

350. Another problem with Prof. Marvel's theory is that a great deal of Dentsply's relevant promotion is not free-ridable because it is "purely brand specific" -- i.e., customers are convinced by the promotion that they want to buy a particular brand of teeth and a dealer's recommendation will not dissuade them of their brand preference. (D.I. 457 at 3965-66) The term "purely brand specific" is derived from Prof. Marvel's 1982 paper describing his theory, where he wrote:

This argument does not apply if the promotional investment is purely brand specific. In such cases, the dealer will not be in a position to switch customers from brand to brand.

(Id. at 3965)

351. One of Dentsply's purely brand specific promotions is its "add-a drawer" program. (Id. at 3966) The objective of this

program is to convince a customer to add additional teeth to an existing stock of Trubyte teeth. (Id.; D.I. 454 at 3560) If the promotion successfully convinces the lab to expand its inventory of Trubyte teeth, it does not make sense that the lab would be willing, or the dealer would be able to convince the lab, to do so by buying a rival's brand of teeth instead. (D.I. 457 at 3967) Other examples of purely brand specific promotions are Dentsply's cooperative marketing program, Portrait "sticker" program, Portrait Spectacular program, and competitive tooth swaps. (D.I. 457 at 3967-69; D.I. 454 at 3560-62; D.I. 432 at 2143-44, 2169-70)

352. To the extent Dentsply's promotions are purely brand specific, they are not free-ridable, and Prof. Marvel's efficiency theory does not apply to them. (D.I. 457 at 3969)

iii. Dentsply Has Not Shown That Promotion Would Decrease Absent Dealer Criterion 6; Indeed, the Evidence Shows That Both Dentsply and its Competitors Would Increase Their Levels of Promotion

353. Even assuming Prof. Marvel's efficiency theory applied to the tooth market and Dentsply would have an incentive to do less promotion because it could not protect its investment in such promotion, Dentsply would also have a countervailing incentive to do more promotion in order to compete with its rivals once they gain access to dealers. (D.I. 457 at 3970-71) These two effects on Dentsply's promotion level from removing

Dealer Criterion 6 must be weighed against each other. (Id. at 3971) The testimony of Dentsply's own executives indicates that, if Dealer Criterion 6 is removed and as a result Dentsply loses market share, Dentsply will likely increase its promotions to regain its share. (D.I. 454 at 3513-14; D.I. 432 at 2309; D.I. 450 at 2688)

354. If marketing expenditures would increase absent Criterion 6, there can be no concern about an inefficient level of marketing by Dentsply and, therefore, no pro-competitive justification for maintaining Dentsply's exclusionary policies. (D.I. 457 at 3972)

355. The evidence also shows that Dentsply's rivals would increase their levels of promotion and marketing if Dealer Criterion 6 were no longer in effect. Various Dentsply competitors have testified that when they determine how to allocate resources, they evaluate how effective the promotional resource will be at increasing sales. (D.I. 419 at 281-82) Dentsply's rivals would increase their promotional expenditures if their teeth were sold through the dental laboratory dealer network. (Id.; D.I. 425 at 1316-19)

3. Dentsply's Business Justification Theory Is Inconsistent with the Facts in the Marketplace

356. In addition to the specific areas where Prof. Marvel's theory does not apply to the artificial tooth market, Dentsply's asserted justifications for its exclusionary policies are

inconsistent with its own announced reason for its exclusionary policies, its conduct enforcing the policy, its rival suppliers' actions, and dealers' behavior in the marketplace. (D.I. 457 at 3973-74)

a. Dentsply's Justification Theory Is Inconsistent with its Dealers' Own Vehement Opposition to Exclusive Dealing

357. The rationale for Dentsply's claimed pro-competitive justification is that it makes distribution more efficient, resulting in increased profits. But in order to get dealers to cooperate with this distribution restraint, Prof. Marvel's theory requires that Dentsply must share its increased profits with the dealers. (Id. at 3974) Thus, in theory, exclusive dealing should make dealers "better off" because they get a "share of the pie." (Id.)

358. Instead of showing support for Dentsply's exclusionary policies in order to receive the benefit of this arrangement, however, dealers vigorously oppose the policy. (Id. at 3975) Both Ms. Harris of Atlanta Dental and Mr. Weinstock of Zahn Dental voiced the opinion at trial that Dentsply's policies exert too much control over the products they are able to sell. (D.I. 420 at 593-94; D.I. 417 at 157)

359. These dealers have gone so far as to take affirmative action to undermine Dentsply's enforcement of its policy against other dealers. For example, Zahn Dental, Atlanta Dental and many

others supported Frink, and put their own relationships with Dentsply at risk, by supplying Frink with Trubyte teeth after it had been terminated as a Dentsply dealer. (D.I. 417 at 155-57; D.I. 420 at 588-94, 701-05) These dealers sold Trubyte teeth, at cost, to Frink in order to show their support for Frink's stand against Dentsply. (Id.) If dealers obtained some benefit from the policies because they were in fact pro-competitive, there is no reason they would undermine its enforcement. (D.I. 457 at 3975)

b. Dentsply's Justification Theory Is Inconsistent with its Application and Enforcement of Dealer Criterion 6

360. Dr. Reitman provided two examples of Dealer Criterion 6 enforcement that have nothing to do with the purported justifications put forward by Dentsply at trial: Trinity and Leach & Dillon. (D.I. 457 at 3975-78)

(a) Trinity was a dealer that sold Trubyte merchandise but not teeth, and then added Vita teeth. (D.I. 429 at 1886) Dentsply had not expressed any dissatisfaction with Trinity as a merchandise dealer. (Id. at 1887-88) Because Trinity did not carry Trubyte teeth, Dentsply had made no investments in Trinity's tooth sales. (Id.) Nevertheless, Dentsply terminated Trinity for adding Vita teeth. (Id.) Prof. Marvel's theory does not apply to dealers who do not carry Trubyte teeth, since there are no tooth promotions on which a competitor can free ride in

the first place under this scenario. (D.I. 457 at 3975-76) Nor is there any reason to believe that preventing Trinity from selling competitive brands of teeth would somehow enhance its ability to sell Trubyte merchandise. (D.I. 429 at 1707) Instead, the reason Dentsply terminated Trinity was to try to foreclose a distribution point for Vita. (D.I. 457 at 3976)

(b) Leach & Dillon proposed to dealers that they handle only the accounts receivable function for the Davis Schottlander Enigma teeth it was selling. (D.I. 417 at 174; D.I. 432 at 2296-97) The dealers' tooth counters and sales representatives would not be involved in selling the Enigma teeth. (Id.) As a result, Prof. Marvel's efficiency story does not apply here because the dealer is not doing any stocking or selling and there is no opportunity to steer customers. (D.I. 457 at 3978) Nonetheless, Dentsply considers such an arrangement a violation of the dealer criteria. (D.I. 432 at 2295-97)

c. Dentsply's Justification Theory Is Inconsistent with its Own and Other Suppliers' Conduct in the Marketplace

361. Dr. Reitman identified two areas where Dentsply's justification theory is inconsistent with its own or other suppliers' conduct in the dental laboratory products market: (1) no other artificial tooth supplier has imposed exclusive dealing on dealers; and (2) Dentsply does not treat its wholly exclusive dealers any differently than its dealers carrying rival brands of

teeth under Dealer Criterion 6's grandfathering provision in a way that is consistent with Prof. Marvel's theory. (D.I. 457 at 3978-79)

362. If Prof. Marvel's efficiency theory applies to Dentsply, then it should apply to Dentsply's rivals as well. (Id. at 3979) The evidence in the record, however, demonstrates that no other tooth suppliers use exclusive dealing. (D.I. 417 at 155; D.I. 431 at 2066-67)

363. The dealers that sell grandfathered brands of rival teeth in addition to Trubyte teeth are a significant test of Prof. Marvel's theory in several ways. (D.I. 457 at 3981-82) As noted above, those dealers are where one would expect to see the type of "bait and switch" steering necessary to Prof. Marvel's theory if such steering was occurring in the market; however, there are "zero examples" in the record. (Id. at 3982) Moreover, there are two other important ways in which these dealers contradict Prof. Marvel's theory:

(a) Under Prof. Marvel's theory, Dentsply should structure its various marketing programs to devote more resources to its exclusive dealers than to the nonexclusive dealers because Dentsply cannot protect its promotional investments in those dealers carrying grandfathered brands of teeth. (Id.) There is no evidence in the record, however, that Dentsply devotes more promotional resources to its wholly-exclusive dealers and, in

fact, Dentsply executives are very clear that they treat all dealers selling their teeth the same in this respect. (Id.)

(b) There is no evidence that the nonexclusive dealers carrying grandfathered brands of rival teeth are less efficient than the exclusive Dentsply dealers. (Id. at 3982-83)

364. Dentsply executives testified that the company does not treat exclusive dealers any differently than grandfathered dealers in the area of promotional support. (D.I. 454 at 3511-12, 3597; D.I. 450 at 2686-87; D.I. 432 at 2288-89)

365. When Dentsply has converted a lab from using a competitive tooth to a Trubyte tooth, it has not tried to steer that lab away from buying Trubyte teeth from a nonexclusive dealer such as Zahn, despite Dentsply's perceived risk that the nonexclusive dealer could sell a competing brand to the lab. (D.I. 450 at 2686-87) Dentsply's commitment not to steer business to one dealer over another is taken very seriously: Chris Clark described it as a "cardinal rule in terms of how we conducted ourselves with dealers that we would not cross." (Id. at 2687)

366. Evidence from dealers corroborates Dentsply's policy: for instance, Dentsply did not alter its level of training, marketing assistance or advertising to DLDS when it started carrying the Universal and Justi lines pursuant to the

grandfathering provision in Dealer Criterion 6. (D.I. 425 at 1429)

367. Dentsply's top-five tooth dealers in 2001 all sold competing brands of teeth in addition to Trubyte. In 2001, according to Dentsply's General Manager, Zahn accounted for about 39 percent of overall Trubyte tooth sales, Patterson 28%, Darby 8%, Benco 4%, and DLDS a little bit under 4%. (D.I. 432 at 2179-81; DX 1665) Together, these five dealers accounted for 83% of Dentsply's tooth sales in 2001. (Id.)

368. Mr. Brennan testified that he knew of no instance in which a grandfathered tooth dealer failed to provide the level of service Dentsply was looking for because the dealer carried a rival manufacturer's teeth. (D.I. 429 at 1734-35)

369. Mr. Clark believed that Zahn was a more effective and "more active" tooth dealer than Patterson, despite the fact that Zahn carries more competitive lines of teeth than Patterson does. (D.I. 450 at 2685) In a September 15, 1993 letter from Dentsply's Senior Vice President to Norman Weinstock, Dentsply wrote: "Zahn has been the most aggressive dealer in the U.S. in the tooth marketplace without a doubt." (GX 44 at DS 030646-47)

III. CONCLUSIONS OF LAW

1. Antitrust cases are resolved on a case-by-case basis focusing on the particular facts of each case. Eastman Kodak Co. v. Image Technical Servs., Inc., 504 U.S. 451, 467 (1992).

2. The goal of antitrust law is to protect competition, not competitors. Brokerage Concepts, Inc. v. U.S. Healthcare, Inc., 140 F.3d 494, 533 (3d Cir. 1998).

A. The DOJ Has Failed To Prove That Dentsply Has Violated Section 1 Of The Sherman Act And Section 3 Of The Clayton Act

3. Section 1 of the Sherman Act provides that "[e]very contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal. Every person who shall make any contract or engage in any combination or conspiracy hereby declared to be illegal shall be deemed guilty of a felony[.]" 15 U.S.C. § 1.

4. Only unreasonable restraints of trade are prohibited. See Business Elecs. Corp. v. Sharp Elecs. Corp., 485 U.S. 717, 723 (1988). To establish a claim under § 1 of the Sherman Act, plaintiffs must show that: 1) there was a contract, combination, or conspiracy; 2) that unreasonably restrained trade; and 3) affected interstate commerce. See Armstrong Surgical Ctr., Inc. v. Armstrong County Mem'l Hosp., 185 F.3d 154, 157 (3d Cir. 1999). All exclusive dealing agreements must comply with § 1 of the Sherman Act. Barr Labs., Inc. v. Abbott Labs., 978 F.2d 98, 110 (3d Cir. 1992) (citing American Motor Inns, Inc. v. Holiday Inns, Inc., 521 F.2d 1230, 1239 (3d Cir. 1975)).

5. Section 3 of the Clayton Act makes it unlawful for a person to sell goods on the condition, agreement, or understanding that the purchaser shall not deal in the goods of a competitor where the effects of such conditions, agreement, or understanding may be to substantially lessen competition or tend to create a monopoly. See 15 U.S.C. § 14.

6. In order to prove a claim under § 3 of the Clayton Act, plaintiff must prove that the probable effect of Dentsply's restrictive dealing agreements is to decrease competition. See Standard Fashion Co. v. Magrane-Houston Co., 258 U.S. 346, 356 (1922).

7. For § 3 cases, the Supreme Court has noted that "[i]n practical application, even though a contract is found to be an exclusive-dealing arrangement, it does not violate the section unless the court believes it probable that performance of the contract will foreclose competition in a substantial share of the line of commerce affected." Tampa Elec. Co. v. Nashville Coal Co., 365 U.S. 320, 327 (1961); accord Barr Labs, 978 F.2d at 110.

8. Courts apply a balancing approach under the "rule of reason" in analyzing claims under § 1 of the Sherman Act and § 3 of the Clayton Act. See U.S. v. Microsoft Corp., 253 F.3d 34, 59 (D.C. Cir. 2001); See Omega Env'tl., Inc. v. Gilbarco, Inc., 127 F.3d 1157, 1162 (9th Cir. 1997); Wisconsin Music Network, Inc. v. Muzak Ltd. P'ship, 5 F.3d 218, 221-22 (7th Cir. 1993).

9. As discussed by the Third Circuit:

The rule of reason requires the fact-finder to weigh [] all of the circumstances of a case in deciding whether a restrictive practice should be prohibited as imposing an unreasonable restraint on competition. The plaintiff bears an initial burden under the rule of reason of showing that the alleged combination or agreement produced adverse, anti-competitive effects within the relevant product and geographic markets. The plaintiff may satisfy this burden by proving the existence of actual anticompetitive effects, such as reduction of output, increase in price, or deterioration in quality of goods or services[.] Such proof is often impossible to make, however, due to the difficulty of isolating the market effects of challenged conduct. Accordingly, courts typically allow proof of the defendant's 'market power' instead. Market power, the ability to raise prices above those that would prevail in a competitive market is essentially a surrogate for detrimental effects.

U.S. v. Brown Univ. in Providence in State of R.I., 5 F.3d 658, 668-69 (3d Cir. 1993) (internal citations and quotations omitted).

10. The relevant product market for purposes of this case is the sale of prefabricated artificial teeth in the United States. For the artificial tooth market, the ultimate consumers are the dental laboratories. Dentists only prescribe the brand of tooth 10% of the time and the lab selects the brand of tooth in the other 90%.

11. As direct distribution to the dental laboratories is a viable and, in some ways, advantageous method of distribution, Dentsply's exclusive arrangements with dealers do not foreclose a substantial share of the market or present an unreasonable

restraint on competition. See Omega Envtl., 127 F.3d at 1163; CDC Techs., Inc. v. IDEXX Labs., Inc., 186 F.3d 74, 80 (2d Cir. 1999); Ryko Mfg. Co. v. Eden Servs., 823 F.2d 1215, 1234-35 (8th Cir. 1987).

12. Direct distribution has the potential ability to deprive Dentsply (or any manufacturer employing dealers) of significant levels of business. See Thurman Indus., Inc. v. Pay 'N Pak Stores, Inc., 875 F.2d 1369, 1374 (9th Cir. 1989).

Notably, the DOJ's expert agreed that competing manufacturers are not foreclosed from a substantial share of the dental laboratories. (D.I. 427 at 1649-50) Furthermore, the DOJ failed to provide any evidence that dental laboratories feel "precluded from dealing with other manufacturers." LePage's Inc. v. 3M, 324 F.3d 141, 162 (3d Cir. 2003) (citing Barr Labs, 978 F.2d at 110-11).

13. Other dealers besides the 23 dealers used by Dentsply are available to manufacturers as well. This further illustrates that Dentsply's exclusive arrangement has not foreclosed competition in the artificial tooth market.

14. The DOJ asserts that Dentsply's rivals cannot compete effectively absent access to Dentsply's dealers. The court disagrees. While it may be easier for Dentsply's rivals to compete through Dentsply's dealers, it is not the function of the antitrust laws to ease the burden of competing with an

established and focused rival. See U.S. v. Aluminum Co. of Am., 148 F.2d 416, 430 (2d Cir. 1945) (Hand, J.) (“The successful competitor, having been urged to compete, must not be turned upon when he wins.”).

15. In addition, although Dentsply and its dealers consider Dealer Criterion 6 to be an agreement between them, nothing contractually obligates a dealer to continue with this arrangement. Indeed, dealers are free to leave Dentsply whenever they choose. The fact that no dealer has deemed leaving the Dentsply network a financially viable alternative is not surprising given Dentsply’s competitors’ failure to compete.

16. Dentsply’s primary competitors are Vita/Vident and Ivoclar. Vident’s focus has been on crown and bridge products, not artificial teeth. Both Vident and Ivoclar, until recently, employed only European style moulds. European style moulds are not well suited to the United States market. In addition, unlike Dentsply, neither Vident nor Ivoclar have a significant sales force dedicated to artificial teeth. While Dentsply has extensively marketed its teeth using pull-through marketing, there is no evidence Vident and Ivoclar have attempted to similarly promote their respective brands of artificial teeth.

17. Thus, while the DOJ attempts to make much of the fact that no dealer has elected to leave Dentsply, the court concludes that this is a result of Dentsply’s rivals’ failure to offer an

attractive alternative rather than a result of Dentsply's power in the artificial tooth market. The important point for purposes of this case is that a dealer could leave at any time if an attractive alternative became available. See Omega Envtl., 127 F.3d at 1163-64 ("[T]he short duration and easy terminability of these agreements negate substantially their potential to foreclose competition. Because all of Gilbarco's distributors are available within one year . . . a competing manufacturer need only offer a better product or a better deal to acquire their services. Plaintiffs' expert opined that no distributor would abandon the Gilbarco line for an untested product with no reputation. We agree with the unremarkable proposition that a competitor with a proven product and strong reputation is likely to enjoy success in the marketplace, but reject the notion that this is anticompetitive. It is the essence of competition." (internal citations and footnotes omitted)); Roland Mach. Co. v. Dresser Indus., Inc., 749 F.2d 380, 394-95 (7th Cir. 1984) ("Since dealership agreements in this industry are terminable by either party on short notice, Komatsu, to obtain its own exclusive dealer in some area, has only to offer a better deal to some other manufacturer's dealer in the area. . . . Exclusive-dealing contracts terminable in less than a year are presumptively lawful under section 3.").

B. The DOJ Has Failed To Prove That Dentsply Has Violated § 2 Of The Sherman Act

18. Section 2 of the Sherman Act provides that "[e]very person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony[.]" 15 U.S.C. § 2. Section 2 prohibits a business with monopoly power from maintaining that monopoly power through means that go beyond competition on the merits.

19. The Third Circuit has noted that "if the [exclusive dealing agreements] do not infringe upon the stiffer standards of anti-competitiveness under the Clayton Act, they will also be lawful under the less restrictive provisions of the Sherman Act." Barr Labs., 978 F.2d at 110; see also Tampa Elec., 365 U.S. at 335 ("We need not discuss the respondents' further contention that the contract also violates [§] 1 and [§] 2 of the Sherman Act, for if it does not fall within the broader proscription of § 3 of the Clayton Act it follows that it is not forbidden by those of the former.").

20. Thus, based on the court's finding that Dentsply is not in violation of § 3 of the Clayton Act, Dentsply is not in violation of § 2 of the Sherman Act either. However, even absent the court's conclusion with respect to the Clayton Act, the court concludes that Dentsply does not violate § 2 of the Sherman Act.

21. "The offense of monopoly under § 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident." Eastman Kodak, 504 U.S. at 480 (quoting U.S. v. Grinnell Corp., 384 U.S. 563, 570-571 (1966)).

1. Dentsply Does Not Have Monopoly Power In The Market For Artificial Teeth

22. "Monopoly power is generally defined as the power to control prices or to exclude competition, and the size of market share is a primary determinant of whether monopoly power exists." Pennsylvania Dental Ass'n v. Medical Serv. Ass'n of Pa., 745 F.2d 248, 260 (3d Cir. 1984); Grinnell, 384 U.S. at 571 ("The existence of such power ordinarily may be inferred from the predominant share of the market.").

23. Based on Dentsply's predominant market share, monopoly power may be inferred. Dentsply's market share on a revenue basis is between 75-80%. On a unit basis, in the segments Dentsply competes in, Dentsply holds a 67% market share. Dentsply has maintained this dominant market share for years. Such a predominant market share is sufficient for the court to infer monopoly power. See, e.g., American Tobacco Co. v. U.S., 328 U.S. 781, 797, (1946) (over two-thirds of the market is a monopoly); see also Grinnell, 384 U.S. at 571 (listing cases).

24. The inquiry does not end with proof of high market share. The DOJ must also prove Dentsply has the power to control prices or exclude competition. See Oahu Gas Serv. Inc. v. Pacific Res., Inc., 838 F.2d 360, 366 (9th Cir. 1988) (“[M]arket share is just the starting point for assessing market power. A high market share, though it may ordinarily raise an inference of monopoly power, will not do so in a market with low entry barriers or other evidence of a defendant’s inability to control prices or exclude competitors.” (internal citations and quotations omitted)).

25. In the case at bar, the DOJ has failed to prove that Dentsply has the power to control prices or exclude competitors.

26. Dentsply’s criterion 6, while clearly intending to exclude competitors from dealers, does not exclude competitors from the consumer - the dental laboratories. As previously discussed, direct selling to the laboratories is a viable and, in some ways, advantageous method of distribution. Dentsply does not have the power to exclude competitors from the ultimate consumer.

27. Furthermore, Dentsply’s two main rivals, Vident and Ivoclar, have failed to gain market share as a result of their own business decisions, not Dentsply’s exclusionary practices.

28. Dentsply’s inability to exclude competitors is further evidenced by the entry of Heraeus Kulzer and Davis Schottlander &

Davis, as well as Ivoclar's recent expansion of its line to include American style moulds. Cf. Barr Labs., 978 F.2d at 114 ("[W]e think the continued entry of competition, albeit with small initial market share shown on this record, indicates that Abbott's position is subject to significant potential erosion.").

29. The DOJ has failed to prove that Dentsply's exclusive dealing arrangement with dealers is a barrier to entry in the artificial tooth market. While it may be easier and more expeditious for a new entrant to enter the market with established Dentsply dealers, competition can thrive via direct distribution or through partnership with existing (albeit smaller) dental dealers. Moreover, any new or existing tooth manufacturer may "steal" a Dentsply dealer by offering a superior product at a lower price.

30. The DOJ also failed to prove that Dentsply controls prices. The evidence shows that Dentsply teeth are generally priced between Vident and Ivoclar teeth. Although one former Dentsply employee testified that Dentsply does not establish its prices in relation to the competition, this is insufficient to establish that Dentsply controls price. The DOJ has provided no evidence that Dentsply has established a market of supra-competitive pricing. Dentsply's profit margin, while high, was not shown to be high relative to any other tooth manufacturer.

Moreover, high margins are to be expected in a market in which significant pre-sale promotion is employed.

31. The DOJ asserts that Dentsply was slow to react to changes in the market, specifically with the introduction of its Vita-shaded line of teeth (Portrait). Contrary to an indication of control over prices and exclusion of competitors, any lack of urgency on the part of Dentsply to react to market demands is a result of a lack of competition pushing Dentsply to compete. As the court has already discussed, this lack of competition is due to Vident's and Ivoclar's own business decisions, not Dentsply's exclusionary practices.

2. The Willful Acquisition or Maintenance of Monopoly Power

32. Although Dentsply's high market share could lead to a conclusion that Dentsply possesses monopoly power, "merely possessing monopoly power is not itself an antitrust violation[.]" Microsoft, 253 F.3d at 51 (citing Northeastern Tel. Co. v. AT&T, 651 F.2d 76, 84-85 (2d Cir. 1981)). "A firm violates § 2 only when it acquires or maintains, or attempts to acquire or maintain, a monopoly by engaging in exclusionary conduct 'as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.'" Microsoft, 253 F.3d at 58 (quoting Grinnell, 384 U.S. at 571).

33. The "rule of reason" analysis under § 2 is similar to the analysis of a § 1 claim. See Microsoft, 253 F.3d at 59 (internal citations and quotations omitted). As discussed previously, the DOJ has failed to prove that Dentsply has created a market with supra-competitive pricing. Under the rule of reason, the court concludes that the circumstances of the artificial tooth market require a finding that Dentsply's Dealer Criterion 6 is not an unreasonable restraint on competition.

34. The DOJ has focused extensively on Dentsply's anticompetitive intent in establishing Dealer Criterion 6. While the court agrees that Dentsply's intent has clearly been anticompetitive, even the DOJ admits that "'bad' intent alone [does] not establish that conduct is anticompetitive where the conduct appears objectively incapable of harming competition[.]" (D.I. 477 at 41)

35. In sum, because direct distribution is viable, non-Dentsply dealers are available, and Dentsply dealers may be converted at any time, the DOJ has failed to prove that Dentsply's actions have been or could be successful in preventing "new or potential competitors from gaining a foothold in the market[.]" LePage's, 324 F.3d at 159.

C. Dentsply's Justification Of Dealer Criterion 6 Is Pretextual

36. In the event that the DOJ had established Dentsply violated the Sherman and/or Clayton Acts, Dentsply has offered a pro-competitive justification for Dealer Criterion 6. The burden is on Dentsply to show that Dealer Criterion 6 is sufficiently pro-competitive. See Brown Univ., 5 F.3d at 669.

37. In this case, the court concludes that Dentsply's justification for Dealer Criterion 6 (either to focus dealers or protect their investment in promotion of artificial teeth) is merely pretextual. Dentsply's pre-litigation rationale for Dealer Criterion 6 was expressly to exclude competitors from dealers and not to focus dealers or protect Dentsply's investment in promoting artificial teeth. See LePage's, 324 F.3d at 159 ("When a monopolist's actions are designed to prevent one or more new or potential competitors from gaining a foothold in the market by exclusionary, i.e. predatory, conduct, its success in that goal is not only injurious to the potential competitor but also to competition in general."). Dentsply cannot prove that Dealer Criterion 6 is pro-competitive.

38. Other evidence further belies the litigation inspired justification for Dealer Criterion 6, such as: (a) Dentsply's expert admitted that exclusive dealing with dealers is not necessary to protect promotion with dentists and consumers; (b) no evidence exists of dealers practicing "bait and switch"

tactics despite years of opportunity with grandfathered brands; (c) most promotion is brand specific and not free-ridable; (d) Dentsply enforced Dealer Criterion 6 against Trinity - a dealer that did not carry Trubyte teeth but only merchandise; (e) Dentsply threatened Frink with losing its dealership of other Dentsply products beyond artificial teeth; and (f) Dentsply approved Darby as a dealer despite concluding that there was no need for additional distribution.

D. Evidentiary Issues

39. The Wind Survey. As discussed in the court's findings of fact: (1) the screening questionnaire failed to identify relevant respondents; (2) the questionnaire instructions were complex and confusing; (3) a pre-test was not conducted; (4) the response rate was low; (5) non-response bias was not addressed; (6) respondents were unwilling or unable to devote time to take the survey seriously; (7) the results could not be replicated; (8) a standard error measurement was not calculated; and (9) a key parameter estimate was arbitrarily changed. The court finds that the Wind Survey and the expert testimony based on the survey do not possess "circumstantial guarantees of trustworthiness[.]" See Fed. R. Evid 702, 703 and 807; see generally Pittsburgh Press Club v. U.S., 579 F.2d 751 (3d Cir. 1978) (excluding survey because the survey was not conducted in accordance with generally accepted survey principles and not used in a statistically

correct way). Thus, the survey is entitled to no weight and inadmissible under the Federal Rules of Evidence. The Wind Survey is precluded and has not been considered by the court. Accordingly, the expert opinions of Prof. Wind and Dr. Reitman, to the extent their opinions are based on the survey, are inadmissible as well. See Pittsburgh Press, 579 F.2d at 760. Finally, the court notes that even if the survey were admissible, the defects in the survey design and execution would require the court as factfinder to give the survey no weight.

40. Dentsply Surveys. Dentsply objects to the admission of surveys previously commissioned by Dentsply to establish market share, as well as the analysis of the surveys by Dentsply employees. Specifically, Dentsply objects to exhibits GX 14, GX 17, GX 20, and GX 23-A. The court finds that the documents were made by Dentsply's agents or employees within the scope of the agency or employment and adopted by Dentsply. Thus, the exhibits are admissible under Rule 801(d)(2)(D) and 801(d)(2)(B).

41. The DOJ argues that certain exhibits and testimony are inadmissible for hearsay or foundation issues. The court has reviewed each of the DOJ's objections and determined that the evidence cited by the court in the findings of fact is admissible under the Federal Rules of Evidence.

IV. CONCLUSION

For the reasons stated, Dentsply has not violated § 1 or 2 of the Sherman Act or § 3 of the Clayton Act. An appropriate order shall issue and judgment shall be entered accordingly.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

UNITED STATES OF AMERICA,)
)
 Plaintiff,)
)
 v.) Civil Action No. 99-005-SLR
)
DENTSPLY INTERNATIONAL, INC.,)
)
 Defendant.)

O R D E R

At Wilmington, this 8th day of August, 2003, consistent with the opinion issued this same day;

IT IS ORDERED that Dentsply International, Inc. has not violated § 1 or 2 of the Sherman Act or § 3 of the Clayton Act. The Clerk of Court shall enter judgment in favor of defendant Dentsply International, Inc. and against plaintiff United States of America.

Sue L. Robinson
United States District Judge