Commission Opinion

IN THE MATTER OF

CHICAGO BRIDGE & IRON COMPANY, ET AL.

OPINION OF THE COMMISSION AND FINAL ORDER IN REGARD TO ALLEGED VIOLATIONS OF SEC. 7 OF THE CLAYTON ACT AND SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT

Docket 9300; File No. 0110015
Complaint, October 25, 2001--Opinion and Final Order, December 22, 2004

In a unanimous Opinion, the Commission addressed the acquisition by Respondent Chicago Bridge & Iron Company ("CB&I") of the Engineered Construction and Water Divisions of Respondent Pitt-Des Moines, Inc. The Commission determined that the acquisition affected four relevant product markets involving the design and construction of liquefied natural gas (LNG) storage tanks; liquefied petroleum gas (LPG) storage tanks; liquid atmospheric gas (LIN/LOX) storage tanks; and thermal vacuum chambers (TVCs) in the United States. The Commission concluded that the acquisition substantially lessened competition in each of these markets, and therefore violated Section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act. The Final Order, among other things, requires Respondent CB&I to create two separate, stand-alone operating divisions or subsidiaries – each fully, equally, and independently engaged in all aspects of the relevant business, and capable of competing in the relevant markets – and to divest one of those divisions within six months to an acquirer approved by the Commission.

Participants

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For the Respondent: *Duane M. Kelley, Jeffrey A. Leon, Greg J. Miarecki, Christopher B. Essig, Michael P. Mayer, Andrew D. Shapiro, Danielle A.R. Coffman, David E. Dahlquist, James F. Herbison,* and *Lance W. Lange, Winston & Strawn L.L.P.*

OPINION OF THE COMMISSION

By SWINDLE, Commissioner, For A Unanimous Commission:

I. Introduction and Statement of Issues

This case involves the acquisition of a company by its closest competitor in four relevant markets.[1] On February 7, 2001, in the midst of the Commission's investigation of the acquisition,[2] Respondent Chicago Bridge & Iron (CB&I) acquired certain assets of the Engineered Construction and Water Divisions of Respondent Pitt-Des Moines (PDM). At the time of the acquisition, both parties designed, engineered, and constructed storage tanks for liquefied natural gas (LNG), liquefied petroleum gas (LPG), and liquid atmospheric gases such as nitrogen, oxygen, and argon (LIN/LOX), as well as thermal vacuum chambers

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[1] This Opinion uses the following abbreviations for citations:

Tr. – Transcript of testimony before the Administrative Law Judge
ID – Initial Decision (page number)
IDF – Initial Decision Finding of Fact (the number of the factual finding)
CCFF – Complaint Counsel's Finding of Fact (the number of the factual finding)
RAB – Respondents' Appeal Brief
CCACAB – Answering and Cross-Appeal Brief of Counsel Supporting the Complaint
RRCARB – Respondents' Reply and Cross-Appeal Response Brief
OA – Transcript of the Oral Argument on Appeal
CX – Complaint Counsel's Exhibit
RX – Respondents' Exhibit
JX - Joint Exhibit

[2] Tr. at 4079-81.

(TVCs), which are used to test satellites for the aerospace industry. The Commission's Complaint, issued October 25, 2001, charged that the acquisition may substantially lessen competition or tend to create a monopoly in violation of Section 7 of the Clayton Act, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, and that, through the acquisition, the parties engaged in unfair methods of competition in or affecting commerce in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45. [3]

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[3] This Opinion uses the following abbreviations for third-party companies referenced herein: ABB Lummus Global (ABB Lummus), Air Liquide Process and Construction (Air Liquide), Air Products and Chemicals (Air Products), American Tank & Vessel, Inc. (AT&V), Atlanta Gas Light Co. (Atlanta Gas), BOC Gases (BOC), Boeing Satellite Systems (Boeing), British Petroleum (BP), Chart Process Systems (Chart), Chattanooga Boiler & Tank (Chattanooga), CMS Energy (CMS), Dynegy, Inc. (Dynegy), El Paso Corp. (El Paso), Enron Corp. (Enron), Fluor, Inc. (Fluor), Graver Tank (Graver), Freeport LNG Development LP (Freeport LNG), Howard Fabrication (Howard), Intercontinental Terminals Co. (ITC), Ishikawa Heavy Industries (IHI), Linde BOC Process Plant LLC (Linde), Matrix Service Co. (Matrix), Memphis Light, Gas & Water (MLGW), Morse Construction Group (Morse), Process Systems International (PSI), S.N. Technigaz (Technigaz), Skanska AB (Skanska), Toyo Kanetsu K.K. (TKK), TRW Space & Electronics (TRW), Whessoe International (Whessoe), Williams Energy (Williams), XL Technology Systems (XL), Yankee Gas Services Co. (Yankee Gas), Zachry Construction Corporation (Zachry). All other references to companies use the particular company's full name or the only name referred to in the record.

A. The Initial Decision[4]

The Initial Decision held that CB&I's acquisition of PDM violated Section 7 of the Clayton Act and Section 5 of the FTC Act in four relevant lines of commerce in the United States: (1) field-erected LNG storage tanks, (2) field-erected LPG storage tanks, (3) field-erected LIN/LOX storage tanks, and (4) field-

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[4] The Initial Decision states that when the Commission amended its Rules of Practice for Adjudicative Proceedings, 16 C.F.R. § 3.51, in 2001 it removed the requirement under Rule 3.51(c)(3) that an Initial Decision be supported by substantial evidence. ID at 85. Accordingly, it states that its findings of fact are based on "reliable and probative evidence." *Id.* To clarify, we note that when the Commission removed the word "substantial" from Rule 3.51(c)(3), it did not change the evidentiary standard upon which its decisions must be based.

The Federal Register Notice made clear that, prior to the amendment, the "substantial evidence" language in Rule 3.51(c)(3) referred to the standard for agency decisions under Section 556(d) of the Administrative Procedure Act, 5 U.S.C. § 556(d), which specifies the quantum of evidence (in most cases a preponderance) needed to support findings of fact. FTC Rules of Practice, 66 Fed. Reg. 17,622, 17,626 (Apr. 3, 2001). The Notice also made clear that the amendment removed the "substantial evidence" language merely to eliminate any confusion between Section 556(d) and the more deferential substantial evidence standard for judicial review of agency action. *Id.* Thus, we take it as settled law that regardless of the standard under which a reviewing court must accept the Commission's findings of fact, the Commission (and its ALJ) normally must base findings upon a "preponderance of the evidence." *See Carter Prods., Inc. v. FTC*, 268 F.2d 461, 487 (9th Cir. 1959). Of course, the Commission's factual and legal review of this matter is *de novo*.

erected TVCs.[5] Although the Initial Decision rejected Complaint Counsel's proffered Herfindahl-Hirschman Indices (HHIs) as unreliable forecasters of the acquisition's competitive effects,[6] it nonetheless found that Complaint Counsel had established a prima facie case in each of the relevant markets.[7] Specifically, the Initial Decision found that Complaint Counsel demonstrated that "CB&I and PDM were the number one and two competitors . . . and that no other company provides effective competition."[8]

The Initial Decision also held that Respondents' evidence of actual or potential entry did not rebut Complaint Counsel's prima facie case.[9] It found that "potential and actual entry is slow and ineffective and cannot keep [the relevant] markets competitive."[10] For the LNG tank market, the Initial Decision concluded that many of the steps taken by recent or potential entrants are too preliminary to provide a basis for determining whether they can challenge CB&I's market power and that several other projects suggest that the new entrants do not constrain CB&I.[11] Similarly, for the LPG and LIN/LOX tank markets, the Initial Decision concluded that the actual and potential entry identified by Respondents is not sufficient to constrain CB&I's market power.[12]

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[5] IDF 18-19; ID at 126.

[6] ID at 89-93.

[7] ID at 89.

[8] ID at 125.

[9] ID at 100-103.

[10] ID at 102.

[11] ID at 103-105.

[12] ID at 105-106.

It also found no evidence of actual or potential entry in the TVC market.[13]

In addition, the Initial Decision rejected Respondents' argument that customers in these markets are sophisticated and can thus constrain CB&I's pricing.[14] It found that past pricing is not well known in three of the four relevant markets,[15] and that most customers therefore do not have significant bargaining power.[16] It concluded that Respondents' evidence of customer sophistication did not rebut Complaint Counsel's prima facie case.[17]

Because it found that Respondents did not rebut Complaint Counsel's prima facie case, the Initial Decision concluded that Complaint Counsel carried their burden of persuasion that the merger was likely to substantially lessen competition in violation of Section 7 of the Clayton Act and Section 5 of the FTC Act.[18]

Although not required to do so, the Initial Decision also considered Complaint Counsel's evidence of post-acquisition

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[13] ID at 106.

[14] ID at 109.

[15] *Id*. The Initial Decision does not delineate in which relevant markets customers lack pricing information. In addition, because it references only those findings of fact related to the LNG tank market and its findings with respect to customer sophistication in other markets do not clearly establish a lack of price information (*see* IDF 204-07), we cannot determine which three markets the Initial Decision means to include in its analysis.

[16] ID at 109.

[17] *Id*.

[18] ID at 114-15.

price increases in the LNG tank, LIN/LOX tank, and TVC markets and concluded that the evidence did not show such price increases.[19]

Finally, the Initial Decision dismissed Respondents' argument that the merger did not harm competition because PDM planned to exit the relevant markets even absent the merger.[20] The Initial Decision found that Respondents did not establish that PDM had made a decision to close the business or that PDM had conducted an exhaustive effort to sell the package of assets sold to CB&I.[21] It thus concluded that even if an exiting assets defense is legally recognizable, Respondents did not establish such a defense in this case.[22]

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[19] ID at 110-114.

[20] ID at 115-118. Respondents argued that (1) PDM would have liquidated its EC Division absent the merger; (2) CB&I was the only potential purchaser; and (3) the merger thus did not result in a substantial lessening of competition. ID at 115.

[21] ID at 116-118.

[22] *Id*.

B. Legal Standards[23]

Section 7 of the Clayton Act provides, in relevant part, that "no person subject to the jurisdiction of the Federal Trade Commission shall acquire the whole or any part of the assets of another person . . . where in any line of commerce or in any activity affecting commerce in any section of the country, the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly."[24] "As its language suggests, [S]ection 7 is 'designed to arrest in its incipiency . . . the substantial lessening of competition from the acquisition by one corporation of the whole or any part of the stock' or assets of a competing corporation."[25] Merger law "rests upon the theory that, where rivals are few, firms will be able to coordinate their behavior, either by overt collusion or implicit understanding, in order to restrict output and achieve profits above competitive

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[23] In the present case, the alleged violation of the Federal Trade Commission Act's Section 5 prohibition against unfair methods of competition follows from the alleged violation of Section 7 of the Clayton Act. *See FTC v. Cement Inst.*, 333 U.S. 683, 694 (1948) (conduct that violates other antitrust laws may violate Section 5 as well). Similarly, a seller's participation in an unlawful transaction may violate Section 5 of the FTC Act. *See Yamaha Motor Co. v. FTC*, 657 F.2d 971, 985 (8th Cir. 1981) (upholding, solely on Section 5 grounds, a Commission finding that a sale of stock was unlawful). Accordingly, we determine that the alleged Section 5 violation does not require an independent analysis in this matter.

[24] Clayton Act §7, 15 U.S.C. § 18 (2004).

[25] *FTC v. University Health, Inc.,* 938 F.2d 1206, 1218 (11th Cir. 1991) (quoting *United States v. E.I. du Pont de Nemours & Co.,* 353 U.S. 586, 589 (1957)).

levels."[26] Thus, it is settled law that "[s]ignificant market concentration makes it 'easier for firms in the market to collude, expressly or tacitly, and thereby force price above or farther above the competitive level.'"[27] The threat is that "firms in a concentrated market might in effect share monopoly power, setting their prices at a profit-maximizing, supracompetitive level by recognizing their shared economic interests and their interdependence with respect to price and output decisions."[28]

The unifying theme of Section 7 decisional law and economic teaching is that "mergers should not be permitted to create or enhance market power or to facilitate its exercise."[29] A merger or acquisition is illegal under Section 7 if the remaining firm or firms will be more likely to engage in conduct that enables it or them profitably to maintain prices above competitive levels for a significant period of time, even if that conduct would be lawful in itself.[30] In general, unlawful accretions of market power may

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[26] *FTC v. PPG Indus.,* 798 F.2d 1500, 1503 (D.C. Cir. 1986); *see FTC v. Elders Grain Inc.*, 868 F.2d 901, 905 (7th Cir. 1989).

[27] *University Health*, 938 F.2d at 1218 n.24 (quoting *United States v. Rockford Mem'l Corp.*, 898 F.2d 1278, 1282-83 (7th Cir. 1990)).

[28] *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 227 (1993).

[29] U.S. Dep't of Justice & Federal Trade Comm'n, *Horizontal Merger Guidelines* § 0.1 (1992, as amended 1997), *reprinted in* 4 Trade Reg. Rep. (CCH) ¶ 13,104 (hereinafter *Merger Guidelines*).

[30] Section 7 "is concerned with far more than 'collusion' in the sense of an illegal conspiracy; it is very much concerned with 'collusion' in the sense of tacit coordination not amounting to conspiracy." 4 Phillip E. Areeda, Herbert Hovenkamp & John Solow, Antitrust Law: An Analysis of Antitrust Principles and

come about in several ways. First, a merger may result in a single firm that so dominates a market that it is able to maintain prices above the level that would prevail if the market were competitive. While antitrust case law has long recognized that a competitor may achieve and maintain market dominance or monopoly status through its own prowess, or even through "historic accident,"[31] Section 7 expressly forbids acquisitions and mergers that "tend to create a monopoly."[32] Second, a merger may result in only a few firms accounting for most of the sales of a product and thereby enable those firms to exercise market power by explicitly or tacitly coordinating their actions.[33] Third, in some circumstances, a merger may result in a single firm that is not a monopolist but nonetheless is able to exercise market power without the concurrence of – or coordinated responses by – other firms in the market.[34] In each of these circumstances, the exercise of market

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Their Application, ¶ 916, at 85 (rev. ed. 1998); *see Merger Guidelines* § 2.1.

[31] *United States v. Grinnell Corp.*, 384 U.S. 563, 571 (1966).

[32] 15 U.S.C. § 18.

[33] Areeda, Hovenkamp & Solow, *supra* note 30, ¶ 901b2, at 9; *see, e.g., University Health*, 938 F.2d at 1219 (four firms "easily could collude to [raise prices or reduce output] without committing detectable violations of . . . the Sherman Act").

[34] Such unilateral effects are most likely to result in either of two circumstances. First, a firm might be able to increase prices in markets where competitors are distinguished primarily by differentiated products and the merging firms produce products that a substantial number of customers regard as their first and second choices (or, more precisely, where a substantial volume of sales are to customers who regard the products of the merging firms as their first and second choices). *See FTC v. Swedish Match,* 131 F. Supp. 2d 151, 168 (D.D.C. 2000); *New York v. Kraft Gen. Foods, Inc.,* 926 F. Supp. 321, 333-35 (S.D.N.Y.

power results in lower output and higher prices and a corresponding transfer of wealth from buyers to sellers or a misallocation of resources. As we discuss in this opinion, CB&I's acquisition of PBM raises the very competitive problem that is the focus of Section 7 – an accretion of market power and a tightening of oligopoly market conditions.

We are guided in our assessment of this merger by the case law and the *Merger Guidelines*, both of which set out the general framework for our analysis and provide instruction for the issues raised on appeal. Under this framework, Complaint Counsel must first establish a prima facie case that the acquisition is unlawful. Typically, this has been accomplished by showing that the transaction will significantly increase market concentration,[35] which in turn establishes a "presumption" that the transaction is likely to substantially lessen competition.[36] Of course, "market share and concentration data provide only the starting point for analyzing the competitive impact of a merger."[37] "That the

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1995); *see generally United States v. Oracle Corp.,* 331 F. Supp. 2d 1098, 1113-21 (N.D. Cal. 2004). Second, although no case seems to have dealt directly with such facts, economic learning holds that a firm might be able to increase prices above competitive levels in some markets where capacity is constrained and competitors may not be able to increase output in response to an output restriction by the merged firm. *See, e.g., Merger Guidelines* § 2.22.

[35] As the D.C. Circuit has observed, "[t]he Supreme Court has adopted a totality-of- the-circumstances approach to [Section 7], weighing a variety of factors to determine the effects of particular transactions on competition." *United States v. Baker Hughes, Inc.,* 908 F.2d 981, 984 (D.C. Cir. 1990).

[36] *Merger Guidelines* §1.51; *FTC v. H.J. Heinz Co.,* 246 F.3d 708, 715 (D.C. Cir. 2001); *Baker Hughes*, 908 F.2d at 982.

[37] *Merger Guidelines* § 2.0.

government can establish a prima facie case through evidence on only one factor, market concentration, does not negate the breadth of this analysis. Evidence of market concentration simply provides a convenient starting point for a broader inquiry into future competitiveness."[38] The strength of the initial presumption also varies according to how high the concentration numbers are. As we will discuss, Complaint Counsel may establish a prima facie case with concentration data and introduce other types of evidence relating to market and entry conditions to bolster their concentration data.

Respondents may rebut the prima facie case by producing evidence that

> "show[s] that the market-share statistics [give] an inaccurate account of the acquisition['s] probable effect[] on competition" in the relevant market. In so doing, the defendant may rely on "nonstatistical evidence which casts doubt on the persuasive quality of the statistics to predict future anticompetitive consequences," such as: "ease of entry into the market, the trend of the market either toward or away from concentration, and the continuation of active price competition." Additionally, the defendant may demonstrate unique economic circumstances that undermine the predictive value of the government's statistics.[39]

If Respondents are successful in their rebuttal efforts, the evidentiary burden shifts back to Complaint Counsel and merges with the ultimate burden of persuasion, which remains with Complaint Counsel at all times.[40]

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[38] *Baker Hughes,* 908 F.2d at 984.

[39] *University Health,* 938 F.2d at 1218 (citations omitted).

[40] *Id*. at 1218-19.

C. Issues and Summary of Decision

The relevant product and geographic markets are uncontested in the present case. As the Initial Decision found, they are field-erected LNG storage tanks, field-erected LPG storage tanks, field-erected LIN/LOX storage tanks, and field-erected TVCs (all four built in the United States).[41] Respondents also do not contest that CB&I and PDM were the dominant suppliers of the products in these four relevant markets prior to the acquisition. Rather, at the heart of this case are Respondents' arguments that post-acquisition entry has occurred in the LNG tank market and that smaller incumbents have expanded their presence in both the LPG and the LIN/LOX tank markets.[42] Respondents contend that this entry and expansion make the parties' former dominance irrelevant, that the Commission should focus solely on this post-acquisition period, and that the Commission should find that the acquisition does not violate the antitrust laws.

Established antitrust principles hold that entry must be not only likely to occur in a timely manner but also sufficient to constrain post-merger price increases to pre-merger levels.[43] In our assessment of whether the entry in these markets meets this

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[41] The Complaint initially pled the relevant lines of commerce as TVCs, LNG tanks, LNG peak-shaving plants, LNG import terminals, LPG tanks, and LIN/LOX/LAR tanks (which are also known as LIN/LOX tanks). However, the Initial Decision found the four relevant markets we identify, and the parties have not contested these markets. IDF 18-19.

[42] Although Respondents characterize both the LIN/LOX and the LPG tank markets as attracting new entry post-merger, we find that a more accurate characterization of the phenomenon to which Respondents point is an attempted expansion by smaller incumbents.

[43] *Merger Guidelines* §§ 3.2-3.4.

standard, we have considered both the post-acquisition bidding evidence in the relevant markets[44] and the bidding history of those markets. The history of these markets reveals that they have not been characterized by easy entry and expansion and have been dominated by Respondents for decades.[45] Despite the fact that suppliers have come and gone in these markets over the years and have, on occasion, been awarded a bid and constructed a tank, the evidence demonstrates that the real competition in these markets has been between CB&I and PDM. The evidence strongly suggests that this dynamic would have continued absent the merger, and Respondents' own strategic planning documents

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[44] Some post-acquisition evidence may not necessarily receive as much weight as other types of evidence. *See United States v. General Dynamics Corp.*, 415 U.S. 486, 504-05 (1974) ("If a demonstration that no anticompetitive effects had occurred at the time of trial . . . constituted a permissible defense to a §7 divestiture suit, violators could stave off such actions merely by refraining from aggressive or anticompetitive behavior."); *Hospital Corp. of America v. FTC,* 807 F.2d 1381, 1384 (7th Cir. 1986) ("Post-acquisition evidence that is subject to manipulation by the party seeking to use it is entitled to little or no weight."); *B.F. Goodrich Co.,* 110 F.T.C. 207, 341 (1988) (same). *See also FTC v. Consolidated Foods Corp.,* 380 U.S. 592, 598 (1965) (finding that the court of appeals gave too much weight to post-acquisition evidence that, among other things, showed a declining share).

[45] Areeda, Hovenkamp & Solow have commented that "[t]he only truly reliable evidence of low barriers is repeated past entry in circumstances similar to current conditions." 2A Phillip E. Areeda, Herbert Hovenkamp & John Solow, Antitrust Law: An Analysis of Antitrust Principles and Their Application, ¶420b, at 60 (2d ed. 2002). *See also FTC v. Cardinal Health, Inc.*, 12 F. Supp. 2d 34, 56 (D.D.C. 1998) ("[T]he history of entry into the relevant market is a central factor in assessing the likelihood of entry in the future.").

predicted that the merged firm would "dominate" the relevant markets.[46] Thus, to determine whether the entry Respondents suggest is likely to restore the competition lost from the merger, we must determine whether a sea-change has occurred in these markets so as to render inapplicable the competitive conditions that have held for so long. Based on the evidence, we conclude that such is not the case and that the entry and expansion alleged by Respondents are not sufficient to constrain CB&I's conduct in the foreseeable future (and thus offset the harm to competition resulting from the acquisition).

In Part II of this Opinion, we discuss the product markets and review the conditions that characterize sales in those markets. Specifically, Part II explains how LNG tanks, LPG tanks, LIN/LOX tanks, and TVCs are constructed and how bidding takes place in each of these markets.

Part III of the Opinion examines the sufficiency of Complaint Counsel's prima facie case, deals with the Initial Decision's exclusion of the HHI evidence, and explains the role of such evidence in our assessment of Complaint Counsel's case. We also examine the bidding history in each of the relevant markets and conclude, contrary to the Initial Decision, that this history not only bolsters the HHI evidence but also provides an independent reason

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[46] *See* CX 74 at PDM - C 1005941(PDM document evaluating a possible acquisition of CB&I and stating that it would result in "[m]arket dominance in [the] Western Hemisphere"); CX 648 at PDM-HOU 000267 (recommendation to PDM's Board that states that acquiring CB&I will result in "[m]arket dominance"); Tr. at 5169 (testimony from Luke Scorsone [now the head of CB&I's Industrial Division] that he believed that an acquisition of CB&I by PDM could result in worldwide market dominance for LNG and LPG tanks). *See also* CX 1686 at CBI/PDM-H 4005550 ("When the integration process is over," CBI "will truly be the world leader instorage [sic] tanks").

for finding that Complaint Counsel met their burden. Finally, we examine evidence related to entry conditions in each of the relevant markets and conclude that entry in each market is extremely difficult.

In Part IV, we examine Respondents' rebuttal case. We first reject Respondents' argument that the small size of the relevant markets precludes finding liability under Section 7 of the Clayton Act. We also examine Respondents' evidence of entry in the LNG, LPG, and LIN/LOX tank markets and conclude that the entry and expansion identified by Respondents are inadequate to restore these markets to their premerger state. Because we find that entry into the relevant markets is difficult and that effective entry and expansion are not likely to occur in the foreseeable future, we also reject Respondents' potential competition argument. Finally, we examine evidence related to whether customers can constrain a price increase by CB&I and determine that they cannot. We conclude that Respondents have not rebutted Complaint Counsel's prima facie case.

Part V of the Opinion discusses the likely competitive effects of the acquisition and concludes that the acquisition is likely to lessen competition substantially in the relevant markets.

In Part VI, we explain why, given our conclusions in Parts III, IV, and V, we do not need to consider the issues raised by Complaint Counsel's cross-appeal to the extent it argues that the ALJ erred in not finding that the acquisition resulted in actual anticompetitive effects.

In Part VII, we consider and reject Respondents' argument that competition in the relevant markets was not harmed because PDM would have exited the four relevant markets absent the acquisition.

Part VIII sets out the remedy that we are ordering in this matter and addresses the issues raised by Respondents' and Complaint Counsel's respective objections to the ALJ's order.

In sum, we adopt the Initial Decision's holding that the acquisition violated Section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act in all four relevant markets, and we adopt the findings set out in the Initial Decision to the extent they are not inconsistent with our Opinion. We also make a number of new factual findings based upon our de novo review of the record.[47] We order Respondents to divest such assets and take such actions as are necessary and appropriate to establish a viable competitor to the market that will restore the competition lost from this acquisition.

II. Industry Background

A. LNG Tanks

LNG tanks are field-erected tanks that can store between 2.5 million and 42 million gallons of natural gas (primarily comprising methane)[48] at cryogenic temperatures (-260° F). These tanks are very large, potentially having a diameter of 200 feet or more[49] and a height of 100 to 150 feet, and can cost approximately $35 million to $50 million.[50] Because they store the gas cryogenically, LNG tanks must have inner walls made of 9 percent nickel steel.[51] The metallurgical properties of this 9 percent nickel steel require special welding techniques to ensure

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[47] Throughout this Opinion, our legal conclusions and findings of fact are intermixed according to subject matter.

[48] Tr. at 537, 1560, 4452, 4964. The transcript describes LNG tank capacity in terms of both gallons and barrels. For consistency, we have converted all capacity figures to gallons. There are 42 gallons in a barrel. Tr. at 320, 5007.

[49] IDF 24.

[50] Tr. at 4566, 6260.

[51] Tr. at 530.

against cracking and other problems. If LNG leaks through the tank due to faulty welding, the consequences can be disastrous,[52] and although this result is unlikely given the quality checks now in place, faulty welding can result in significant construction delays and substantial economic and financial losses.[53]

There are three types of LNG tanks currently produced: (1) single-containment tanks, (2) double-containment tanks, and (3) full-containment tanks. A single-containment tank is a double-walled steel tank that comprises one 9 percent nickel steel tank surrounded by insulation and a carbon steel tank (to hold the insulation in place).[54] Both of these tanks are enclosed by a concrete or earthen dike.[55] A double-containment tank also consists of an outside container that encloses the inner 9 percent nickel steel and carbon tanks. However, unlike the structure surrounding the nickel-steel tank in a single-containment tank, the outer container in a double containment tank is also capable of holding the LNG so that if the inner tank fails, the liquid will be contained.[56] A full-containment tank has the 9 percent nickel steel tank used in a single-containment tank encased in a layer of concrete, so that both liquid and vapor are contained in the event of a spill.[57] Customers choose between tank types based on the nature of the area (urban versus rural), the land area for the site,

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[52] Tr. at 564-65, 1789, 6234-35.

[53] *See, e.g.*, Tr. at 6285-87 (liquidated damages account for the fact that the revenue stream does not begin until the facility is finished and that delay can result in the loss of "a lot of revenue") (*in camera*).

[54] Tr. at 530, 4110.

[55] Tr. at 531, 6170.

[56] Tr. at 531, 6171.

[57] Tr. at 532, 6170.

the size of the tank, and the Federal Energy Regulatory Commission's (FERC) vapor dispersion and thermal radiation requirements.[58]

The inner 9 percent nickel steel tank for any LNG tank is difficult to make. The sheets constituting these tanks must be curved and beveled correctly, and the design, welding, and erection of the tanks must take account of specific characteristics such as the fact that the thickness of the plate varies from top to bottom.[59] Among other things, the foundation of the tank also must be designed and constructed to protect the ground from the tank's cold temperatures, and piping connections and pumps must be designed and constructed to properly move the fluid in and out of the tank.[60] An LNG tank supplier must also identify, contract with, and supervise traveling field crews and local labor crews and maneuver the project through various federal and local regulatory processes. This entire process must occur in a timely manner, because delays in the project result in unrealized cash flow and economic losses to the customer, which may result in liquidated damages for the tank supplier.[61]

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[58] FERC regulations require that the radiation intensity of a potential fire and the vapor dispersion from a potential spill not exceed certain limits at the boundary of the site. Tr. at 533, 6969. A computer model calculates the distance needed from the center of the tank to the site boundary based on the size of the tank. Tr. at 6970. Because full-containment tanks result in lower vapor dispersion and thermal radiation values, they can be placed on smaller parcels of land than can accommodate single-containment or double-containment tanks. Tr. at 533-34. Similarly, double-containment tanks can be placed on smaller pieces of land than comparably sized single-containment tanks. Tr. at 6971.

[59] Tr. at 5898.

[60] Tr. at 5920-5922.

[61] Tr. at 6184, 6265-66, 6481-82.

LNG storage tanks generally serve two types of facilities: LNG import terminals and peak-shaving plants. LNG import terminals receive LNG from tankers and offload the LNG to storage tanks. As the LNG is distributed, the import terminal pumps the liquid out of the LNG storage tanks, vaporizes and pressurizes the gas, and sends it to the pipeline.[62] In an import terminal, this process usually happens at roughly the same time that the liquid is unloaded from the tanker. A peak-shaving plant, on the other hand, is used by local utilities to store LNG to provide reserves in case of a shortage.[63] Thus, as natural gas is delivered, it is liquefied and stored in the tanks. When the gas is needed, the liquid is vaporized and then sent back through the natural gas pipeline. The two major components of a peak-shaving plant are the liquefaction unit (which brings the gas in, treats the gas so it can be liquefied, and then performs the liquefaction) and the LNG storage tanks.[64] Field-erected LNG tanks at peak-shaving plants tend to have smaller capacity than those used in LNG import terminals.[65]

B. LPG Tanks

LPG tanks are field-erected, refrigerated tanks for liquefied gases including propane, butane, propylene, and butadiene.[66] These tanks store liquefied gases at low temperatures, around

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[62] Tr. at 6170; IDF 25.

[63] IDF 26.

[64] *Id*.

[65] IDF 27.

[66] IDF 30; CX 993 at PDM-HOU021479.

−50° F.[67] LPG tanks are also very large, store hundreds of thousands of barrels of LPG, and cost approximately $5 million.[68]

As with LNG tanks, the steel for LPG tanks is fabricated in pieces, shipped to the site, assembled, and welded.[69] The tanks also require proper insulation and a foundation that protects against the very cold temperatures of the stored liquid moving from the tank into the earth.[70] If this temperature migration were to occur, the resulting frost would damage the structure of the tank.[71] Similar to LNG tanks, LPG tanks are a critical component of LPG import/export terminals in that they receive LPG from ships (to be moved through pipelines) and from pipelines (to be placed on ships and exported).[72] An LPG terminal with adequate storage capacity can both import and export LPG.[73]

C. LIN/LOX Tanks

LIN (liquid nitrogen), LOX (liquid oxygen), and LAR (liquid argon) (collectively, LIN/LOX) tanks are field-erected cryogenic tanks that store various liquid gas products at cryogenic temperatures at approximately -300° F or lower.[74] Their design is similar to that of LNG tanks, and they usually include inner and

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[67] Tr. at 2722-23.

[68] Tr. at 6575, 6719-20, 7281.

[69] Tr. at 6567, 6574.

[70] Tr. at 6579-81.

[71] Tr. at 6581.

[72] Tr. at 6709.

[73] *Id*.

[74] Tr. at 825, 833-34; CX 650 at CBI/PDM H4019758.

outer shells.[75] However, they are smaller than LNG tanks,[76] holding 300,000 to 1,000,000 gallons of liquid.[77] A typical LIN/LOX tank costs $500,000 to $1.5 million.[78]

LIN/LOX tanks are an essential part of integrated air separation facilities used by major industrial gas firms such as Air Liquide, Air Products, Praxair, BOC, and MG Industries. Air separation facilities separate air into its constituent components of nitrogen, oxygen, and argon.[79] Air separation facility customers use the gases for various industrial applications that require large amounts of storage capacity.[80]

At ambient temperatures, LIN is used to create inert (non-reactive) environments in applications such as chemical blanketing or purging. In its liquid form, LIN has cooling or freezing applications in the food and manufacturing industries. In manufacturing, LIN can also shrink materials that otherwise would not fit in the fabrication process. LOX, which unlike LIN is a very reactive gas and combines directly with virtually all elements, is used in the medical industry for oxygen treatment and in the steel and glass industries for combustion and melting. LAR is even more inert than LIN and has applications where an extremely inert environment is required, such as high-quality welding (where it is used as a shielding gas) and primary metal furnaces (where it acts to protect the furnace from high temperatures).

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[75] Tr. at 833.

[76] Tr. at 1346, 4072; CX 170 at CBI-PL009650.

[77] Tr. at 1346.

[78] Tr. at 1507-08.

[79] Tr. at 338, 824-26, 1386.

[80] JX 37 at 33.

D. TVCs

A field-erected TVC is the outer shell of a large vessel that is used to simulate outer space in order to test satellites before they are launched.[81] TVCs also contain a thermal vacuum system composed of an inner shroud, vacuum insulated pipe, a thermal conditioning unit, and cryogenic pumps or other pumping equipment.[82] Together, this highly sophisticated system of temperature and vacuum controls allows the chamber to attain temperature ranges from ⁻292° to ⁻238° F and a range of extreme vacuum levels.[83] Field-erected TVCs can be as large as 45 by 45 by 60 feet[84] and can cost $12 million to $17 million.[85]

Typically, one company builds the shroud and another company builds the surrounding tank.[86] The dominant shroud constructors have been PSI (aka Chart) and XL, which, prior to the merger, formed alliances with the dominant tank constructors – PDM and CB&I, respectively.

E. Bidding

As we further discuss in Part III.B, *infra*, all four relevant markets are characterized by a purchasing process that uses some

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[81] Tr. at 1262.

[82] Tr. at 1263.

[83] Tr. at 1262. The testimony characterized the temperature range as ⁻180° to ⁻150° C. For consistency, we have converted these figures to Fahrenheit.

[84] Tr. at 1264.

[85] Tr. at 1891 (*in camera*), 1923 (*in camera*), 2074.

[86] Tr. at 1264.

form of competitive bidding. In the LNG, LPG, and LIN/LOX tank markets, for example, buyers try to create a competitive environment by sending bid packages to multiple bidders.[87] Both LNG and LIN/LOX customers testified that they prefer to have at least three bidders.[88] In addition, although it appears most prevalent in the LPG and LIN/LOX tank markets, customers in all three tank markets use a second round of bidding to negotiate price so that they can "leverage the competitive environment prior to contract award."[89] Customers in all three tank markets also sometimes inform bidders of the existence of competition in order to reduce the prices bid.[90] Similarly, in the TVC market, customers solicit proposals from multiple bidders and then either select one bidder with whom to negotiate a best and final offer (BAFO)[91] or negotiate BAFOs with multiple bidders.[92]

Bidding for LNG tanks, however, is particularly complicated, because the construction of peak-shaving plants and LNG import terminals can be organized in a number of ways.[93] For example, a facility owner may choose to manage the project and solicit competitive bids for various stages of the project, such as the front-end engineering and design (FEED) work for the facility or

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[87] Tr. at 2302, 2307, 7083.

[88] Tr. at 347-38, 4618-19, 6495.

[89] Tr. at 2299; *see also* Tr. at 349-50, 1992-93.

[90] Tr. at 2304-05, 4954, 5040, 6603, 6626-27.

[91] Tr. at 1440.

[92] Tr. at 211.

[93] Tr. at 704 (*in camera*). In addition to engaging in multiple iterations of bidding, LNG tank customers also employ blind bids, where a bidder has one shot to submit its bid and does not know who its competition is.

the LNG tank. On the other hand, a facility owner may hire an Engineering, Procurement, and Construction (EPC) firm to manage the full breadth of the project. As the name suggests, an EPC contractor engineers the project, procures equipment and material, and constructs (or manages the construction of) the facility. Depending on its abilities and the customer's preference, an EPC contractor can perform the entirety of the work itself, subcontract portions of the work (such as LNG tanks) to other providers, or simply manage the various subcontractors for the owner.[94] In addition, although many LNG tank customers use competitive bids to select an EPC firm, some customers choose to negotiate sole-source contracts with certain suppliers.[95] This practice appears less prevalent in the LPG and LIN/LOX tank markets.[96]

III. Complaint Counsel's Prima Facie Case

A. Herfindahl-Hirschman Index Calculations

At trial, Complaint Counsel presented sales evidence from 1990 to 2001 and asserted that CB&I and PDM accounted for over 70 percent of all sales made in each of the relevant markets

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[94] Where the EPC contractor takes on responsibility for the subcontractor's work or performs the work itself, the contract amounts to a turnkey contract. A turkey contractor for an LNG import terminal or peak-shaving facility is responsible for building the entire plant from the engineering through the start-up of the plant. Tr. at 1323. Suppliers prefer to provide the customer with the entire facility, because such projects have higher margins than stand-alone LNG tanks. Tr. at 2812-13; CX 660 at PDM-HOU005013.

[95] Tr. at 6180-82, 6267.

[96] *See* Tr. at 6712-13.

(and 100 percent of all sales in both the LNG and TVC markets).[97] Complaint Counsel argue that these sales data translate into HHIs that entitle them to a presumption that the acquisition will lessen competition.[98] Complaint Counsel alleged – and the Initial Decision found – that the acquisition would result in post-acquisition HHIs of 5,845 for the LIN/LOX tank market, 8,380 for the LPG tank market, and 10,000 for the LNG tank and TVC markets.[99] Based on Complaint Counsel's evidence and the Initial Decision's findings, the acquisition resulted in HHI increases of 2,635 for the LIN/LOX tank market, 3,911 for LPG tank market, 4,956 for the LNG tank market, and 4,999 for the TVC tank market.[100]

HHIs measure market concentrations and can indicate market power (or the lack thereof). They have been consistently employed by courts assessing the likely impact of a merger or acquisition.[101] The Initial Decision, however, refused to rely on the HHI data that Complaint Counsel put into evidence. The ALJ reasoned that in markets with sporadic sales, finders of fact must treat concentration data with a fair bit of skepticism, because the numbers may not accurately represent the competitive landscape. The Initial Decision also pointed out that the changes in concentration in this case are sensitive to the time period chosen and therefore concluded that the HHIs are arbitrary and

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[97] CCACAB at 21.

[98] *Id.* at 20.

[99] Tr. at 3443, IDF 273 (LIN/LOX); Tr. at 3403-04, IDF 218 (LPG); Tr. at 3055, IDF 68 (LNG); Tr. at 3494, IDF 371 (TVC).

[100] *Id.*

[101] *See, e.g., Heinz*, 246 F.3d at 716; *PPG Indus.,* 798 F.2d at 1503; *Cardinal Health,* 12 F. Supp. 2d. at 53-54.

unreliable.[102] Specifically, the ALJ noted that because CB&I did not build an LNG or LPG tank or a TVC between 1996 and the acquisition, the change in concentration for that time period would be zero.[103]

We understand the ALJ's point and agree that in markets with sporadic sales, finders of fact must treat concentration statistics with care. However, total disregard of the concentration statistics is an entirely different matter and is a step we are unwilling to take in this case. Were one to look at a snapshot of a particular time, the HHIs taken alone might give the impression that CB&I was not a competitive force at that time. But such a notion is contradicted by other evidence in this case.[104] The ALJ's observation – which reflects a recognition that the sales in these markets are indeed sporadic – simply shows why it is appropriate to consider an extended period of time in analyzing these markets. Therefore, we reverse the ALJ's conclusion and will take account of the HHIs in this case.

We have considered the probative value of the concentration data in this case in light of all other evidence and have concluded that the evidence here corroborates – rather than refutes – the inferences that can be drawn from the HHIs. For example, in all four relevant markets, CB&I and PDM made by far the greatest number of sales, not only for the time period focused on by Complaint Counsel, but also for at least two decades. Indeed, as

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[102] ID at 91-92.

[103] ID at 91.

[104] Respondents' own economic expert, Dr. Barry Harris, acknowledged that it would be incorrect to conclude that the merger does not hurt competition simply because one Respondent accounted for all the sales in a relevant market over some period of years and the other Respondent accounted for none. Tr. at 7228.

we noted earlier,[105] Respondents do not contest that they were the dominant suppliers in all four markets prior to the acquisition. In addition, none of the relevant markets is characterized by easy entry, and other firms making tanks in the various markets have not expanded their presence by any appreciable measure. We thus believe the nature of sales in these markets distinguishes the instant case from cases in which courts have given HHIs little weight due to market conditions. In *Baker Hughes*, for example, the government did not present evidence beyond the concentration levels themselves, and the court found those data unreliable given the volatile nature of the market and low entry barriers.[106] Similarly, in *General Dynamics*, the Supreme Court found that the market share data overstated the competitiveness of the acquired firm going forward, because they did not take into account that firm's depleted reserves and commitment contracts.[107]

In a case such as this, where there are very few sales in any given year, the aggregation of sales data over a period of years can present a compromise. On the one hand, aggregating sales over a longer period increases the risk that competitive conditions will have changed significantly over the period. On the other hand, extending the time period in order to enlarge the sample of sales reduces the risk that chance outcomes will obscure the competitive significance of the different firms. In other words, aggregating sales data over a longer period can either increase or decrease the degree to which the corresponding HHIs accurately reflect competitive conditions.

Here, the evidence shows that competitive conditions have not changed sufficiently over an extended period to undercut the

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[105] *See* Part I.C, *supra.*

[106] 908 F.2d at 986 (citing *United States v. Baker Hughes*, 731 F. Supp. 3, 11 (D.D.C. 1990)).

[107] 415 U.S. at 493.

HHIs' central implication – that CB&I's acquisition of PDM combined the two principal competitors in these markets and is therefore likely to have harmed competition. Unlike the market described in *Baker Hughes*, the markets in this case are not volatile and shifting. Rather, these two companies are the only competitors that have made significant sales in each of the four markets for at least the past two decades. This fact is unquestionably reflected in the concentration levels presented by Complaint Counsel. Therefore, we believe that an extended time frame is an appropriate period in which to analyze the parties' sales data. Although the 11-year period chosen by Complaint Counsel is not the only option that was available, we are satisfied that the data present a representative picture of the various markets, given Respondents' long history of dominance in these markets preceding the acquisition. We also believe that the 1996-2001 period on which the ALJ focused provides a less reliable barometer than a more extended period.

The HHIs presented by Complaint Counsel for the four relevant markets range from 5,000 to 10,000 post-acquisition, with concentration increases that range from 2,600 to 5,000. They are thus well above the level needed to establish a prima facie case and entitle Complaint Counsel to a presumption that the merger is "likely to create or enhance market power or facilitate its exercise."[108] As we will discuss, however, Complaint Counsel also presented evidence of pre-acquisition bids, contemporaneous documents from the parties, and customer testimony that all suggest that the acquisition will have an anticompetitive effect in each relevant market. We find that this additional evidence not only bolsters the validity of Complaint Counsel's HHIs but also provides ample reason for finding that they established a prima facie case.

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[108] *Merger Guidelines* § 1.51.

B. Pre-Acquisition Competition in the Relevant Markets

In all four relevant markets the evidence establishes that CB&I and PDM were each other's closest competitor prior to the acquisition, and that together they largely dominated the sales of LNG, LPG, and LIN/LOX tanks and TVC tanks. These two companies also closely monitored each other's activities, and customers were frequently able to play one firm off against the other in order to obtain lower prices. The acquisition eliminated this substantial direct competition between them and left CB&I with an "undue" percentage share of each market. In this section, we further examine Complaint Counsel's market share case to consider the conditions that prevailed in each of the four markets. Based on this examination, we conclude that the qualitative evidence leaves no doubt that the acquisition has left CB&I as the dominant player – indeed, the only major player – in all of the markets and, as just noted, provides an independent reason for finding a strong prima facie case of presumptive liability. Accordingly, the evidence "creates, by a wide margin, a presumption that the merger will lessen competition" in each of the four markets.[109]

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[109] *Heinz*, 246 F.3d at 716. However, *Baker Hughes* noted that "evidence of market concentration simply provides a convenient starting point for a broader inquiry into future competitiveness." *Baker Hughes*, 908 F. 2d at 984. *See also General Dynamics*, 415 U.S. at 498 (1974) ("[S]tatistics concerning market share and concentration, while of great significance, [are] not conclusive indicators of anticompetitive effects[.]"); *Merger Guidelines* § 2.0 ("[M]arket share and concentration data provide only the starting point for analyzing the competitive impact of a merger."). Nonetheless, where concentration levels are extraordinarily high – as they are in this case – Respondents bear the burden of demonstrating that the HHIs are unreliable in predicting a transaction's competitive consequences. *See Heinz*, 246 F.3d at 715.

1. Pre-Acquisition Competition in the LNG Tank Market

The evidence establishes that prior to the acquisition CB&I and PDM had a virtual duopoly in the manufacture and construction of LNG tanks. From 1990 to the acquisition in 2001, these two firms were the only winners of bids to build LNG tanks in the United States. While one could argue (as Respondents do) over whether 1990 to 2001 is the appropriate period to examine, the choice of another period would not dramatically change the results: CB&I and PDM were the only companies with non-trivial sales of LNG tanks for over three decades.[110]

In the 11 years prior to the acquisition, CB&I and PDM were also the only bidders for the vast majority of projects.[111] The evidence reveals that firms other than CB&I and PDM bid in only two projects of nine.[112] Moreover, both of those projects demonstrate that CB&I and PDM did not face significant

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[110] From 1975 to the time of the acquisition, PDM and CB&I were the only companies that constructed LNG tanks for import terminals. Similarly, out of the 95 LNG tanks awarded for United States peak-shaving facilities in the 35 years prior to the acquisition, only seven tanks went to companies other than CB&I and PDM, and none went to other companies in the preceding 11 years. CX 125, CX 1645. CX 1645 discusses two additional peak-shaving projects not identified in the 93 projects listed in CX 125 – the 1995 MLGW project and the 1995 Pine Needle LNG project. The Citizen's Gas & Coke and South Carolina Pipeline Corp. projects discusses in CX 1645 are peak-shaving plants but CX 125 accounts for them. The Granite State Gas and Atlanta Gas projects were cancelled. CX 1645 at 2. The Enron, Cove Point, and Liquid Carbonic projects were not peak-shaving plants. CX 173 at CBI-PL010403, CX 853 at PDM-HOU011488.

[111] IDF 72-73.

[112] IDF 65, 72.

competition from other suppliers. Although Lotepro teamed with Whessoe and Black & Veatch teamed with TKK, and both groups submitted bids for MLGW's peak-shaving plant in Capleville, Tennessee,[113] their bids were well above that of CB&I.[114] Similarly, evidence suggests that CB&I and PDM were each other's closest competitor in bidding for the Atlanta Gas peak-shaving plant. Although the project was ultimately cancelled, Atlanta Gas evaluated another bidder (Marlborough Enterprises) and deemed its bid inferior to those of CB&I and PDM.[115]

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[113] The bid for this project was awarded in 1995. CX 1645.

[114] Tr. at 560, 3196-98. Although PDM was disqualified from bidding on this project because it did not meet the specifications in the request for proposals, MLGW's project manager testified that once the bids were adjusted for quality, PDM's bid was very close to CB&I's. Tr. at 1876.

Respondents argued at trial that the tank bids themselves were competitive and that the difference in the MLGW bids is mostly attributable to the liquefaction portion of the bid. The evidence indicates, however, that CB&I's tank bid was well below those of Black & Veatch/TKK and Lotepro/Whessoe. CB&I bid $36 million for the facility – $22 million for the liquefaction facility and $14 million allocated to the tank. Tr. at 648, 1809. In contrast, Lotepro/Whessoe's bid was $40 million. Tr. at 1809. Although there is no evidence on the precise breakdown of Lotepro's bid, the project manager for MLGW testified that the tank portion of Lotepro's bid was "quite a bit higher" than CB&I's. Tr. at 1810. Similarly, Black & Veatch/TKK's bid was $47.7 million, of which $31 million was allocated to the liquefaction process and $16.7 million was allocated to the tank. Tr. at 648.

[115] CX 161.

Testimony from customers and industry participants establishes that PDM and CB&I were the only viable LNG tank suppliers prior to the acquisition and that the acquisition substantially harmed competition.[116] MLGW testified that it was concerned about the competition for its upcoming project in 2006, because post-acquisition it does not "see anyone out there with experience that could come into the market and compete with CB&I/PDM."[117] A representative of another customer, People's Light, Gas & Coke, testified that the acquisition eliminated a choice and would have a "negative impact."[118] He elaborated that "[w]hat makes a vendor bid a lower price is not altruism but a fear that if you do not bid that lower price, you won't get the job."[119] An industry consultant echoed this concern and stated, "[T]here's plenty of people out there that will bid, but I think it will be difficult for anybody to come in and beat a bid from CB&I at this point."[120]

The parties' internal documents also confirm that CB&I and PDM did not consider other firms to be significant competitive threats. In the years prior to the acquisition, CB&I and PDM focused almost exclusively on each other in their assessment of the competitive landscape and paid little or no attention to what other companies were doing. For example, PDM's 1998 President's Report to the Board of Directors devoted two of seven pages to CB&I, with virtually no mention of any other

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[116] The testimony discussed in this paragraph of text comes from witnesses who observed first-hand the competition between CB&I and PDM.

[117] Tr. at 1830.

[118] Tr. at 324.

[119] *Id.*

[120] Tr. at 703 (*in camera*).

competitor.[121] PDM's 2000 Business Plan also analyzed the "Domestic LNG" market and concluded that "CB&I is PDM EC's domestic competition for LNG tanks."[122] In fact, Luke Scorsone, who now heads CB&I's Industrial Division,[123] candidly admitted that prior to the acquisition he viewed PDM as CB&I's lone competition in the LNG tank market.[124]

2. Pre-Acquisition Competition in the LPG Tank Market

Although the LPG tank market appears not to have been a duopoly prior to the acquisition,[125] only two of the 11 projects bid from 1990 until the acquisition were won by firms other than CB&I and PDM.[126] Furthermore, we find that fully crediting these two projects overstates their competitive impact. First, although Morse won a bid in 1994, it was later acquired by CB&I and is no longer in the market.[127] Second, although AT&V won a small project near its Gulf Coast fabrication facilities in 2000, the record suggests that this award was an anomaly given the small size and

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[121] CX 68.

[122] CX 94 at PDM-HOU017580.

[123] Prior to the acquisition, Mr. Scorsone was head of PDM's Erected Construction Division, which was the division responsible for sales of the various storage tanks and the TVCs at issue in this case.

[124] Tr. at 4851.

[125] In addition to CB&I and PDM, the record identifies AT&V, Matrix, Wyatt, Morse, and Pasadena Tank as bidders. Tr. at 3750, 5040, 6550, 6561, 7286. *See also* JX 23a at 119-123 (*in camera*), CX 397.

[126] IDF 210.

[127] Tr. at 6546.

the proximity of the tank to its facilities.[128] Even if we credit these wins fully, CB&I and PDM still stand as the dominant players and closest competitors, with only an occasional job going to other firms.

We have taken note that CB&I had not won any LPG tank jobs from 1994 until after the acquisition.[129] While this fact, at first blush, seems to undermine the pre-acquisition competitive significance of CB&I and suggests that the acquisition may not have actually lessened competition between CB&I and PDM in LPG tanks, the record shows that CB&I's string of losses after 1993 is not competitively significant. One of the LPG jobs that PDM won during this period (the Sea-3 project) is anomalous because PDM's bid left out a $400,000 piece of equipment that should have been included in the price.[130] It is not clear that PDM would have won the bid absent this error. In addition, during this period, CB&I continued to bid on each of the available LPG jobs, and the evidence suggests that its presence constrained PDM's pricing.[131]

Demand for LPG tanks has been declining,[132] and therefore customer testimony on the potential effect of the acquisition is

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[128] Tr. at 7129-31, 7133-34; CX 107 at PDM-HOU005015.

[129] Complaint Counsel's expert calculated the probability of CB&I's losing five straight bids if it were one of two equal bidders as 3.13 percent. Tr. at 3686-87. If it were one of three equal bidders, the probability would be 32/243 (or 13 percent). Tr. at 3688.

[130] Tr. at 4826.

[131] Tr. at 2300, 2306, 3375; CX-63, 68, 94 at PDM-HOU017582, 116, 660.

[132] *See* Tr. at 2309 (Fluor not aware of any field-erected LPG tanks being planned by anyone).

scant. Nevertheless, Fluor testified that the competitive alternatives to Fluor for its Sea-3 project were PDM and CB&I.[133] In addition, as is the case with the LNG market, the parties' own documents reflect that they viewed each other as the primary competition for LPG tanks. PDM strategic planning documents identified CB&I as "PDM EC's only competitor on domestic . . . LPG . . . projects."[134] CB&I's documents echo this sentiment. A presentation for CB&I's Board of Directors examined business conditions for 2000 and remarked that "[t]he combination of CB&I/PDM would be very strong in aggregating technology expertise, field crews and customer relationships."[135] Mr. Scorsone also testified that PDM was a formidable competitor to CB&I in LPG tanks in the Western Hemisphere.[136]

As with the LNG market, Respondents projected that the acquisition would give them market power in LPG tanks. In August 1999, PDM's CEO suggested to the PDM Board that PDM acquire CB&I, with an eye to achieving "[m]arket dominance in [the] Western Hemisphere, . . . LPG worldwide

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[133] Tr. at 2307-08. Matrix, a would-be entrant, also stated that CB&I and PDM were the only competitors for LPG tanks. Tr. at 1614.

[134] CX 107 at PDM-HOU005016 (PDM's "Strategic Plan 2000"); CX 68, 94, 648, 660.

[135] CX 216 at CBI-PLO33892.

[136] Tr. at 4263-64; *see also* CX 163 (CB&I document mentioning PDM as main competitor in the low temperature and cryogenic market, which includes LPG); CX 216 (CB&I Board of Directors' September 2000 Strategy Meeting document) at CBI-PL033886 (PDM a "formidable competitor" to CB&I in LPG in Western Hemisphere).

market dominance."[137] Although Scorsone testified that he made these statements merely to elicit enthusiasm from the Board and that it would have been very hard to dominate the domestic market,[138] we find that these statements were more than mere puffery. CX 648 is replete with references to CB&I and makes no reference to the competitive impact of other firms. At his investigational hearing, Scorsone also testified that CB&I was the largest in the world and an "icon for us [PDM] to focus on."[139] He admitted that he had believed that "market dominance" could be an outcome of an acquisition when he made the presentation to PDM's Board in 1999.[140] In addition, testimony from two major LPG customers reflects the view that the only competitive alternatives in the LPG tank market were PDM and CB&I.[141]

3. Pre-Acquisition Competition in the LIN/LOX Tank Market

The LIN/LOX tank market includes (and has historically included) several small fringe firms. Thus, like the LPG tank market prior to the acquisition, the LIN/LOX market was not an outright PDM/CB&I duopoly. In addition, Graver manufactured LIN/LOX tanks from 1990 until its exit in 2001.[142] Two additional firms, AT&V and Matrix, entered the market not long

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[137] Tr. at 4788-87; CX 648 at PDM-HOU000267 (August 1999 presentation to PDM Board of Directors).

[138] Tr. at 4786-88.

[139] Tr. at 5168.

[140] Tr. at 5168-69. *See also* CX 68 at 8 (August 1998 PDM Board presentation) ("CBI is PDM EC's major competitor in almost all of the significant markets PDM EC serves.").

[141] Tr. at 2308, 3367.

[142] IDF 269-70.

before the acquisition.[143] Chattanooga was an active bidder both before and after the acquisition but has yet to win a bid.[144] One additional firm, BSL, bid for a time and then exited the market.[145]

Despite the appearance, and disappearance, of multiple competitors in the LIN/LOX market, our examination of recent market history, customer testimony, and company documents leads us to find that the real competition in LIN/LOX tanks prior to the acquisition consisted of only CB&I, PDM, and Graver – and then of only CB&I and PDM after Graver exited in 2001. From 1990 to the acquisition, 109 LIN/LOX tanks were constructed.[146] Of these tanks, CB&I won 25, PDM won 44, Graver won 34, Matrix won 4, and AT&V won 2.[147] Graver was a well-known competitor in LIN/LOX tanks.[148] Its exit in 2001 was a significant event that further concentrated an already concentrated market.[149] Matrix had just entered the market a few years prior to the acquisition.[150] Shortly before the acquisition, AT&V also was finally able to win a LIN/LOX bid and has since

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[143] IDF 313, 320; Tr. at 4599.

[144] IDF 325-27.

[145] Tr. at 954-55, 1351-52, 1378-80, 1577-78, 2001.

[146] IDF 269; ID at 95.

[147] *Id.*

[148] *See* Tr. at 479, 1350-51, 1378, 1988-89, 6424-25.

[149] *See* Tr. at 1988-89. Before it exited the market in 2001, Graver's performance had been deteriorating following its acquisition by Iteq (several years before CB&I acquired PDM). Tr. at 2425.

[150] IDF 320.

completed the project and won two additional bids.[151] The section on entry below (Part IV.C.3) discusses in detail why none of these third-party firms has been a sufficient entrant – that is, one that has replaced the competition lost from the acquisition.

Customer testimony supports the conclusion that CB&I and PDM were the two principal competitors in the U.S. LIN/LOX tank market after Graver's exit in 2001 and that the acquisition substantially reduced competition. Air Liquide testified that it was concerned about the acquisition because competition had already been reduced by Graver's exit and because prices would tend to rise with only one viable LIN/LOX tank supplier left.[152] Linde testified that the acquisition drastically reduced its choice to one vendor.[153] Air Products testified that the acquisition eliminated a low-cost, preferred bidder and that it expects prices in LIN/LOX to go up as a result.[154] MG Industries testified that the acquisition took away an aggressive competitive bidder and that it is worse off after the acquisition, without PDM in the market.[155] PDM was the lowest bidder for the last three or four project inquiries for MG Industries, which frequently pitted PDM against CB&I to get better prices.[156]

Documentary evidence related to bids also confirms that PDM was an aggressive competitor in the LIN/LOX tank market and

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[151] Tr. at 2321-22, 2504-05, 4599.

[152] Tr. at 1988-91.

[153] Tr. at 878.

[154] Tr. at 1352-53.

[155] Tr. at 475.

[156] Tr. at 462.

frequently underbid CB&I.[157] Sometimes this dynamic caused both firms to submit bids with negative profit margins.[158] Respondents' documents also confirm that CB&I and PDM viewed each other as their primary competition. For example, CB&I and PDM monitored each other's past LIN/LOX bids but did not follow the bids of AT&V or Matrix.[159] In addition, both parties' documents often mention each other, with relatively little attention to other competitors.[160] Taken as a whole, this evidence supports the conclusion that the market was dominated by CB&I and PDM and that they were each other's closest competitor at the time of the acquisition.

4. Pre-Acquisition Competition in the TVC Market

Only CB&I, PDM, and Howard have submitted bids for TVC tank projects since 1990. The record demonstrates, however, that despite Howard's bidding presence, it has not been a significant factor in the TVC market. Howard has never won a project and is not regarded by customers as a credible bidder.[161] In fact, although Howard submitted a lower bid for Raytheon's Long Beach project, Raytheon chose the CB&I/XL pairing[162] because

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[157] CX 183; CX 193 at CBI-PL20339; IDF 279-82.

[158] CX 183; CX 193 at CBI-PL020339.

[159] IDF 277-79.

[160] *Id.*

[161] Tr. at 192-93, 384-87, 1443. In addition, Howard's founder testified that he did not believe that Howard had any real chance of winning a large TVC project. Tr. at 192-93.

[162] Typically, one company builds the shroud and another company builds the tank that encloses it. Tr. at 1264. The dominant shroud constructors have been PSI (aka Chart) and XL, which have formed alliances with the dominant tank constructors,

Raytheon believed that CB&I/XL had a superior technical approach.[163] In addition, Howard's total yearly revenues are small, ranging from $2.5 million-$3.0 million, and its bonding capability is correspondingly small.[164]

Customers agree that the main competition for TVCs was between CB&I and PDM and that the acquisition would eliminate this competition to their detriment. For example, TRW testified that when it learned that CB&I had acquired PDM, it estimated that the cost for its planned chamber would increase 50 percent.[165] Another customer, Spectrum Astro, testified that it considers competition between at least two suppliers important to foster innovation and to keep prices down.[166]

As with the other product markets, Respondents' documents show us that the real competition for TVCs rested in CB&I and PDM. A draft business plan for CB&I and XL's strategic alliance to bid for TVC projects described the "only competition for the thermal vacuum systems market" as the PSI/PDM "strategic alliance."[167] Witnesses representing the two makers of shrouds for TVCs testified that the only companies able to construct tanks for field-erected TVCs were PDM and CB&I,[168] one stating that "there were basically two dominant companies that supplied the

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PDM and CB&I. Thus, in the bidding on field-erected TVC projects, PSI/PDM has typically been pitted against XL/CB&I.

[163] Tr. at 383-87.

[164] Tr. at 181, 200.

[165] Tr. at 1456-57.

[166] Tr. at 2050-51.

[167] CX 212 at CBI-PL031721; Tr. at 1159.

[168] Tr. at 1110, 1115, 1118, 1267.

field-erected chambers and two dominant companies that supplied [thermal vacuum control] systems."[169]

5. Conclusions on Pre-acquisition Competition

The qualitative record evidence thus bolsters the conclusions that can be drawn from the HHIs, which show extremely high levels of concentration in all four markets. The acquisition has resulted in a merger to monopoly or near-monopoly in each relevant market, giving rise to a very strong presumption that the merger is anticompetitive. We next turn to a discussion of entry conditions to determine if there is any evidence to suggest that the acquisition is less anticompetitive than the concentration levels show.

C. Entry Conditions

In addition to their prima facie case based on concentration numbers and a more detailed examination of competitive conditions in each market, Complaint Counsel presented evidence that the LNG, LPG, and LIN/LOX tank markets are difficult to enter.[170] Although Respondents present a very different entry argument as a major part of their defense, we analyze entry conditions in the context of Complaint Counsel's prima facie case. We do this because evidence of high entry barriers necessarily strengthens the conclusions to be drawn from

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[169] Tr. at 1118.

[170] The difficulty of entry into the TVC market is not in dispute. Rather than suggesting that new entrants or expanding smaller incumbents will restore competition, Respondents argue that CB&I was not a competitive presence in the TVC market. RAB at 48.

Complaint Counsel's showing of high concentration levels.[171] If entry is difficult, then CB&I would be sheltered from the threat of new entry and any market power it has would be more secure.[172] In contrast, if entry is easy, any market power gained from a merger can be quickly eroded in the event that incumbent firms, acting alone or in unison, increase prices to a supracompetitive level.[173]

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[171] In addition, while we acknowledge the conceptual framework of shifting burdens of production, we note that as a practical matter it would be difficult to consider this evidence elsewhere in our analysis, because Complaint Counsel introduced this evidence as part of their prima facie case. At least one court has noted this same difficulty. *See University Health*, 938 F.2d at 1219 n.25 (noting that the government introduced all of its evidence at one time and that defendant responded in kind, and concluding that it would analyze whether the FTC had demonstrated that it had "satisf[ied] its ultimate burden of persuasion," *id.* at 1219, rather than focusing on shifting burdens).

[172] *See Heinz*, 246 F.3d at 717 (high entry barriers eliminate the possibility that the competition lost from the merger will be mitigated by new entry); *United States v. Visa U.S.A., Inc.*, 163 F. Supp. 2d 322, 342 (S.D.N.Y. 2001) ("The higher the barriers to entry, and the longer the lags before new entry, the less likely it is that potential entrants would be able to enter the market in a timely, likely, and sufficient scale to deter or counteract any anticompetitive restraints."), *aff'd*, 344 F.3d 229 (2d Cir. 2003).

[173] *Baker Hughes*, 908 F.2d at 987 ("In the absence of significant barriers a company probably cannot maintain supracompetitive pricing for any length of time."); *United States v. Syufy Enters.*, 903 F.2d 659, 671 n.21 (9th Cir. 1990) (noting that low barriers to entry precluded Syufy from maintaining market share and controlling prices).

In the absence of actual new entry or expansion by smaller incumbents, predictions about entry require speculation firmly rooted in market realities. Indeed, Areeda & Hovenkamp have commented that "[t]he only truly reliable evidence of low barriers is repeated past entry in circumstances similar to current conditions."[174] Over the years, however, courts and commentators[175] have identified a host of variables that might prohibit or deter a new entrant, including government regulation,[176] high initial investments,[177] incumbent control of an essential or superior resource,[178] access to customers,[179]

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[174] 2A Areeda, Hovenkamp & Solow, *supra* note 45, ¶420b, at 60 (2d ed. 2002). *See also Cardinal Health*, 12 F. Supp. 2d at 56("[T]he history of entry into the relevant market is a central factor in assessing the likelihood of entry in the future.").

[175] Areeda, Hovenkamp & Solow identify and discuss economies of scale, high initial investment, capital market imperfections, risk, scarce inputs or customers, product reputation and promotion, and governmental constraints as potential barriers to entry. 2A *id*. ¶ 421, at 65-74.

[176] *See, e.g., Syufy*, 903 F.2d at 673 ("some of the most insuperable barriers in the great race of competition are the result of government regulation"); *United States v. Franklin Elec. Co.*, 130 F. Supp. 2d 1025, 1031 (W.D. Wisc. 2000) (identifying a patent as an entry barrier).

[177] *See, e.g., Visa*, 163 F. Supp. 2d at 341 (finding, among other barriers to entry, an up-front investment of over $1 billion).

[178] *Rebel Oil Co. v. Atlantic Richfield Co.*, 51 F.3d 1421, 1439 (9th Cir. 1995) (identifying, among other things, control by the incumbent of essential or superior resources as a barrier to entry).

[179] *Cardinal Health*, 12 F. Supp. 2d at 58; *see also Visa*, 163 F. Supp. 2d at 342 (identifying the inability of Visa to obtain customers and therefore vendors as a barrier to entry).

reputation,[180] and economies of scale.[181] In addition, some courts have embraced the economic concept that for an entry barrier to exist, it must impose long-run costs on the new entrant that the incumbent did not shoulder.[182]

We first turn to Respondents' argument that entry barriers are low in the LNG, LPG, and LIN/LOX tank markets based on the alleged entry in those markets.[183] Respondents point to the facts that three new suppliers in the LNG tank market have contacted customers and that one of these suppliers will be awarded the job to build an LNG tank for Dynegy's Hackberry, Louisiana import terminal.[184] Similarly, Respondents attest that new entrants have bid in both the LPG and LIN/LOX tank markets and that one supplier has won awards to build three LIN/LOX tanks post-merger.[185] They thus conclude that although "[t]he ALJ identified several requirements that new entrants must meet in order to enter the relevant markets[,] . . . these requirements are not the same as

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[180] *See, e.g.*, *Swedish Match*, 131 F. Supp. 2d. at 170-71; *Avery Dennison Corp. v. Acco Brands*, 2000-1 Trade Cas. (CCH) ¶ 72,882, 87557 (also available at 2000 U.S. Dist. LEXIS 3938 (C.D. Cal. Feb. 22, 2000)). *See also Franklin Electric*, 130 F. Supp. 2d at 1031-32 (finding customers' insistence on firms with a track record a barrier to entry); *United States v. United Tote Inc.*, 768 F. Supp. 1064, 1079 (D. Del. 1991) (same).

[181] *Cardinal Health*, 12 F. Supp. 2d at 57.

[182] *See Western Parcel Express v. UPS of America*, 190 F.3d 974, 975 (9th Cir. 1999); *Rebel Oil,* 51 F.3d at 1439 ("capital market evaluations imposing higher capital costs on new entrants").

[183] RAB at 20, 25-26.

[184] RAB at 14-17.

[185] RAB at 17-19.

entry barriers."[186] If Respondents are correct and if entry barriers are low, the merger is not likely to create or enhance market power and thus is not anticompetitive.

We conclude, however, that Respondents' argument misses a crucial point: in order to deter or counteract the competitive effects of a merger, entry must restore the competition lost from the merger. As the *Merger Guidelines* instruct, entry must be not only likely to occur in a timely manner but also sufficient to constrain post-merger price increases to pre-merger levels.[187] This mode of analysis has enjoyed widespread acceptance in courts, in the economic literature, and among antitrust scholars.[188] Indeed, cases prior to the 1992 revision of the *Merger Guidelines* also examined the sufficiency of entry in their analyses. These cases frequently focused on the ability of the new entrant to take market share from or reduce the prices of the incumbent firms. For example, in finding low entry barriers, *Baker Hughes* relied on, *inter alia*, the fact that a firm had entered the market and expanded from insignificance to become the market leader.[189]

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[186] RAB at 20.

[187] *Merger Guidelines* §§ 3.2-3.4.

[188] *See Visa*, 163 F. Supp. 2d. at 342 (entry must be "timely, likely, and [of a] sufficient scale to deter or counteract any anticompetitive restraints"); *Cardinal Health*, 12 F. Supp. 2d at 55-58 (same); Robert D. Willig, *Merger Analysis, Industrial Organization Theory, and Merger Guidelines*, Brookings Papers on Economic Activity: Microeconomics, 281, 307 (1991) ("[T]he likelihood, timeliness, and sufficiency of the induced entry are the critical elements of the analysis."); 2A Phillip E. Areeda, Herbert Hovenkamp & John Solow, *supra* note 45, ¶422, at 74-78. *See also FTC v. Staples Inc.*, 970 F. Supp. 1066, 1088 (D.D.C. 1997) (finding that expansion by Wal-Mart would not constrain the merging parties' prices).

[189] 908 F.2d at 988-89.

The court thus concluded that the market was "volatile and shifting"[190] and predicted that "competitors not only [could], but probably [would], enter or expand if [the] acquisition [led] to higher prices."[191] The court's description of that market made clear its understanding that new entrants or smaller incumbents could effectively constrain the merging entity. Similarly, the *Syufy* court found it dispositive that a post-merger entrant took a significant share of the first-run film market away from the incumbent firm, rendering benign what on its surface had been a merger to monopoly.[192]

The focus on sufficient entry has also led some courts to reject the type of argument that Respondents make in this case – that because new players have entered in some nominal sense, entry barriers are low or non-existent. For example, the court in *Rebel Oil* rejected the argument that the existence of two new entrants constituted evidence of low entry barriers and stated that "[t]he fact that entry has occurred does not necessarily preclude the existence of significant entry barriers."[193] The court noted that because the new entrants would be unable "to take significant business away from the predator, they are unlikely to represent a challenge to the predator's market power."[194] The court in *Oahu Gas Service* also refused to find an absence of entry barriers because the new entrants had remained relatively small.[195] Similarly, the trial court in *Tote* found entry insufficient to rebut

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[190] *Id.* at 986.

[191] *Id.* at 989.

[192] 903 F.2d at 665.

[193] 51 F.3d at 1440 (quotation marks omitted).

[194] *Id.*

[195] *Oahu Gas Serv. Inc. v. Pacific Res. Inc.*, 838 F.2d 360, 366-67 (9th Cir. 1988).

the government's prima facie case, because new entrants could not constrain anticompetitive price increases by the incumbents.[196] This focus on the competitive impact of the new entry echoes precisely the question posed by the sufficiency prong of the *Merger Guidelines* and relevant case law, and frames the ultimate question we must answer in this case.

In the LNG, LPG, and LIN/LOX tank markets, the mere fact that new entrants and fringe firms have an intent to compete does not necessarily mean that those firms are significant competitors capable of replacing lost competition. The evidence establishes that the firms that Respondents have identified in these markets are pursuing work and that customers have testified that they will consider bids from suppliers other than CB&I.[197] However, these facts at most show that these firms have the capacity to submit a bid.[198] Although the ability to submit a bid is obviously a necessary first step, we find it insufficient to answer the ultimate question – whether the new entry or smaller incumbent expansion can constrain CB&I at the level it was constrained pre-acquisition. As we discuss below, the evidence shows that to compete effectively with CB&I – and thus sufficiently constrain it – bids from these new entrants must also be taken seriously by the

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[196] 768 F. Supp. at 1082.

[197] AT&V has also won three awards to build LIN/LOX tanks. However, as we discuss in Part IV.B.3.a.(1), *infra*, AT&V's performance on these jobs calls into question its ability to compete in the future.

[198] In the LNG tank market, Skanska/Whessoe, TKK/AT&V, and Technigaz/Zachry have submitted bids for Dynegy's Hackberry, Louisiana project. In addition, AT&V and Matrix have submitted bids for LPG tank projects, and AT&V, Matrix, and Chattanooga have submitted bids for LIN/LOX tank projects. RAB at 14-19.

customers in these markets and present the customers with credible alternatives.[199]

1. Entry Conditions of the LNG Tank Market

LNG tank customers require potential suppliers to have a good reputation, knowledge of the local labor force, knowledge of federal and local regulatory requirements, and employees who are skilled at designing and constructing tanks. In other words, suppliers must have experience to compete. The evidence suggests that customers view experience in the LNG tank market as evolving over time, with each successfully completed project improving a supplier's ability to provide a quality product and to obtain future work. For example, customers evaluate a potential supplier's strength in each of the aforementioned categories. Moreover, it appears that as an LNG tank supplier builds more tanks, it becomes more efficient both in terms of costs and its ability to build a quality product.[200] This dynamic is particularly important in the United States, where CB&I has decades of experience and has solidified a reputation for quality and reliability. To enter the U.S. market effectively, an LNG tank supplier must not only meet customers' basic requirements but also must be able to match CB&I's long-honed abilities.

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[199] We find the Initial Decision's discussion of entry barriers relevant in that it correctly identified a number of credentials any new entrant must have as well as market characteristics that a new entrant must overcome to successfully compete with CB&I. *See generally* IDF 46-54, 166-76, 237-53, 328-33, 415-18; ID at 99-108.

[200] *See, e.g.*, Tr. at 1639-40 (a former Zachry employee notes that the more LNG projects it completes, "the more [it] can optimize [its] methods and be more competitive" in terms of costs) (*in camera*).

The evidence clearly establishes that an LNG tank supplier's reputation plays a key role in its ability to compete. Several customers testified that they prefer to deal with companies with experience in both designing and building tanks and that an LNG tank supplier needs to have constructed more than one tank to be viewed favorably. Yankee Gas, for example, testified that a supplier that has constructed only one tank will not meet the "broad level of experience that [it] will require in [its] evaluation."[201] Similarly, Dynegy testified that it prefers someone with LNG tank construction experience,[202] and Black & Veatch testified that it would be hesitant to use an inexperienced supplier.[203]

We find support for this testimony in the behavior of various customers when they select bidders. The first step many companies take in putting together a slate of bidders is to determine which companies have successfully built LNG tanks in the past.[204] Moreover, past performance is an essential aspect of a customer's evaluation of a potential LNG tank supplier. For example, in choosing an LNG tank supplier for its Capleville project, MLGW specifically assessed and rated the various bidders' experience.[205] Although that project occurred several years prior to the acquisition, the evidence suggests that customers continue to take a potential supplier's track record and reputation into account. El Paso testified, for example, that in qualifying bidders it evaluates, among other things, a company's history with

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[201] Tr. at 6702.

[202] Tr. at 4581-82.

[203] Tr. at 564-77.

[204] Tr. at 4544-45.

[205] Tr. at 1788-91.

previous projects.[206] Similarly, Yankee Gas testified that experience will carry a lot of weight in its evaluation of bids for an upcoming project.[207] CB&I itself recognizes the importance of reputation and markets itself to customers based on the success of its past projects and cites this experience as a reason for choosing it instead of other suppliers.[208]

Antitrust law has long recognized that reputation can be a barrier to entry and expansion.[209] This principle applies especially to markets in which a product failure may result in dire consequences – as the failure of an LNG tank surely would. The court in *Franklin Electric* found that a consumer's reluctance to switch away from firms with long track records in manufacturing submersible turbine pumps would likely prohibit meaningful entry.[210] Similarly, in *Tote*, the fact that a new entrant would need to demonstrate that its system could operate flawlessly for one to two years as a prerequisite to market acceptance was a factor that

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[206] Tr. at 6166-67.

[207] Tr. at 6702-03.

[208] CX 140, CX 162, CX 173. *Cf.* CX 1719 (investor fact sheet emphasizing "112 years of industry experience").

[209] In *Cardinal Health*, for example, the court found that, among other things, the "strength of [the defendants'] reputation" served as a "barrier[] to competitors as they attempt to grow significantly." 12 F. Supp. 2d at 57. Similarly, courts in other cases have found that brand loyalty can make meaningful entry unlikely. *See, e.g.*, *Swedish Match*, 131 F. Supp. 2d at 170-71; *Avery Dennison*, 2000-1 Trade Cas. (CCH) ¶ 72,882 at 87,557 (also available at 2000 U.S. Dist. LEXIS 3938 at *42-44).

[210] 130 F. Supp. 2d at 1031.

would impede new entrants from gaining market share and constraining price increases.[211]

This precedent notwithstanding, Respondents cite *Baker Hughes* for the proposition that the mere fact that customers place great importance on product quality and reliable future service does not constitute a "high entry barrier."[212] This argument not only misreads *Baker Hughes* but is wholly inapplicable to this case. In the passage cited by Respondents, the court of appeals specifically acknowledged that a customer's focus on product quality and reliable future service "may handicap new entrants."[213] It merely refused to overturn the district court's conclusion that other factors – such as actual entry and expansion – outweighed the evidence regarding customers' concerns.[214] In the instant case, the record presents quite a different picture. The evidence demonstrates that far from being "general statements" – as Respondents suggest[215] – the customers' preference for experience repeatedly manifests itself in the way customers view potential suppliers and award bids in real-world contests. Moreover, unlike in *Baker Hughes*, there is no evidence in this case that new

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[211] 768 F. Supp. at 1079-1081.

[212] RAB at 21.

[213] 908 F.2d at 989 n.10.

[214] 908 F.2d at 989. We also note that the Ninth Circuit has concluded that reputation by itself does not necessarily reflect barriers to entry. *Omega Environmental Inc. v. Gilbarco*, 127 F.3d 1157, 1164 (9th Cir. 1997); *Syufy*, 903 F.2d at 669. As in *Baker Hughes*, entry in both of these cases occurred and expanded in the relevant markets. *Omega Environmental*, 127 F.3d at 1164; *Syufy*, 903 F.2d at 665. We thus find these cases inapplicable to the case before us, in which the markets have not seen competitively significant new entry or expansion post-acquisition.

[215] RAB at 21.

entrants or smaller incumbents can expand their presence in the LNG tank market. Quite to the contrary, the LNG tank market is characterized by long-standing dominance by the two merged firms and a reluctance on the part of customers to take a chance on firms with no experience.

The customers' focus on experience is understandable, because building an LNG tank is not easy.[216] In addition, while some of the skills necessary to build an LNG tank may be of a general nature, others are not. Black & Veatch testified, for example, that the welding, foundation work, and pipeline connections for these cryogenic tanks require specialized skills to be done properly.[217] Similarly, Yankee Gas testified that it will not credit experience in building petroleum tanks as the type of experience necessary to build LNG tanks, because the cryogenic properties of LNG tanks require a special construction skill set.[218] To deal with these technical challenges, both CB&I and PDM developed specialized construction procedures, trained supervisors to manage various parts of the tank construction, and developed working relationships with traveling field crews and local labor. For a new entrant to be taken seriously, it would need to demonstrate that it has access to a group with similar knowledge and expertise. We thus find that it is critical for a tank supplier to have experienced and knowledgeable supervisors as well as access to specialized field crews.

One customer testified that it is necessary for an LNG tank supplier to have supervisors on staff, because they are otherwise difficult to find.[219] This statement is supported in the merging

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[216] *See* discussion *supra* at Part II.A.

[217] Tr. at 565.

[218] Tr. at 6701-02.

[219] Tr. at 6231-32.

parties' own business practices. Prior to the acquisition, both PDM and CB&I had on salary a staff of supervisors for the construction of the tanks, and CB&I has retained such employees following the acquisition.[220] These supervisors must also be trained to ensure that they are familiar with LNG projects.[221]

Similarly, tank suppliers must employ and train field crews to perform some of the more specialized work on these tanks.[222] The training not only focuses on such obvious skills as the requisite specialized welding techniques, but also teaches the crew familiarity with the firm's procedures and the use of its equipment.[223] These crews, which can range from 40 to 60 people, travel from job to job and are distinct from the local labor pool.[224]

Respondents suggest that because field crews are hourly (rather than salaried) employees and because they can work for multiple companies, knowledge of and connections with these crews do not represent a competitive advantage for the merged firm.[225] We disagree. While it is true in theory that a prospective new entrant could hire members of these field crews, the crew would not be familiar with either the new entrant's procedures or its equipment and would thus need to be trained – a process that would result in additional time and costs to the new entrant.[226] As one CB&I

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[220] Tr. at 2626-27.

[221] Tr. at 2625-26.

[222] Tr. at 2633-34.

[223] Tr. at 2625-26.

[224] Tr. at 1598-99.

[225] RAB at 23.

[226] Tr. at 1641 (*in camera*), 2626.

employee stated, "[T]here's obviously a learning curve as that person learns a particular company's procedures and equipment."[227] He elaborated that a person working on an initial project "would probably be not as efficient as someone who had worked with the company's procedures and equipment for years."[228] This familiarity reduces CB&I's costs and is likely to factor favorably into a customer's assessment of a bid from CB&I.[229] CB&I can assure a customer not only that it has access to the needed field crews but also that its crews' familiarity with CB&I will save the customer time and money over other options.[230] A new entrant would thus need to cultivate such relationships and be able to demonstrate to customers that it could match CB&I's proficiency in attracting and working with field crews.

Respondents have also argued that access to welders is not a hurdle to entry in this market, because "[w]elding processes for LNG tanks are non-specific."[231] The weight of the evidence suggests otherwise. Regardless of whether the welding is done by field crews, local labor, or the employees of a tank construction

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[227] Tr. at 2633-34.

[228] Tr. at 2634.

[229] Tr. at 2633-34.

[230] A Technigaz employee testified that CB&I has experienced field crews that can erect a tank in a shorter time than newly trained field crews. Tr. at 4713 (*in camera*). Similarly, a former Zachry employee stated that there is a learning curve associated with construction of LNG tanks, Tr. at 1637 (*in camera*), and that a company's costs decrease as it builds more tanks. Tr. at 1639-40 (*in camera*). We find this testimony borne out in the Dynegy bid, where Technigaz/Zachry (which has never built an LNG tank) was excluded for price reasons. Tr. at 4760 (*in camera*).

[231] RAB at 22.

company, a tank supplier must first have welding procedures in place. CB&I has developed specialized, proprietary welding procedures that it does not share with the industry, and prior to the acquisition PDM did the same.[232] In fact, in a 2002 discussion with its investors, CB&I's CEO emphasized that building an LNG tank involves very specialized work and that facility owners recognize this fact and do not want to take a chance on "shoddy welding."[233] Similarly, AT&V's Vice President testified that "the [welding] equipment is quite expensive to develop. You can go buy it, but the stuff you buy has to be modified and tailored, and then you have to build procedures around it."[234] He elaborated that because LNG tanks are constructed of sophisticated materials, "you don't just weld them up any old way."[235] Matrix, which supplies LIN/LOX tanks, also testified that if it were to try to supply LNG tanks, it would need to develop specialized welding procedures.[236] As a result, we find that a new entrant would need to develop welding procedures, train its welders in those procedures and the use of its equipment, and demonstrate to customers that it would be able to safely weld and deliver an operable tank in a timely manner.

We also find that knowledge of and connections with local labor are a necessary prerequisite to an LNG tank supplier's ability to compete effectively. Several customers testified that LNG tank suppliers must have knowledge of these markets.[237]

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[232] Tr. at 6028-29; CX 109 at PDM-HOU006700; CCFF 331-32.

[233] CX 1731 at 44.

[234] Tr. at 2379.

[235] *Id.*; s*ee also* CCFF 327.

[236] Tr. at 1601.

[237] *See, e.g.*, Tr. at 310, 4521, 7017-18.

One customer even testified that it would not consider a foreign LNG tank designer for a U.S. project unless that designer teamed with an American construction firm.[238] In addition to having general knowledge of local labor markets in the United States, a new entrant would also need to learn how to employ those labor resources most effectively in the construction of LNG tanks and would need to develop relationships with local vendors and suppliers. In its SEC filings, CB&I has repeatedly pointed to the fact that it has cultivated such relationships and has stated that these relationships confer a competitive advantage.[239] In addition, CB&I's CEO testified that a company's local presence can translate into a competitive advantage through knowledge of the local vendors and suppliers and of the local labor markets.[240]

Respondents argue that much of the construction labor is contracted locally and that the construction skills necessary – including welding – can be easily learned. As proof of this position, they point out that Whessoe completed LNG tanks in Dabhol, India, with the use of local labor. We find, however, that Respondents' argument misses an essential point and that the experience in Dabhol actually exemplifies why entry and expansion in the U.S. market are difficult. The ability to hire local

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[238] Tr. at 7017-18.

[239] *See, e.g.*, CX 1061 at 10-11 (reporting in an SEC 10-K that CB&I "believes that it is viewed as a local contractor in a number of the regions it services by virtue of its long-term presence and participation in those markets" and that "[t]his perception may translate into a competitive advantage through knowledge of local vendors and suppliers, as well as of local labor markets"); CX 1575 at 7 (same). To avoid any possible confusion, we emphasize that the possession or acquisition of a "competitive advantage" is not illegal, but it can be a relevant factor when a merger is defended on the ground that entry is easy.

[240] Tr. at 4230.

welders untrained in welding LNG tanks presupposes that a tank supplier is ready and able to train and supervise those workers. Although it contracted with a local construction company in India that employed skilled workers, Whessoe needed to bring a large number of supervisors to the work site. We would expect the same to hold true in the United States, given that any foreign firms that enter the U.S. market likely would have U.S. construction partners without experience in building LNG tanks. In fact, the evidence suggests that the international tank design firms recognize this fact and have plans to train U.S. construction employees in the management of these projects – an endeavor that will take a long time and be costly.[241] In addition, even after the U.S. construction employees are trained, it would likely take them a few years to become as efficient as those of CB&I – a fact that AT&V's Vice President acknowledged regarding his firm's employees.[242] Thus, whether the international design firms provide supervisors for a particular job or train employees in the United States, the new entrants face a long and costly learning process before they can become effective competitors to CB&I.

Finally, customers testified that an LNG tank supplier must be able to steer a proposed project through the FERC application process in a timely manner.[243] While it takes expertise to complete the tank drawings and various resource reports required

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[241] *See, e.g.*, Tr. at 2324-26 (TKK plans to train AT&V employees project managers and has thus far trained one), 2626-27(CB&I employee explaining that project managers must be trained).

[242] Tr. at 2379-80; IDF 147.

[243] Because the FERC regulations apply only to interstate commerce, they are usually not applicable to peak-shaving facilities, which serve only local markets. However, in some instances, an owner may specify that its peak-shaving facility be built to comply with the FERC regulations. Tr. at 4930.

by FERC, many customers testified that it is also of paramount importance to secure approval in a timely manner.[244] Because construction on the LNG tank cannot begin until the FERC application is approved, delay in the approval process translates into delay in the construction and erection of the tank, which in turn delays completion of the entire facility. This delay, of course, can represent real costs for the customer.[245] Thus, customers take FERC experience into account when they evaluate potential bidders.[246] In fact, BP commented that the foreign companies

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[244] Tr. at 310 (stating a reluctance to use an inexperienced LNG tank supplier, because, among other things, the supplier would not be "familiar with all the [regulatory] parties that have requirements and how to satisfy all those parties in a reasonable time"). *Cf.* Tr. at 566 (meeting the schedule is important, and if the tank is delayed, that time is added to the project); Tr. at 627 ("delays in completing the tanks or problems with utilizing the tanks will impact the schedule and the success of the project"); Tr. at 6287 (CMS believed the number one risk on the project was schedule) (*in camera*).

[245] *See, e.g.,* Tr. at 3192 (missing deadlines causes "potential damage to the [LNG tank] client"); Tr. at 6286-87 (the revenue stream does not start until the LNG facility is ready for service) (*in camera*). These costs are usually mitigated by liquidated damages or other penalties. Tr. at 3191-92, 6286-87 (*in camera*).

[246] Prior to the acquisition, Atlanta Gas evaluated bids based partially on the bidders' FERC experience. CX 161. Similarly, CB&I's FERC experience appears to have played a crucial role in CB&I's post-acquisition negotiations with both BP and CMS. As will be discussed more fully in Parts IV.B.1.(a)-(b) of this Opinion, the evidence suggests that CB&I successfully leveraged its completion of the FERC applications into sole-source contracts with BP despite BP's initial reluctance to grant such contracts. When BP hired CB&I, it believed that CB&I's FERC experience gave CB&I a significant advantage. Tr. at 6093 (*in camera*).

would need to demonstrate the capability to steer a project through the FERC process before it would award them a bid.[247] The evidence also demonstrates that CB&I itself recognizes the importance of experience with the FERC approval process, because it touts its own FERC experience in dealing with prospective customers.[248]

The evidence thus establishes that, at a minimum, a new entrant would need to go through a time-consuming process to develop procedures to meet the unique challenges of building LNG tanks; recruit and hire supervisors with highly specialized experience; gain access to local labor forces; and acquire expertise in dealing with complex regulatory requirements.[249] Without such

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CMS also chose CB&I based in part on CB&I's FERC experience. Tr. at 6283 (*in camera*). Although some customers hire consultants and EPC contractors to help with the FERC approval process, Tr. at 4991, the evidence suggests that for some customers – especially those in sole-source negotiations – a bidder's FERC experience is crucial.

[247] Tr. at 6092 (*in camera*).

[248] In recent correspondence with a potential customer, the merged firm noted that "CB&I brings unmatched experience in preparing the documents . . . that are necessary for permitting and/or filing for FERC authorization permits." CX 140. In the same correspondence, CB&I further described itself as a firm "whom the permitting agencies, most especially FERC, know and respect." *Id.*

[249] We reject Complaint Counsel's suggestion that access to raw materials and ownership of fabrication facilities are necessary for a new entrant to be competitive. Although the 9 percent nickel steel for LNG tanks used to be sourced in the U.S., it appears that it is now sourced from Japan and Europe. Tr. at 4891 (CB&I purchases its 9 percent nickel steel from Japan and Europe). In addition, while owning a fabrication plant may be helpful in other

attributes, an entrant's bid is not likely to be taken seriously, and it will be unable to constrain CB&I effectively. In fact, the new entrants recognize these requirements. AT&V's Vice President, for example, testified that TKK planned to train AT&V's employees in project management skills such as estimating, scheduling, and coordinating as well as in construction techniques, welding, and the operation of welding equipment.[250] While we find such testimony highly probative of AT&V's intent to stay in the market and its plans to become a competitive force, we find that, as of the time of trial – nearly three years after the acquisition – AT&V still has not become a factor in the market. It cannot yet constrain CB&I, and it certainly has not replaced the competition that was lost from the acquisition. Furthermore, we cannot predict when – or even whether – it might do so.

As we will discuss more fully in Part IV.B.1, *infra*, we also find that CB&I's long-standing presence in the U.S. confers on it a virtually insurmountable advantage in many of the attributes we just discussed, at least for the foreseeable future. It has many years of experience in building LNG tanks in the United States. This experience not only gives CB&I an advantage in terms of cost and efficiency but also provides it a reputation for quality and reliability.[251] We believe this dynamic explains why Asian tank

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relevant markets, there is no evidence to suggest that owning such a plant makes a difference for building LNG tanks. There is some general testimony that owning a fabrication plant might reduce one's costs on LNG projects, Tr. at 1636 (*in camera*), but we find more persuasive the fact that CB&I had its steel for some recent projects fabricated at the foreign steel mill and delivered directly to the site. Tr. at 4893-94.

[250] Tr. at 2325.

[251] Tr. at 1637-38 (a supplier that builds an LNG tank incurs expenses "that [it] can improve when [it] perform[s] the same work the second or the third time or subsequent times") (*in*

manufacturers historically have built the majority of LNG tanks in Asia, European-based tank manufacturers have built the bulk of tanks in Europe, and PDM and CB&I have built the only tanks in the United States.[252] In essence, a new entrant faces a conundrum: its lack of experience and inability to build a reputation place it at a competitive disadvantage in terms of winning a bid, which is the very thing it needs to gain experience and build a reputation.

2. Entry Conditions of the LPG Tank Market

The evidence shows that conditions of entry and expansion in the LPG tank market are similar to those in the LNG tank market. It is very difficult to get work without an established record for building high-quality, field-erected LPG tanks.[253] Bidders are selected for inclusion in the bidding process based on past performance, technical capabilities, safety record, quality programs, the size and scope of structures built previously, the

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camera); Tr. at 2633-34 ("For any type of tank project, there's obviously a learning curve as that person learns a particular company's procedures and equipment, and during the initial project that person was used on he would probably be not as efficient as someone who had worked with the company's procedures and equipment for years."); Tr. at 4713 (CB&I has a cost advantage over Technigaz/Zachry because it has "experienced field crews that can erect an LNG tank in a shorter period of time than a newly trained field crew that has no past experience.") (*in camera*). *See also* CX 392 at 4 (affidavit seeking in camera treatment for documents related to improving CB&I's "processes and methods" that "improve [CB&I's] efficiency and lower [its] costs").

[252] *See* Tr. at 699 (*in camera*), 717-18 (*in camera*); CX 1649 (world map plotted with global tank sales).

[253] *See* Tr. at 1609 (LPG tank market characterized as having "learning curves and expenses" similar to the LNG tank market).

volume of work performed, number of employees, qualifications of welders, and financial information.[254] Both Fluor and ITC, for example, pre-qualify bidders using these criteria.[255] It is also important to customers that a contractor show that it has managed a project of similar size,[256] that it is not stretched too thin at the time the project is to be built,[257] and that it has the ability to manage cash flow.[258] Moreover, as with the LNG tank market, an LPG tank supplier's depth of experience matters. AT&V testified, for example, that it would need not only automated equipment and extensive welding training but also years of experience to catch up to CB&I.[259]

Safety is a critical concern for LPG customers. The hazards of a leak are severe, as exemplified by the catastrophic failure of a Whessoe-built LPG tank in Qatar.[260] A builder's reputation and safety record are therefore among the most important considerations for customers,[261] and buyers are not inclined to

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[254] Tr. at 2290-97, 7083-84; JX 27 at 115-16. Sometimes buyers send bid packages to firms that would not meet qualification standards. Tr. at 7134. The buyer does not expect that such bidders will be accepted but allows them to bid as a matter of courtesy. Tr. at 7134; JX 27 at 57.

[255] Tr. at 2289-91, 7084.

[256] Tr. at 2291-92, 2295.

[257] Tr. at 2295.

[258] Tr. at 2297.

[259] Tr. at 2379-80.

[260] Tr. at 3323; *see also* Tr. at 7141-42.

[261] JX 27 at 70.

contract with builders that have not already built similar tanks.[262] ITC testified that it sends packages to firms that it thinks are reputable and have the capability to build the tank.[263] ITC prefers an experienced builder for any tank that will contain liquid below -3° F, and even a 10 percent price cut would not make it worthwhile to use an inexperienced supplier.[264] ITC testified that at times it allows suppliers to bid even though it does not think they will be competitive, simply to foster its "relationships with them."[265] After the first round of bids comes in, however, it evaluates whether the low bidder is "capable of doing the job that [it] want[s] done."[266] There is no evidence in the record that an inexperienced bidder has made it past this first bidding round.

Technical barriers to entry are not as high in the LPG tank market as in LNG tank market, but they are high nonetheless.[267] LPG tanks are bigger than LIN/LOX tanks but smaller than LNG tanks, and they hold their contents at temperatures that are low (about -50° F) but above those of LNG tanks.[268] An LPG entrant would not need as many field personnel as an LNG entrant, and

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[262] Tr. at 7141 ("[P]eople want to see you have built one."); JX 23a at 195 (*in camera*).

[263] Tr. at 7084.

[264] JX 27 at 115-16.

[265] Tr. at 7134; JX 27 at 57.

[266] Tr. at 7083.

[267] Morse testified that it did not have to extensively train its fabrication personnel to work on an LPG project. Tr. at 6570-71. Although Morse's testimony may be viewed as self-serving because CB&I now owns it, we nonetheless find that owning a fabrication facility is not an entry barrier in the LPG tank market.

[268] Tr. at 1609-10, 4073.

(unlike an LNG tank entrant) it would have no FERC requirements to master.[269] Generally, LPG tanks use the same kind of construction as LNG tanks but are able to use enhanced carbon steel or a special type of conventional steel (unlike LNG tanks, which require 9 percent nickel steel and more specialized welding techniques).[270] Nonetheless, LPG tank suppliers must develop specialized welding procedures and train welders to build these tanks.[271] Although many companies can make pressure spheres or various flat-bottomed tanks, the record does not indicate that any of these firms have either the requisite special equipment or welding crews that are both experienced with the materials required for LPG tanks and able to travel to the site to work on an extended LPG project.[272]

Arguably, one might expect supply-side substitution to occur if CB&I were to attempt to exert market power in the LPG tank market, because the LPG tank market lies somewhere between the LNG and LIN/LOX markets in the difficulty of its technical requirements and the size of the projects it involves. That is, an LNG tank manufacturer might easily bid on an LPG project, as the latter would be less technically demanding and smaller in scope than an LNG project. If a very large LPG project were available, it might (in theory) attract bids from LNG tank suppliers. There is no record evidence, however, that any LNG tank supplier has shown such interest. In addition, it might appear that a LIN/LOX tank supplier could attempt to make the leap into the LPG market – particularly if a smaller, relatively uncomplicated project were opened for bid. As we discuss in detail in Part IV.B.3 below, however, the existing LIN/LOX tank suppliers (other than CB&I) seem to have difficulty meeting the technical requirements for

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[269] Tr. at 1609-10.

[270] Tr. at 4890.

[271] Tr. at 6570-71.

[272] Tr. at 7106-07; JX 27 at 43, 59.

smaller LIN/LOX tanks, so we find it unlikely that they will be able to compete effectively in the LPG market. Thus, for the foreseeable future, it does not appear that a foreign LNG tank firm will step into the U.S. LPG tank market, or that any LIN/LOX tank supplier identified in the record would be a credible entrant in the LPG market.

3. Entry Conditions of the LIN/LOX Tank Market

We find that entry barriers in the LIN/LOX tank market are also high. A great deal of specialized know-how and critical skills are required in the engineering, fabrication, and construction of LIN/LOX tanks.[273] Design of the tanks requires sophisticated engineering and adherence to stringent regulatory codes.[274] Experienced workers are also critical.[275]

As with the LNG market, ample evidence demonstrates that reputation and experience play a crucial role in a customer's acceptance of LIN/LOX tank manufacturers, making it difficult for new entrants to gain acceptance. LIN/LOX tanks can be very dangerous if they are improperly constructed. Tank failure can cause leaks of the cryogenic liquids and create a potentially catastrophic situation. For example, liquid nitrogen can cause severe (and potentially fatal) burns as well as asphyxiation.[276] Similarly, liquid oxygen is highly volatile, and its release can support intense fire that will consume everything in its path.[277] Customers are thus hesitant to contract with an inexperienced manufacturer. Air Liquide testified that safety is the most

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[273] Tr. at 842, 1343-1346, 2198-99.

[274] Tr. at 1566-67.

[275] Tr. at 2190.

[276] Tr. at 848, 1996-97.

[277] *Id.*

important factor when it selects a LIN/LOX tank vendor.[278] In addition, LIN/LOX tank customers are liable to their customers for any tank failure.[279] Linde and Air Liquide testified that because of this potential for liability, they have to be very careful in selecting a LIN/LOX vendor.[280]

LIN/LOX tanks are an integral part of the construction and operation of large air separation facilities. Thus, even if a LIN/LOX tank does not fail outright, any problems in the completion or operation of a LIN/LOX tank can have a cascading effect on the much larger air separation plant that the customer is building and on the chemical or manufacturing facility that the plant will serve.[281] Therefore, meeting schedule deadlines is critical to LIN/LOX customers.[282] If a supplier falls behind schedule in the completion of a LIN/LOX tank, it is costly for the tank customer.[283] LIN/LOX customers are liable for liquidated damages to their air separation plant customers if they do not have the plant completed on time.[284] Consequently, LIN/LOX tank manufacturers need to be able to demonstrate a successful track record of completing LIN/LOX tanks on schedule.[285]

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[278] Tr. at 1996-97.

[279] Tr. at 849.

[280] Tr. at 849, 1996-99.

[281] Tr. at 4658-59.

[282] Tr. at 849, 2400-01.

[283] *Id*.; Tr. at 1997.

[284] Tr. at 849.

[285] Tr. at 849, 1996-97, 2399-2401.

Customers are also reluctant to contract with an inexperienced LIN/LOX tank supplier because LIN/LOX tanks sometimes do not fail until several years after they are built. Thus, customers like to see that a vendor's tanks have held up over time,[286] and some customers refuse outright to hire a supplier that has never constructed a LIN/LOX tank.[287] In addition, suppliers that have built multiple tanks over time have an advantage that increases as they build more tanks.[288] Air Products testified, for example, that it would be risky to contract with a supplier that had never built a LIN/LOX tank.[289] Air Liquide testified that it would not buy a LIN/LOX tank from a manufacturer that had never built one before and that it prefers a supplier that has built many LIN/LOX tanks.[290] MG Industries testified that it is very important for a LIN/LOX tank supplier to have prior experience[291] and that it would not contract with Matrix until Matrix gained experience.[292]

This emphasis on experience is reflected in customers' bidding procedures. For example, as part of Air Products' pre-qualification process, it requires the provision of an experience list and calls past customers for references.[293] Air Products requires

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[286] Tr. at 998-99, 2399.

[287] Tr. at 467, 1995-99, 2017. *Cf* Tr. at 1388 (discussing the stringent requirements that a LIN/LOX supplier with no experience would need to meet).

[288] Tr. at 467, 1995-99, 2017; s*ee also* Tr. at 2399.

[289] Tr. at 1391.

[290] Tr. at 1995-99, 2017.

[291] Tr. at 467.

[292] Tr. at 489.

[293] Tr. at 1357-60.

that the engineers, field crew, and supervisors all have prior LIN/LOX experience.[294] Moreover, customers have a very strict pre-qualification process that a LIN/LOX tank manufacturer must go through before the customer will entertain a bid from the vendor. Much as in the LNG tank market, LIN/LOX tank customers examine the manufacturer's safety record, experience, technical capability, reputation, track record, and financial stability.[295] Given these pre-qualification requirements, it is very difficult for a manufacturer that has never built a LIN/LOX tank to win a bid.[296]

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[294] Tr. at 1388-91.

[295] Tr. at 1357-60 (Air Products uses safety criteria, technical capability, financial viability, and price to select a LIN/LOX tank supplier); Tr. at 1994 (a supplier's technical abilities, safety record, and financial strength are factors that Air Liquide focuses on in selecting a LIN/LOX supplier); Tr. at 849 (Linde is very careful when selecting a LIN/LOX vendor).

[296] Tr. at 2398-99. LNG and LPG tank suppliers have expertise similar to that needed to build LIN/LOX tanks, and, as a result, there is the theoretical possibility that a supplier in one or both of the two former markets might also be a credible LIN/LOX tank supplier. However, as of the time of the trial in this matter, none of the new entrants in the LNG tank market had submitted a bid to build a LIN/LOX tank, and no evidence suggests any plans to do so in the future. While there is some overlap among firms in the LPG tank and the LIN/LOX tank markets – Matrix, Chattanooga, and AT&V each participate in both markets – those LPG tank suppliers that have historically focused solely on building LPG tanks have not bid on any post-merger LIN/LOX projects, and there is no evidence that they plan to do so. As we discuss in Parts IV.B.2-3, *infra*, for the most part the firms participating in both markets have not been successful in either. Moreover, we find that experience in building LPG tanks does not necessarily mean that a supplier would be proficient and efficient at building

Based on the evidence, we conclude that it is very difficult, if not almost impossible, for new LIN/LOX entrants to overcome these obstacles. Therefore the LIN/LOX tank market displays the same conundrum that characterizes the LNG market – an entrant must have a proven track record and a solid reputation to win a bid, but it can only obtain these qualities after it has already successfully completed prior LIN/LOX projects.

4. Entry Conditions of the TVC Market

As noted earlier (n.170, *supra*), Respondents do not dispute that technical barriers to entry into the TVC market are very high. A significant technological challenge in the building of a successful TVC vessel is the highly specialized welding technique needed to maintain a near-perfect vacuum: "if the welds are improper and there's [sic] overlaps that trap gas . . . there will be a continuous leak."[297] Any such leak will jeopardize the accuracy of testing done in the TVC because the required vacuum levels are so high. One customer testified that "the vacuum levels that we deal with are almost – you can almost count the number of molecules of gas that remain[] in the chamber."[298] If the chamber has a larger defect, it may lose vacuum rapidly during a satellite test, creating "a serious issue with saving the satellite."[299]

LIN/LOX tanks without some experience in the LIN/LOX market. For example, LIN/LOX and LPG tanks are made of different types of steel. Like LNG tanks, LIN/LOX tanks must be made of 9 percent nickel steel to contain the cryogenic liquid they hold. LPG tanks, which do not require liquid to be contained at such cold temperatures, use enhanced carbon steel.

[297] Tr. at 1142.

[298] Tr. at 1141.

[299] Tr. at 1144; *see also* Tr. at 1454.

A field-erected TVC tank maker needs to have "a crew that virtually lives in the field for elongated periods of time. . . . You need construction management people, safety people."[300] In the TVC market, buyers place a premium on having the entire project – from engineering to turnkey operability – handled by a tightly integrated team.[301]

Customers also place great importance on the TVC tank maker's ability to stay on schedule.[302] While a satellite is being tested in a TVC, the satellite engineers working on the project are put on hold and are not reassigned to other work.[303] TVC tests take between 2 weeks and 40 days, and each day of testing delays completion of the satellite program by at least a day.[304] Moreover, satellite makers may incur penalties for delaying a spacecraft launch.[305]

We thus find that the absence of any entry into the TVC market, together with the immensely difficult technical challenges any new entrant into that market would face, "largely eliminates the possibility that the reduced competition caused by the merger will be ameliorated by new competition from outsiders and further strengthens" Complaint Counsel's prima facie case.[306]

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[300] Tr. at 1103.

[301] Tr. at 385-87, 1920 (*in camera*).

[302] Tr. at 206.

[303] Tr. at 1734.

[304] Tr. at 1734-37.

[305] Tr. at 1737.

[306] *Heinz*, 246 F.3d at 717 (citing *University Health*, 938 F.2d at 1219 & n.26).

5. Conclusions on Entry Conditions

We conclude that entry and expansion in each of the four relevant markets are difficult and time-consuming. At a minimum, the entry conditions we have outlined are likely to foreclose new entrants and smaller incumbents from winning bids for some time to come, because they would need to accumulate experience in order to compete with CB&I. Moreover, the new entrants' and smaller incumbents' attempts to gain this experience run up against CB&I's long-standing presence in each of the markets, which gives it a decided advantage over inexperienced suppliers. We do not conclude that these new suppliers will never become a competitive presence in the market. However, they lack experience and are unable in a reasonable time frame to build a reputation for quality and reliability – in markets that, for obvious reasons, highly value such a reputation. We therefore find that entry and expansion in these markets are not likely to replace the competition lost through the acquisition or to sufficiently constrain CB&I in a timely manner.

D. Conclusions on Complaint Counsel's Prima Facie Case

As set forth in more detail above, Complaint Counsel have established extraordinarily high levels of concentration through HHIs, provided additional evidence of pre-merger bids that independently demonstrates the markets to be highly concentrated and enhances the HHIs, and strengthened that showing with evidence of difficult entry conditions. Accordingly, we find that Complaint Counsel have established a strong prima facie case and now turn to Respondents' rebuttal case.

IV. Respondents' Rebuttal Case

Once Complaint Counsel has established a prima facie case, the burden shifts to the respondent to establish that the case inaccurately predicts the probable effects of the merger. As we noted earlier, "[t]he Supreme Court has adopted a totality-of-the-circumstances approach to [Section 7], weighing a variety of

factors to determine the effects of particular transactions on competition."[307] Accordingly, a respondent in a Section 7 case may introduce evidence on a wide variety of qualitative or quantitative factors to show that Complaint Counsel's prima facie case gives an inaccurate account of the acquisition's probable effects on competition in the relevant markets.[308]

In the present case, Respondents do not challenge the relevant product and geographic markets identified in the Initial Decision. They also do not dispute that each of the markets was highly concentrated before the acquisition or that the acquisition increased concentration levels substantially.[309] Rather, Respondents proffer a number of other claims (listed in the order in which we treat them): that the acquisition did not violate Section 7 because the relevant markets are minuscule and do not affect a "substantial" line of commerce; that any possible anticompetitive effects of the acquisition have been cured by post-acquisition entry into the LNG tank market and the expansion of other competitors in the LPG and LIN/LOX tank markets;[310] that

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[307] *Baker Hughes*, 908 F.2d at 984.

[308] *See University Health*, 938 F.2d at 1218, and cases discussed therein.

[309] Respondents do argue that CB&I was not a competitive force in the TVC market at the time of the acquisition and that it is "questionable whether CB&I would have the necessary expertise to construct TVCs absent the [a]cquisition." RAB at 48. However, the evidence shows that CB&I continued to exert competitive pressure on PDM in the TVC market up to the time of the acquisition. *See* Part. III.B.4, *supra*.

[310] Respondents argue that the ALJ erred by not considering post-acquisition evidence in his evaluation of Complaint Counsel's prima facie case. However, the post-acquisition evidence proffered by Respondents goes to whether new firms have entered the LNG market or fringe firms have expanded in the

potential entry already constrains CB&I or can be expected to occur in the event of an anticompetitive price increase; that economic evidence demonstrates that CB&I cannot profitably raise prices; that customers in each of the markets are sophisticated and can thus restrain CB&I from imposing post-acquisition price increases; and that PDM would have exited the market even absent the acquisition.

We begin our analysis of these defenses by noting that Respondents' burden on rebuttal is linked to the strength of Complaint Counsel's case.[311] Where, as here, Complaint Counsel have established a strong prima facie case, Respondents' burden is high.

A. Small Size of the Relevant Markets

At the outset, we address Respondents' argument that the ALJ erred because "he failed to consider that, in light of the small size of the relevant markets, substantial effects on competition are unlikely."[312] Respondents read Section 7 of the Clayton Act to require substantial effects in a relevant market in terms of some threshold of unit or dollar sales. As support for their position,

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LPG and LIN/LOX markets. The proper place to analyze this evidence is in Respondents' rebuttal case, and accordingly we will do so.

[311] *Heinz*, 246 F.3d at 725 ("The more compelling the prima facie case, the more evidence the defendant must present to rebut it successfully.") (citing *Baker Hughes*, 908 F.2d at 991); *FTC v. Arch Coal, Inc.*, No. 04-0534 (D.D.C. Aug. 16, 2004) (slip op. at 30); *see also* 2A Areeda, Hovenkamp & Solow, *supra* note 45, ¶422, at 74 ("The more concentrated the market and the greater the threat posed by the challenged practice, the more convincing must be the evidence of likely, timely, and effective entry.").

[312] RAB at 10.

they cite language in the *Baker Hughes* district court decision to the effect that "[t]he minuscule size of the market creates problems for the government's case, because one element of a Section 7 violation is that 'the market must be substantial.'"[313]

Respondents' reading of both Section 7 and the trial court's language in *Baker Hughes* is erroneous. Complaint Counsel correctly point out that the 1950 Celler-Kefauver Amendments to Section 7 of the Clayton Act[314] added the phrase "in any line of commerce" and that courts have consistently held that the volume or size of commerce affected by an acquisition is not a factor in determining the legality of a horizontal merger.[315] We note in addition that Congress extended Section 7 in 1980 to reach firms engaged "in any activity affecting commerce" and to apply to acquisitions by or from "persons," including natural persons and partnerships as well as corporations.[316] In short, we find nothing in the history of Section 7 or the case law even suggesting that some threshold must be reached before Section 7's prohibitions are triggered. As made clear by the statute itself, the relevant inquiry under Section 7 is whether "the effect" of a given transaction "may be substantially to lessen competition, or to tend

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[313] 731 F. Supp. at 9 (citing *du Pont*, 353 U.S. at 595).

[314] Monopolies in Restraint of Trade – Supplementing Existing Laws, Pub. L. No. 81-899, 64 Stat. 1125, 1184 (1950).

[315] *See, e.g., FTC v. Food Town Stores*, 539 F.2d 1339, 1345 (4th Cir. 1976) ("The fact that the markets in which the firms compete may be small is irrelevant under the Clayton Act, and does not affect the legality of the merger."); *cf. United States v. Bethlehem Steel Corp.*, 168 F. Supp. 576, 595 (S.D.N.Y. 1958) ("a merger violates section 7 if the proscribed effect occurs in any line of commerce 'whether or not that line of commerce is a large part of the business of any of the corporations involved'").

[316] Antitrust Procedural Improvements Act of 1980, Pub. L. No. 96-349, § 6(a), 94 Stat. 1157.

to create a monopoly" "in any line of commerce or in any activity affecting commerce in any section of the country."[317]

We also find that, when placed in context, the *Baker Hughes* language quoted by Respondents is more correctly read as questioning whether the government had accurately defined a relevant market in the first instance. The language quoted by Respondents immediately follows a discussion of whether the government had defined both the relevant product and geographic markets too narrowly.[318] The court then added that the narrow line of commerce advocated by the government resulted in insignificant figures in terms of numbers of sales and that the government's statistics were thus vulnerable, given the sporadic nature of sales in the market.[319] Only then did the court conclude, as noted above, that "[t]he minuscule size of the market creates problems for the government's case, because one element of a Section 7 violation is that 'the market must be substantial.'"[320] Moreover, the *Baker Hughes* opinion's quotation from *du Pont* deals with the question of whether the relevant market was properly defined.[321] Thus, although the meaning of the *Baker Hughes* language that Respondents quote may not be perfectly clear, nothing in that opinion mandates our acceptance of the standard that Respondents advocate, particularly in light of the case law cited by Complaint Counsel, the history and scope of Section 7, and the failure of the appellate court in *Baker Hughes* to embrace the lower court's language.

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[317] 15 U.S.C. § 18 (2004).

[318] 731 F. Supp. at 6-8.

[319] *Id.* at 9.

[320] *Id*. (citation omitted).

[321] 353 U.S. at 595.

B. Actual Entry

1. Actual Entry in the LNG Tank Market

a. Entrants into the LNG Tank Market

Respondents argue that increasing demand in the LNG tank market has triggered entry by international LNG tank designers that have formed alliances with U.S. construction companies. Respondents also posit that these new entrants have all of the assets necessary to make them competitive with CB&I, such as international reputations for design, connections with local labor forces, and knowledge of various regulatory requirements. They thus claim that three new entrants – Skanska/Whessoe, Technigaz's joint venture with Zachry, and TKK's joint venture with AT&V – now impose competitive constraints on CB&I.[322] At first blush, Respondents' story has some appeal. As we discuss below, however, a closer examination leads us to conclude that these new entrants do not confront CB&I with competition sufficient to constrain it from raising prices.

(1) The New Entrants' Lack of Reputation and Experience

We begin by noting that, as of the time of trial, none of the alleged new entrants had ever built an LNG tank in the United States. By themselves, they each lack a crucial attribute of any successful LNG tank supplier – a reputation with U.S. customers for quality and reliability.[323] Respondents, however, argue that the

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[322] RAB 14-17.

[323] We also question whether Skanska/Whessoe's reputation is wholly favorable. Whessoe was precluded from bidding on an expansion of Atlantic LNG's plant in Trinidad based on its previous performance. Tr. at 596. In addition, although it appears that Enron was ultimately satisfied with Whessoe's work on its

new entrants have an international reputation that will be recognized and credited by LNG customers in the United States. Indeed, they point to testimony by some customers who stated that they are less hesitant to consider the three foreign tank designers, given their alliances with U.S. construction firms.

Although we think such statements indicate a positive long-term potential for additional competition to develop in the United States, we do not think the statements take Respondents where they want to go. We are even willing to assume that U.S. customers are likely to credit the new entrants' reputations in tank design, but we are unable to make the same assumption about their construction capabilities in the United States. The evidence suggests that customers evaluate not only the experience of a design firm but also the experience of its domestic construction partner. One customer even testified that the ability of the new entrants to compete depends on the capabilities of the U.S. construction companies.[324] We thus find it significant that the U.S. construction companies with which the design firms are partnered have no experience in constructing and erecting LNG

Dabhol, India, project, problems at the outset of the project required Enron to spend extra money to assist Whessoe. Tr. at 4458-59. Internal PDM documents suggest that Whessoe's poor performance on the Trinidad and Dabhol projects is known by customers and would hinder Whessoe's chances of winning a bid. *See* CX 115, 135 (*in camera*). *See also* CX 693 at BP 01 028 (BP internal document noting that "Whessoe did not perform at all well in Trinidad, and Bechtel had to provide substantial project management support.").

In addition, Technigaz has not itself constructed an LNG tank, so it is questionable whether it has the skills to transmit such knowledge to Zachry. Tr. at 4718 (*in camera*).

[324] Tr. at 4521.

tanks, even though they would be expected to lead such efforts.[325] Given CB&I's long history of both designing and building LNG tanks in the U.S., and based on the record as it relates to post-acquisition bids (Part IV.B.1.b, *infra*), we simply cannot conclude that United States customers would rate the new entrants – each a combination of an experienced tank designer and an inexperienced tank constructor – as having a reputation on par with that of CB&I.

Thus, Respondents' reliance on testimony from a number of U.S. customers that plan to consider bids from various combinations of the three new entrants[326] falls far short of proving Respondents' point that entry has been sufficient to replace the competition lost from the acquisition. Unless they were willing to consider these new bidders, LNG tank customers in the United States would have no choice other than CB&I. We thus take their testimony as little more than a refusal to throw themselves on CB&I's mercy. Moreover, these general statements say nothing about the ability of the new entrants to compete effectively with CB&I. We also note that some customers with upcoming projects were unaware of the existence of one or more of the new entrants,[327] which suggests that these new firms' international reputations may not necessarily place them in parity with CB&I.

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[325] Zachry has never built a field-erected tank of any sort, much less a cryogenic LNG tank. Tr. at 1645 (*in camera*). Likewise, Skanska has never built an LNG tank in the United States. IDF 153. Although AT&V has constructed a number of LIN/LOX tanks, these projects have not been wholly successful, and it has never constructed an LNG tank. *See* Part IV.B.3.a.(1), *infra*.

[326] Tr. at 1326-27, 4487-89, 6993, 6999, 7005.

[327] Tr. at 1326, 1846-48, 1852-53. *Cf.* Tr. at 6424-25; IDF 142-43 (Calpine had contacted only CB&I to discuss its upcoming LNG import terminal).

(2) The New Entrants' Lack of Trained Supervisors and Unfamiliarity with Field Crews and Local Labor Markets

CB&I's supervisors are located in the United States and are experienced at managing the construction of LNG tanks. Because the new entrants' U.S. construction partners do not have any such experience, the tank designers either would need to train the construction company employees to supervise the project or would need to send their own supervisors to the U.S. work sites.[328] In either case, they would bear costs that CB&I does not, and these costs likely would make the new entrants less competitive, at least over the next several years.[329]

In addition, we find that CB&I enjoys a competitive advantage due to its relationships with the field crews that construct these tanks. The evidence is mixed regarding whether the U.S. construction partners of the new entrants would have adequate access to field crews at all. At least in theory, it would seem that field crews, who are (or work for) independent contractors, should be willing to sign on with any tank supplier to work on a project. The real world, however, does not seem to work that way. A former Zachry employee testified that Zachry would have needed to hire plate welders, plate erectors, and insulation installers to be competitive with CB&I on the Dynegy project, but he had no information on Zachry's chances of doing so.[330] AT&V also testified that TKK planned to train some of AT&V's employees to be a field crew, which suggests that TKK is not relying on access

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[328] *See* discussion Part III.C.1, *supra*, at p. 39; Tr. at 2626-27.

[329] Tr. at 2379-80; IDF 147 (AT&V's Vice President believes that AT&V's employees will need a few years of experience in the construction of LNG tanks before they work as efficiently as CB&I's employees).

[330] Tr. at 1641-42 (*in camera*).

to the field crews that have traditionally worked with CB&I (or PDM).[331] Moreover, as noted earlier, a tank supplier needs to provide substantial training to its field crews in proprietary techniques, company procedures, and the use of company-specific equipment. Thus, even if a new entrant had the needed access to these field crews, it would be at a competitive disadvantage because of the field crews' unfamiliarity with the entrant's procedures and equipment.[332]

We also find that the U.S. construction companies' inexperience in working with the local U.S. labor market in the construction of LNG tanks, combined with their subcontracting various parts of the tanks, has adverse competitive implications. Although the new entrants' U.S.-based construction companies have general familiarity with local labor regulations and knowledge of the local labor markets, CB&I (as the merged firm) has built virtually every LNG tank constructed in the United States. It thus knows in great detail how those labor markets can most effectively be accessed for the construction of LNG tanks. More important, CB&I has long-standing connections with various suppliers in these local markets. The evidence suggests that CB&I believes its knowledge of and connections with the local labor markets give it a competitive advantage. In a post-acquisition 10-K filing, CB&I stated that "it is viewed as a local contractor in a number of regions it services by virtue of its long-term presence and participation in those markets."[333] It further

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[331] Tr. at 2325-26.

[332] A CB&I employee testified that CB&I's "field crews are trained in our [CB&I's] procedures and with our equipment, and hiring people off the street would involve training costs. . . . [Y]ou have to train them and ensure that they were experienced in your particular line of
work." Tr. at 2626-27.

[333] Tr. at 4231; CX 1061 at 10-11.

noted that "[t]his perception may translate into a competitive advantage through knowledge of local vendors and suppliers, as well as of local labor markets and supervisory personnel."[334] Thus, we cannot assume – as Respondents suggest – that these new entrants, who have never staffed or managed an LNG tank project, would have a knowledge and experience base comparable to that of CB&I.[335]

(3) The New Entrants' Lack of Regulatory Experience

In addition, it appears that the new entrants have little to no experience with the FERC process, which makes some customers hesitant to use them. For instance, BP testified that Skanska/Whessoe, TKK/AT&V, and Technigaz/Zachry all lacked the level of FERC experience that it would require for its upcoming project and that CB&I's FERC experience gave it a significant advantage over other tank builders.[336] BP elaborated that although other LNG manufacturers were doing some work, none had demonstrated that it can actually get through the FERC application process in a reasonable amount of time.[337] This general view is supported by BP's own business practices.

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[334] CX 1061.

[335] We also question whether the new entrants actually have adequate access to the local labor markets and note that Technigaz/Zachry did not bid for El Paso's Baja, California, LNG import terminal, in part because it did not believe it had access to the local labor it would need. Tr. at 1651-54 (*in camera*).

[336] Tr. at 6092-93 (*in camera*). BP testified that MHI, IHI, and Hyundai have virtually no regulatory experience; Daewoo, Technigaz, and Tractebel have a little more experience; and Whessoe might have even a bit more experience Tr. at 6094-95 (*in camera*).

[337] Tr. at 6103 (*in camera*).

Although Skanska/Whessoe heavily marketed itself to BP, BP entered into sole-source contracts with CB&I for each of its North American projects.[338] Similarly, when CMS needed to hire a company to help it meet a FERC filing deadline in a short time, it turned to CB&I alone.

Respondents argue that the new entrants have the requisite regulatory experience because "U.S. standards are de facto international standards."[339] We reject this argument, which contradicts both the testimony and the real-world behavior of customers demonstrating that FERC experience is crucial. The only firm to gain any FERC experience as of the record's close is Skanska/Whessoe, which successfully steered Dynegy's LNG project through the FERC application process.[340] Based on the evidence, we do not find that this single experience puts Skanska/Whessoe on par with CB&I. We note, for example, that BP's testimony about the advantage conferred on CB&I because of the latter's FERC experience occurred after the announcement that Dynegy's facility obtained FERC approval. We thus find that, on balance, the evidence establishes that the new entrants do not have the level of FERC experience necessary to compete effectively in this market.

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[338] Tr. at 4180, 6069, 6087-88 (*in camera*). One reason for this decision appears to be grounded in CB&I's FERC experience. After CB&I refused to prepare the FERC application unless it was able also to build the entire facility, BP structured a deal to meet CB&I's demands – despite its initial reluctance to do so. Tr. at 4180, 6069-71.

[339] RAB at 22.

[340] Tr. at 4932-33; RX 926.

(4) Conclusions on Entry in the LNG Tank Market

We do not suggest that the new entrants would be totally incapable of building an LNG tank in the U.S. It is true that the new entrants have taken a necessary step toward competing in the United States by partnering with U.S. construction firms, which have experience in a wide variety of construction projects and may have some knowledge about various local labor markets that the new entrants can use.[341]

The evidence establishes, however, that being successful at building LNG tanks in the United States requires years of experience in managing the overall project, attracting qualified field crews and local labor, having working relationships with subcontractors, and making regulatory filings.[342] The fact that CB&I has cultivated these skills through decades of experience means that it has some advantages compared to a supplier that has not yet built a tank in the U.S.[343] In addition, CB&I has extensive

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[341] Tr. at 656-57 (Zachry has civil engineers and access to labor in the United States); Tr. at 657-59 (Skanska has a presence in the U.S.); Tr. at 4487 (Zachry is a big construction firm in the U.S. that is generally familiar with U.S. construction practices, labor forces, and pricing).

[342] It is curious that Respondents' description of the process for constructing an LNG tank comes from a project manager for an LNG tank to be built in Bonny Island, Nigeria, rather than from any of the numerous projects CB&I has built or is under contract to build in the United States. *See* Tr. at 5868. Unlike in the United States, CB&I has no particular advantage in the Bonny Island market, so this witness's testimony is not probative of the state of competition in the U.S. market.

[343] *See, e.g.*, Tr. at 6224 (El Paso testimony about cost savings resulting from knowledge of and existing relationships with suppliers).

knowledge of and relationships with various U.S. labor forces and a knowledge of the U.S. regulatory environment, which are attributes customers value. All of these factors work together to help form CB&I's reputation for quality and reliability. While no single competitive advantage we have identified necessarily makes entry difficult, in the aggregate they preclude new entrants from sufficiently constraining CB&I in any reasonable time frame. Thus, we find that even entrants with the technical wherewithal to build LNG tanks have not restored the competition lost from the acquisition and likely cannot do so in the foreseeable future.[344]

Prior to the acquisition, CB&I and PDM were on relatively equal footing. Both firms had experienced tank designers and builders, long experience with the regulatory processes necessary to build LNG facilities, connections to local labor forces, and solid reputations. In other words, each firm had the attributes necessary to satisfy any LNG tank customer. While the new suppliers appear to have gained or are seeking to gain a toehold in the market, they are not on equal footing with CB&I, and their modest progress cannot restore the vibrant competition that once existed.

b. Post-Acquisition Bids in the LNG Tank Market

As of the time of trial, no LNG tank bids in the United States had been awarded to any supplier other than CB&I. Nevertheless, Respondents contend that sufficient entry has occurred because Dynegy accepted bids from the three new entrants while precluding CB&I from bidding on its proposed import terminal. The evidence makes clear, however, that far from shunning CB&I, Dynegy negotiated with CB&I on multiple occasions and rejected

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[344] In apparent recognition of the importance of its advantage, internal CB&I correspondence conveyed a concern that should CB&I win the Dynegy project, it would work side-by-side with Skanska and thus expose its "crews, suppliers, and construction methods" to a competitor. CX 1528.

its offer to bid on the LNG tanks only because CB&I's bid came too late in the process to be considered. The Dynegy project, where CB&I completely ignored its prospective customer's wishes and ultimately removed itself from the competition, comes up short as proof of vibrant competition.

At the outset, we address Respondents' suggestion that Dynegy's award of an EPC contract[345] to Skanska amounts to competition in the relevant market of LNG tanks.[346] This argument fails to distinguish between an EPC contract award and an award for LNG tanks. As we stated earlier, EPC contractors are essentially general managers for an LNG import terminal or a peak-shaving facility. Dynegy made clear to its potential suppliers that it intended to hire an EPC contractor but wanted to bid the LNG tanks separately from the engineering work to save costs.[347] In keeping with this strategy, Dynegy's award of the EPC contract to Skanska did not include an award on the LNG tank.[348] As a result, we discount Respondents' suggestion that this EPC award to Skanska amounts to competition in the relevant market (LNG tanks). We note, however, that even if we were to accept this premise, it appears that CB&I may have taken itself out of the running for the EPC award, which therefore is not evidence of the new entrants' ability to constrain CB&I.[349]

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[345] *See* discussion, *supra* Part II.E.

[346] *See* RAB at 15 (arguing that post-merger "Skanska has *already won* the job of EPC contractor for this project, beating out CB&I and several major international engineering and construction firms") (emphasis in original).

[347] Tr. at 4568-71.

[348] Tr. at 4568.

[349] Some evidence suggests that even if CB&I did not formally withdraw its name from consideration, it did so in effect by continuing to push a turnkey solution despite its customer's desire

After the EPC contract was awarded to Skanska, CB&I refused to submit a bid for the LNG tanks alone, citing concerns about submitting bid information to a competitor's contractor.[350] As a result of these concerns, Dynegy created a firewall around those employees evaluating the LNG tank bids,[351] and these safeguards satisfied both TKK/AT&V and Technigaz/Zachry.[352] Nonetheless, for months CB&I continued to refuse to bid on the LNG tanks and also continued to insist that it be allowed to bid for the facility on a turnkey basis.[353] Only at the close of the bidding did CB&I approach Dynegy with an offer to bid on the LNG tanks themselves. At that point, Dynegy declined CB&I's offer, because it had come too late in the bidding process.[354]

Although it appears that CB&I may have overplayed its hand in negotiating with Dynegy, we cannot conclude on these facts that Skanska/Whessoe, TKK/AT&V, and Technigaz/Zachry effectively constrain CB&I. At most, Respondents have established that LNG customers may award a bid to one of the new entrants when CB&I effectively refuses to bid. This observation, of course, says nothing about the state of competition between the new entrants and CB&I. No evidence suggests that, had CB&I chosen to bid, the new entrants would have overcome the competitive disadvantages we identified earlier. In fact,

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for an alternative. Tr. at 4571-72; CX 138, 139, 140.

[350] Tr. at 4576-77.

[351] Tr. at 4576; RX 144.

[352] Tr. at 4577.

[353] CX 139, 140, 1528.

[354] Although the record does not definitively establish whether Dynegy's bidding period had actually closed, Dynegy's project manager testified that considering CB&I's bid at such a late stage would have been unfair to the other bidders. Tr. at 4572.

CB&I's reluctance to give Dynegy what it wanted and Dynegy's repeated attempts to bring CB&I into the fold may suggest that Dynegy was concerned about the new entrants' disadvantages. Black & Veatch, which was hired to help evaluate bids for the project, testified that it "had concerns that if [it did] not have a domestic tank price for that project that the prices that the client would receive for those tanks would be higher."[355]

Even if we assume that CB&I lost the Dynegy bid on the merits, we would have to weigh that loss against CB&I's other post-acquisition wins. CB&I is in or has completed sole-source negotiations for six LNG tanks post-acquisition.[356] In addition to the significance of this fact standing alone, we find that the circumstances surrounding most of these projects suggest that the new entrants do not constrain CB&I in any meaningful way. For both the CMS and El Paso projects, the new entrants were not even considered as possible suppliers. CMS testified that it was under time constraints and contacted CB&I because it was already familiar with CMS's facility and knew the FERC process.[357] As for BP's award of three tanks to CB&I, this appears to be an example of CB&I's ability to foreclose competition. Although BP wanted to offer the LNG tanks for its three facilities through competitive bidding, CB&I refused to undertake any FERC work without a commitment that would allow it to build the entire facility.[358] Rather than turn to another supplier, BP acceded to CB&I's demands and awarded it turnkey contracts for all three

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[355] Tr. at 622.

[356] In addition to the awards of CMS, El Paso, and three BP projects, CB&I has entered into sole-source negotiations with Poten & Partners for an LNG tank. Tr. at 4399. The record, however, does not elaborate on the circumstances surrounding the Poten & Partners bid.

[357] Tr. at 6282-83 (*in camera*).

[358] Tr. at 6069.

facilities.[359] It is notable that BP's internal analysis on these projects questioned Skanska/Whessoe's ability to perform the work, noted that Technigaz was "not active" in the U.S. market, and failed to mention TKK/AT&V at all.[360] Based on the evidence as a whole, we conclude that CB&I's increased market power following the acquisition is not constrained by the new entrants.

It is somewhat surprising that Respondents cite both the CMS and the El Paso (Southern LNG) sole-source negotiations as evidence of vibrant competition post-acquisition. Boiled down, their argument is that the customer can always seek out another supplier even in the course of a sole-source negotiation, and that accordingly CB&I does not have the ability to dictate price.[361] As evidence of this point, Respondents elicited testimony from both CMS and El Paso that they were prepared to solicit other suppliers if they were not satisfied in their negotiations with CB&I.[362] Respondents argue that this pressure from customers caused CB&I to reduce its price on these two projects.

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[359] Tr. at 6069-71.

[360] CX 693 at BP 01 028.

[361] *See* RAB at 35-37. For the CMS project, Respondents also argue that CMS received a cost-competitive estimate that was lower than the budget price submitted by Skanska/Whessoe. RAB at 35-36. However, CB&I was unaware that CMS sought a bid from Skanska/Whessoe to check CB&I's competitiveness. Tr. at 6295 (*in camera*). Under these circumstances, the fact that Skanska's bid came in higher than CB&I's does not establish "the pro-competitive force of new entry" claimed by Respondents. RAB at 35. An alternative hypothesis – which is fully consistent with evidence – is that Skanska/Whessoe is unable to sufficiently constrain CB&I.

[362] *See* RAB at 35-37.

We find these arguments unpersuasive. First, we note that the evidence about the supposed price reductions comes solely from CB&I and that the record does not provide adequate information to determine whether these price reductions occurred in an absolute sense. Both of these contract negotiations had multiple provisions, and any price decrease could easily have been traded for a concession on another point.[363] CB&I's Mr. Scorsone even conceded that CB&I "negotiated some things in exchange for [the] price reduction" on the El Paso project.[364] In addition, Respondents' argument fails to recognize that the customers' ability to exert pressure by threatening to use another supplier is limited by the strength of the alternative suppliers. We find that the evidence amply demonstrates that the new entrants are not a strong alternative to CB&I and thus do not confer much power on the customer. We therefore view the customers' general statements about switching merely as evidence that the customers are not willing to contract with CB&I at any cost. These statements, however, in no way prove that CB&I is constrained to the same degree that it was before the acquisition. Moreover, the price reductions cited by Respondents occurred well after the Complaint in this case issued and are the type of evidence that is wholly manipulable.[365] We find far more compelling the fact that these customers chose CB&I as their supplier in the first instance.

As evidence of entry, Respondents also point to the fact that the new entrants have contacted a number of customers with projects in the very early stages of development.[366] While this fact

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[363] *See* Tr. at 6285 (CMS identified escalation clauses, change orders, and financial security issues as topics of negotiations) (*in camera*).

[364] Tr. at 5080 (*in camera*).

[365] *See supra* note 44.

[366] RAB 15-16.

may be credible evidence that the new entrants have a desire to compete, it does not establish that meaningful entry has occurred. Simply put, evidence that new entrants are soliciting business (or are even providing some services to the market) is not itself evidence that they are now, or will be in the near future, firms that can sufficiently constrain CB&I. At the time of trial, these projects were at too early a stage to be probative of the state of competition in the LNG tank market. For example, Freeport LNG had applied for FERC approval and had hired S&B/Daewoo to do its FERC work; however, it had plans to bid its EPC contract competitively.[367] In addition, it had not yet awarded – or indeed even identified – potential bidders for the construction of the tank.[368] CB&I's CEO even testified that he believes CB&I to be in the running for this project.[369] Similarly, although Yankee Gas had sought budget pricing and had met with CB&I and Skanska/Whessoe, it had not yet pre-qualified any manufacturers and had not sent out requests for proposals for its tank.[370] Finally, MLGW and Calpine testified that they were considering LNG projects, but they had done nothing more than request preliminary budget pricing.[371] Given the early stages of these projects – and, more important, the customers' consequential lack of information necessary to evaluate the new entrants' proposals – these projects provide inconclusive evidence of whether the new entrants pose a sufficient competitive threat to CB&I.

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[367] Tr. at 6974-76, 6978, 7049.

[368] *See* Tr. at 7043 (Freeport LNG will send out requests for proposals once the FERC application is approved).

[369] Tr. at 4142-45.

[370] Tr. at 6447-49, 6451.

[371] Tr. at 1825-28, 6493-94. In addition, Dominion's Cove Point II expansion project is at an early stage. As of the time of trial, CB&I had submitted only a budget price. Tr. at 4148, 4988.

We also address Respondents' argument that the ALJ erred by disregarding evidence relating to Enron's project in the Bahamas and Atlantic LNG's expansion in Trinidad. Citing their expert's testimony, Respondents assert that "the ability of new entrants to compete effectively in places near the U.S. . . . sheds light on their ability to compete effectively in the U.S."[372] However, there is a crucial difference between competition in the United States market and competition in these other two markets. There are no incumbent firms in either the Bahamas or Trinidad. No one tank supplier enjoys the advantages that come from being the incumbent firm, and all firms can compete on a roughly equal playing field. In contrast, in the United States, the incumbent CB&I has a long-standing presence in the market and consequently enjoys a significant competitive advantage over new entrants.

Respondents argue that CB&I was the "incumbent" in Trinidad, because it had built the last tank there.[373] We cannot say whether building one tank in Trinidad makes an LNG tank supplier an "incumbent" in the sense that we have used that term throughout this Opinion, but it matters little. The record amply demonstrates the power of – and the advantages accruing to – CB&I's true incumbency in the United States and that these advantages are extremely difficult to overcome. We thus conclude that Atlantic LNG's project in Trinidad sheds no significant light on the competitive landscape in the United States. In our view, neither does it demonstrate that LNG tank suppliers can easily enter and effectively compete with CB&I in the United States. Therefore, we find that the ALJ properly excluded evidence related to the Trinidad and Bahamas projects.

Nonetheless, we have examined the evidence surrounding these two projects and conclude that they do not substantiate

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[372] RAB at 38.

[373] *Id.*

Respondents' assertion that the projects demonstrate that entry is easy in the U.S. LNG tank market. The testimony on Enron's Bahamas project is scant at best. Only slightly more than four of the nearly 8,400 pages of trial transcript are devoted to this project.[374] Further, the sole testimony about the bids came from Mr. Carling, who was at Enron at the time but never actually saw the bids. In addition, his testimony is uncorroborated by other evidence. While Carling remembered the relative positions of the bidders and that they were within 7 to 10 percent of one another, there is no evidence regarding the details of the pricing (*e.g.*, budget or firm prices) or whether the bids were quality-adjusted.[375]

Respondents' Trinidad example is similarly flawed. CB&I's Mr. Scorsone testified that Bechtel informed him that CB&I's initial bid was 5 percent higher than another bidder's and that, despite CB&I's subsequent price reduction, TKK/AT&V was awarded the bid.[376] Respondents argue that this award is an "example of the ability of foreign entrants to discipline CB&I in North America."[377] However, the evidence concerning TKK/AT&V's winning bid comes exclusively from Mr. Scorsone, whose testimony was not corroborated by any other evidence and, indeed, was offered solely to show his state of mind.[378] In addition, the record does not contain any details about the submitted bids and does not reveal why the job was awarded to

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[374] *See* Tr. at 4477-4482.

[375] Tr. at 4481.

[376] Tr. at 4492.

[377] RAB at 39.

[378] Tr. at 4951. Mr. Rapp, the project manager for the most recent expansion in Trinidad, was deposed prior to the tank award to TKK/AT&V. When Rapp was deposed, CB&I, TKK, and MHI (among others whose names he could not remember) had not gone past being pre-qualified. Tr. at 1318.

TKK/AT&V. Accordingly, even if we were inclined to consider evidence from these two projects, it would be impossible to draw conclusions about them from the record before us.

c. Evidence of CB&I's and Customers' Views on the LNG Tank Market

Respondents argue that CB&I views the new entrants as significant competitors and that its assessment of these firms factors into its bidding.[379] The chief evidence on this point again comes from CB&I's own employee, Mr. Scorsone, who testified that upon hearing TKK/AT&V's, Technigaz/Zachry's, and S&B/Daewoo's joint venture announcements, he believed that these joint ventures were serious about winning contracts and that the pairings would make strong competitors.[380] However, because Respondents put forward no contemporaneous evidence to corroborate Scorsone's views, we view his testimony with considerable skepticism. Moreover, in the post-acquisition period, CB&I has not acted as if it took the new entrants into account in its negotiations with potential customers. For several post-acquisition projects, CB&I has insisted that it do the work on a turnkey basis – even after customers have expressed a strong preference to bid parts of the project competitively. In negotiating with BP, Freeport LNG, and Dynegy, CB&I refused to do any design or FERC work without a commitment from the customer that it would award the entire project to CB&I. Although BP initially was reluctant, it eventually acceded to CB&I's wishes and agreed to allow CB&I to build its three proposed facilities (on the condition that it was satisfied with CB&I's work on the FERC application). CB&I's strategy was less successful with Freeport LNG and Dynegy, both of which selected other companies to do the desired work. However, the fact that CB&I thought it was in a position to make such demands and, in the case of Dynegy, to

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[379] RAB at 35; *see generally* Tr. at 4860-72.

[380] Tr. at 4853-54, 4856, 4858, 4860-72.

ignore its customer's wishes on multiple occasions speaks volumes about CB&I's view of the competitive landscape. If CB&I truly believed the new entrants provided meaningful competition, it is unlikely that it would have behaved in such a fashion.

Further, the customer testimony cited by Respondents does not support their arguments about the competition provided by the new entrants.[381] Freeport LNG testified at trial that it would seek bids from the new entrants and that it was comfortable with the options it currently has available to build an LNG tank.[382] However, in our view, the Freeport LNG representative could not credibly have made assumptions about these new entrants and their competitive ability based on past experience. Although he had been involved in various LNG projects worldwide, he had not been involved in selecting the tank constructor but rather had focused on the preliminary design aspects.[383] He also had no prior experience with the construction of an LNG tank in the United States.[384] Moreover, the Freeport LNG project was at an early stage, and the company had not yet requested proposals on the tank.[385] Although Freeport may yet consider CB&I, Technigaz, TKK, Daewoo, and IHI as potential bidders in the future, at present Freeport LNG has not evaluated either the new entrants or their ability to constrain CB&I.[386] Similarly, BP's statement that it had sufficient competition to ensure reasonable prices is unpersuasive because the testimony is inconsistent with BP's

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[381] RAB at 39-41.

[382] Tr. at 7018-19.

[383] Tr. at 7025-30.

[384] Tr. at 7025.

[385] Tr. at 7043.

[386] Tr. at 7023, 7043.

internal documents (discussed at p. 60, *supra*) and its actual conduct. Rather than seeking another supplier, BP agreed to give CB&I a turnkey contract for three of its facilities despite what appears to have been an initial reluctance to do so.[387] This evidence suggests that BP did not consider other suppliers as equivalent to CB&I, nor did BP have any experience with evaluating the new entrants' capabilities or pricing.

Finally, we are troubled by Respondents' characterization of some of the customer testimony. Respondents suggest that Bechtel stated that it could get a reasonable price by pitting Technigaz/Zachry against CB&I.[388] However, Bechtel actually testified that it would "assume" it could.[389] While this distinction may seem slight, the record is clear that the Bechtel witness knew very little about Technigaz/Zachry, had not yet pre-qualified it as a supplier, and assumed that the alliance between the two companies was organized to offer a suite of services competitive with those of CB&I.[390] We therefore view the testimony cited by Respondents as merely Bechtel's statement that if Technigaz/Zachry stacked up favorably against CB&I, Bechtel intended to engage them in competitive bidding. Similarly, Respondents cite testimony from Calpine to suggest that Calpine is satisfied with the state of competition post-acquisition.[391] Our review of the testimony (including that cited in Respondents' brief) reveals no such conclusion. Rather, Calpine merely testified that it would consider Technigaz/Zachry, Skanska/Whessoe, TKK/AT&V, and CB&I as potential bidders

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[387] Tr. at 6069-71.

[388] RAB at 40.

[389] Tr. at 1334.

[390] Tr. at 1333-36.

[391] RAB at 39-40.

for its LNG tank when the time comes.[392] We note that at the time of trial, Calpine's project was at a preliminary stage. Requests for proposals had not been issued, and Calpine had done no evaluation of the new bidders. Therefore, we find that this testimony does not corroborate Respondents' assertion.

In sum, we do not view the customer testimony cited by Respondents as supportive of their argument that the new entrants have restored competition lost from the acquisition.[393] While we do not ignore the fact that these customers have not complained about the acquisition, all of these customers (except BP) are at early planning stages and have not issued requests for bids or received pricing from the new entrants. In addition, although BP has awarded three bids to CB&I, it did so only after it was confronted by CB&I's demand that it do the entire project alone, and it gave little consideration to the new entrants. Therefore, it is unlikely that the customers relied upon by Respondents were in a position to have evaluated the state of competition post-acquisition. Accordingly, we view the testimony of these customers as little other than speculation that new entrants might constrain CB&I at some level – which, of course, does not demonstrate that they are an adequate replacement for the competition that has been lost.

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[392] Tr. at 6495-96.

[393] Nor does Respondents' reference to both El Paso's and MLGW's testimony support their position. *See* RAB at 40. Although El Paso testified that the acquisition has not harmed competition in the global market, Tr. at 6140-46, it is the United States market that we must consider. Similarly, MLGW testified that it would have no way of knowing whether a price increase had occurred, and that it would not know until it evaluated bids whether more competition exists now than in 1994. Tr. at 1858-61. This testimony does not establish that "the [a]cquisition has not substantially harmed competition." RAB at 40.

2. Actual Entry in the LPG Tank Market

a. Entrants into the LPG Tank Market

The LPG tank market has been characterized more by exit than by entry as numerous firms that competed in the 1970s today are out of business.[394] The actual or potential entrants in this market also appear vastly overmatched by CB&I.

(1) AT&V

AT&V successfully won and completed a very small LPG tank project in 2000.[395] Its success with this project, however, says little about AT&V's ability to compete on larger LPG projects so as to act as a constraint against CB&I. The evidence suggests that this project not only was small but also was within the region of the country where AT&V is located.[396] It is therefore questionable whether this win indicates an ability to compete nationwide with CB&I. AT&V's Vice President testified, for example, that his firm's ability to compete with CB&I is limited by AT&V's lack of equipment, lack of trained welding personnel, and CB&I's years of experience.[397] He also stated that CB&I automatically gets bidding opportunities that AT&V does not.[398] In addition, he testified that AT&V has limited capacity to obtain bonding due to its small size and uncertain financial position.[399] To overcome

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[394] Tr. at 2391.

[395] Tr. at 7088-89, 7129-31, 7133-34.

[396] CX 107 at PDM-HOU005015 (AT&V characterized as a "Gulf-Coast Regional Competitor").

[397] Tr. 2379-80.

[398] Tr. at 2421-22.

[399] Tr. at 2365-66.

some of its shortcomings, AT&V has partnered with TKK, which supplies the refrigeration expertise that AT&V lacks[400] and allows AT&V to obtain bonding for larger projects than it could secure on its own.[401] This arrangement, however, is only intermittent and has been ineffective at times. For example, the record indicates that AT&V lost an LPG project in Trinidad to CB&I because TKK was not interested in the project and did not bid aggressively.[402] We also note that AT&V has had quality problems in the LIN/LOX tank market[403] post-acquisition, which raises doubts as to whether it could effectively constrain CB&I going forward in the LPG market.

(2) Matrix, Wyatt, Pasadena Tank, and Chattanooga

Respondents also identify as competitors four would-be LPG tank suppliers, none of which had won any bids as of the time of trial: Matrix, Wyatt, Pasadena Tank, and Chattanooga. The evidence related to Matrix, Wyatt, and Pasadena Tank is limited, but it establishes that all three of these suppliers are marginal at best and do not constrain CB&I effectively. For instance, although Matrix testified that it would pursue bidding on an LPG tank if it were given the opportunity, it also testified that it has never bid on an LPG tank.[404] Similarly, although Wyatt pursued LPG business "many years ago," it faces entry barriers because it has never constructed an LPG tank.[405] Wyatt bid on the ABB Lummus post-acquisition project; however, it lost to CB&I in part because ABB

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[400] JX 23 at 49-50, 57 (*in camera*).

[401] Tr. at 2557.

[402] Tr. at 2430-32.

[403] *See* discussion *infra* at Part IV.B.3.(a).

[404] Tr. at 1609.

[405] JX 27 at 71-72.

Lummus found Wyatt unresponsive to technical questions about the project.[406] In addition, it is not clear that Wyatt has the capability to compete in the LPG market. Pasadena Tank also appears to be no more than a marginal competitor. One customer is not willing to use Pasadena Tank because it was very late on an earlier project and had problems that it was unable to solve.[407] In addition, a PDM strategic planning document characterized Pasadena as having "one shop and one office" and as specializing in non-refrigerated tanks.[408]

The Chief Operating Officer and part owner of Chattanooga also testified that it believes it has the ability and the necessary equipment to design and build a field-erected LPG tank,[409] that it has employees who are experienced in building such tanks,[410] and that it plans to pursue LPG jobs in the future.[411] These assertions are questionable, however, because the same witness mistakenly characterized methane tanks as LPG tanks,[412] thought gasoline was LPG,[413] and did not know whether propane, butane, propylene, and butadiene would be in a gaseous or liquid state at ambient temperature.[414] In addition, the Chattanooga witness did

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[406] Tr. at 3750-51.

[407] JX 27 at 132-34.

[408] CX 660 at HOU5015.

[409] Tr. at 6355, 6393.

[410] Tr. at 6356.

[411] Tr. at 6365.

[412] Tr. at 6357-58

[413] Tr. at 6388.

[414] Tr. at 6402.

not recall whether any of Chattanooga's tanks were built for ⁻50° Fahrenheit, though he was confident that Chattanooga would have no trouble building one.[415] In short, Chattanooga's ability to compete in the LPG market is questionable at best.

(3) Morse

Respondents also use Morse as an example of easy "hit-and-run" entry. Morse had never built an LPG tank before it bid on and won a 1994 Texaco job near its home base in the Pacific Northwest. It was able to complete the project quickly and profitably.[416] According to Respondents, Morse was thus poised in 1994 to move from being a regional operation into the nationwide market for LPG tanks. However, after the job for Texaco, Morse did not bid on any other LPG contract in the United States, and internal CB&I and PDM documents do not discuss Morse as a nationwide competitor.[417] Significantly, CB&I acquired Morse in November 2001 – about a month after the Complaint was issued in this case.[418] Moreover, CB&I acquired Morse for only $3 million, which indicates that it was a very small operation compared to CB&I or PDM.[419] In addition, there is testimony that CB&I's acquisition of PDM did not lead Morse to

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[415] Tr. at 6388-89.

[416] Tr. at 7297.

[417] Morse did participate in at least the first round of bidding on an LPG tank in Canada. Tr. at 6589. However, Morse was not asked to bid on an important LPG project, Sea-3/Tampa – reinforcing the characterization of Morse as a regional, not national, competitor. *Id.; see also* CX 107 at PDM-HOU005015 (PDM strategic planning document for 2000 describing Morse as "mostly a Northwest tank company").

[418] Tr. at 6545.

[419] *Id*.

believe it would be able to take PDM's place in the LPG market.[420]

(4) Foreign Suppliers

Foreign suppliers do not present a credible entry scenario sufficient to support Respondents' argument. TKK has partnered in the past with AT&V to bid on LPG projects, but has not shown consistent interest in this market.[421] Technigaz has built only one LPG tank of the type used in the United States.[422] In short, while Respondents point to firms that theoretically might enter the LPG market, no such firm presents more than a speculative possibility of effective entry in the foreseeable future.

(5) Conclusions on Entry in the LPG Tank Market

Of the two firms that have actually won bids in the LPG market, one (Morse) has now been acquired by CB&I, while the other (AT&V) was involved only in one very small, local project that would have little effect on future success in the LPG market. On the basis of the record before us, the other firms identified by Respondents – Matrix, Wyatt, Pasadena Tank, and Chattanooga – are not convincing potential entrants. We therefore conclude that these firms cannot sufficiently constrain CB&I or restore the competition lost from the acquisition.

b. Post-Acquisition Bids in the LPG Tank Market

Respondents cite the single post-acquisition LPG tank project as evidence that the merged firm does not have market power and that the market has become significantly more competitive since

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[420] Tr. at 6662-63.

[421] Tr. at 2431.

[422] Tr. at 4708 (*in camera*).

the acquisition. AT&V and Wyatt participated in the bidding on this project but lost to CB&I – apparently not only because CB&I lowered its profit margins in the second round of bidding but also because AT&V and Wyatt were not responsive to the customer's technical questions.[423]

The post-acquisition project in question involved an LPG tank to be constructed for BASF/ABB Lummus in Port Arthur, Texas. After the first round of bidding, ABB Lummus told CB&I it was in third place out of three bidders.[424] CB&I then found ways to cut costs by redesigning other parts of the project, lowered its margins from over 4 percent to approximately 2½ percent, and won the job in the second round of bidding.[425] This project would seem to suggest that AT&V and Wyatt were acting as constraints on CB&I's exercise of market power, at least in one instance. However, we have found that the other bidders for this job are not convincing entrants. Moreover, the most probative evidence related to this transaction – CB&I's reduction in price – is the type of post-acquisition evidence on which courts and the Commission have been reluctant to rely, because that evidence was controlled by CB&I itself.[426] CB&I's price reduction may well have been influenced by CB&I's knowledge that its acquisition of the PDM assets had been challenged and its desire to preserve the transaction.[427] As a result, this evidence, standing alone, does not

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[423] Tr. at 3750-51.

[424] Tr. at 5040.

[425] Tr. at 5041-42.

[426] *Hospital Corp.*, 807 F.2d at 1384 ("[p]ost-acquisition evidence that is subject to manipulation by the party seeking to use it is entitled to little or no weight"); *B.F. Goodrich Co.,* 110 F.T.C. at 341 (same).

[427] Respondents correctly point out that they did not have the ability to control whether would-be competitors (AT&V and

overcome the other evidence related to the difficulty of fully replacing the competition lost by the merger.

In short, the post-acquisition evidence in the LPG tank market demonstrates no more than that two minor competitors submitted bids after the acquisition. We are not, however, persuaded that CB&I's cost-cutting and margin-shaving represent a "sea-change" in the market sufficient to overcome the contrary evidence.

3. Actual Entry in the LIN/LOX Tank Market

a. Entrants into the LIN/LOX Tank Market

Our assessment of entry into the LIN/LOX tank market is aided by the experiences of a few firms that have entered or attempted to enter the market. Respondents argue that the entry of AT&V, Matrix, and Chattanooga rebuts Complaint Counsel's prima facie case in the LIN/LOX market.[428] However, we find that the experiences of these firms in entering the market, as well as the failed entry effort by a fourth firm not mentioned by Respondents, illustrate instead the high entry barriers in the LIN/LOX market. Furthermore, Respondents' examples do not adequately explain how entry into the LIN/LOX market will overcome the obstacles discussed below and constrain CB&I to the same degree that it

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Wyatt) submitted bids for this post-acquisition job. However, CB&I's response to those bids provides more relevant information about the post-merger competitive landscape.

[428] Respondents argue that AT&V, Matrix, and Chattanooga are examples of "new" entry that has taken place "in just three years." RAB at 19. This characterization is inaccurate. All three firms have been engaged in long-term efforts to obtain LIN/LOX business that predate the acquisition. Only AT&V and Matrix have been able to gain a foothold in the market by winning a few bids; Chattanooga was an unsuccessful bidder before the acquisition and continues to be unsuccessful.

was constrained before the acquisition. We thus agree with the Initial Decision's conclusion that Respondents have not demonstrated that entry is sufficient to constrain the exercise of market power by CB&I in the LIN/LOX tank market.

(1) AT&V

AT&V won its first bid to supply two LIN/LOX tanks to BOC in late 2000,[429] and it has since completed that project.[430] By the time of trial, AT&V had won two additional bids – one more for BOC and one for Air Liquide (which was under construction at the time of trial).[431] Far from establishing that entry into this market is easy, however, AT&V's experience demonstrates how difficult it is to gain a presence in supplying LIN/LOX tanks. AT&V testified that entry into the LIN/LOX market took years of effort.[432] For example, although AT&V started visiting customers and marketing itself as a LIN/LOX tank supplier in the early 1990s, it did not win a contract until 2000.[433]

AT&V testified that it took so long to win a contract because customers preferred the reputation and experience of CB&I and PDM.[434] It also testified that prior to the acquisition, customers generally wanted to deal only with CB&I or PDM and that those

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[429] Tr. at 4599.

[430] Tr. at 4600.

[431] Tr. at 2235 (*in camera*), 2241 (*in camera*), 2504-05, 5291-92.

[432] Tr. at 2503-05.

[433] Tr. at 2397, 4599.

[434] Tr. at 2397-98, 2506-07.

two companies dominated the marketplace.[435] Moreover, AT&V stated that Air Liquide told it that AT&V would have to build one operational LIN/LOX tank that performed well in order for it to win a contract from – or even by considered by – Air Liquide.[436] Thus, AT&V had a difficult time bidding on contracts between 1996 and 2000 because, despite its efforts, it had not yet garnered customer confidence.[437]

AT&V testified that *some* customers are giving it a more serious look because PDM is no longer in the market.[438] However, the evidence surrounding the projects AT&V has won suggests that it will not meaningfully constrain CB&I in the future.

AT&V was required to spend $50,000 on marketing before it won its first contract with BOC in 2000.[439] In addition, BOC testified that because of AT&V's inexperience, BOC planned to spend $50,000 in oversight to ensure that the tank would be delivered on time, on schedule, and on budget. BOC accounted for this expense by adding the $50,000 to AT&V's bid when BOC evaluated the bids, and AT&V's bid was still the lowest.[440] AT&V was thus finally able to convince BOC to take a chance on

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[435] Tr. at 2389-90.

[436] Tr. at 2466-68.

[437] Tr. at 2506-08.

[438] Tr. at 2572.

[439] Tr. at 2383, 2507-08.

[440] Tr. at 4620-21, 4655-56. However, a Linde witness testified that he was told by BOC that there were many cost overruns and that in the end AT&V's price was higher than those of the other bidders. Tr. at 931-32.

it, despite its lack of experience.[441] Although BOC was eventually willing to take a chance, the evidence suggests that some customers are more averse to risk. For instance, MG Industries testified that it was surprised that BOC was willing to contract with AT&V.[442]

In 2002, Air Liquide also awarded a LIN/LOX tank to AT&V for its Freeport, Texas, project.[443] AT&V was selected because it had a significant price advantage over the other bidders (approximately $200,000 less) and also because Air Liquide saw its project as an opportunity to develop another supplier as an alternative to CB&I.[444] The location of the project also affected Air Liquide's choice of AT&V. Because Freeport is very close to Air Liquide's office, Air Liquide felt that it could easily keep track of AT&V.[445] Air Liquide also testified that had PDM been in existence at the time and submitted a credible and competitive bid, Air Liquide would have been far less likely to have taken the risk of developing a new supplier.[446] Air Liquide elaborated that development of a new LIN/LOX tank supplier entails technical, commercial, and financial risks and requires due diligence.[447]

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[441] Tr. at 2506-08.

[442] Tr. at 460-70.

[443] Tr. at 2235 (*in camera*).

[444] Tr. at 2235-37 (*in camera*).

[445] *Id.*

[446] Tr. at 2236 (*in camera*).

[447] Tr. at 2236-37 (*in camera*). Before awarding the bid to AT&V, Air Liquide contacted BOC and obtained a detailed assessment of AT&V's performance from BOC. Tr. at 2239 (*in camera*).

As of the time of trial, [redacted redacted].[448] AT&V did not execute several of the specifications on the tank that Air Liquide required [redacted].[449] AT&V also was behind schedule by three months and had informed Air Liquide of another month-long delay just before the Air Liquide witness gave his testimony. Air Liquide testified that this delay will have negative repercussions for both Air Liquide and its customer, Dow Chemical. In the worst-case scenario, Dow could have [redacted] as a result of the delay.[450] This result [redacted redacted] exemplifies the importance of quality [redacted] and reputation to customers.

[redacted redacted].[451] Air Liquide further stated that the only manufacturer [redacted] is CB&I because CB&I has the technical capability, a good reputation in the industry, and a good performance record and relationship with Air Liquide.[452] Although Air Liquide contacted CB&I about replacing AT&V on the project, CB&I declined.[453] Air Liquide testified that it would not be willing to contract with Matrix [redacted] because Matrix is [redacted] not pre-qualified by Air Liquide's standards.[454] Air Liquide elaborated that to contract with Matrix,

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[448] Tr. at 2241 (*in camera*).

[449] Tr. at 2241-43 (*in camera*).

[450] Tr. at 2246-47 (*in camera*).

[451] Tr. at 2252 (*in camera*).

[452] *Id.*

[453] Tr. at 5036.

[454] Tr. at 2253 (*in camera*).

it would have to go through the whole process of qualifying Matrix as a bidder (including due diligence) and that it can no longer afford to take a chance with an inexperienced supplier.[455]

In addition, AT&V's performance on this job has eliminated any savings that Air Liquide may have enjoyed at the outset. Air Liquide anticipated spending between $100,000 to $150,000 to develop AT&V as a supplier – less than the $200,000 price advantage in AT&V's bid. But Air Liquide testified that it has already spent the full $200,000 difference in pricing and, with the further delays, expects to incur another $100,000 to $150,000 in costs by the end of the project.[456] [
redacted
redacted].[457]

(2) Matrix

Matrix was active in the LIN/LOX tank market in the late 1990s, having successfully completed four tank projects between 1997-2000.[458] As was the case with AT&V, the Matrix witness testified that it took Matrix a long time and hundreds of thousands of dollars to enter.[459] It took between one and one-half and two years from Matrix's initial decision to enter before it won its first contract, and then another year to successfully complete the

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[455] *Id*.

[456] Tr. at 2254-55 (*in camera*).

[457] Tr. at 2255-56 (*in camera*).

[458] IDF 320.

[459] Tr. at 1567, 1584-85.

tank.[460] Matrix's entry was also in part customer-driven.[461] Matrix subsequently completed three tank projects for Praxair and one for Air Products.[462]

However, Matrix sold its Brown Steel fabrication facility in August 2000.[463] Matrix testified that since that sale, it has been at a competitive disadvantage and has elevated costs.[464] Whereas the tanks that Matrix built previously were made when it still owned Brown Steel, today Matrix must subcontract some of the work, which increases its costs.[465] Specifically, the plates for the outer tanks would have to be sent out for blasting and priming.[466] The testimony related to post-acquisition bids reflects that these increased costs have made Matrix non-competitive. For example, Matrix testified that some customers have informed it that its bids were high and questioned its qualifications.[467] Several customers corroborated this view and testified that Matrix has indeed been bidding high.[468] Moreover, Air Liquide was reluctant to contract

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[460] Tr. at 1585.

[461] Praxair needed a union builder and, as between CB&I and PDM, only CB&I did union work. Tr. at 1617. Matrix had built a cluster tank in Ohio for Praxair, so Praxair was familiar with Matrix and awarded Matrix the job. Tr. at 2174-75.

[462] IDF 320.

[463] Tr. at 1589-90.

[464] Tr. at 1590.

[465] Tr. at 2159-61.

[466] *Id*.

[467] Tr. at 2155.

[468] Tr. at 489, 1019, 2000-01.

with Matrix because of its lack of experience[469] and would not consider [redacted] Matrix [redacted].[470]

Matrix testified that it is not planning to exit the LIN/LOX market and that it intends to continue to bid for jobs, though its offering will not be as competitive.[471] Although the acquisition has presented Matrix with some limited opportunities,[472] the evidence suggests that Matrix's viability as a competitor has diminished. Matrix has not won a LIN/LOX job since CB&I acquired the PDM assets. In addition, other LIN/LOX tank suppliers do not view Matrix as a serious competitor. AT&V testified that its only competitors are CB&I and, on a much smaller scale, Matrix.[473] Air Products also testified that Matrix has not replaced PDM.[474] We thus find that the preponderance of the evidence supports the Initial Decision's conclusion that Matrix's competitive viability has diminished since the sale of its Brown Steel facility and that it no longer is a competitive constraint on CB&I.

(3) Chattanooga

Although Respondents assert that "Chattanooga has recently entered this market,"[475] it is more accurate to say that Chattanooga

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[469] Tr. 1588, 2021-22.

[470] Tr. at 2253 (*in camera*).

[471] Tr. at 1595.

[472] Tr. at 2182.

[473] Tr. at 2332-33.

[474] Tr. at 1354.

[475] RAB at 19.

has continued its attempts to gain LIN/LOX business that it began prior to the acquisition. Despite the fact that it has bid on projects since prior to the acquisition, Chattanooga still has not won a bid, and it has yet to construct a LIN/LOX tank.[476] Although Chattanooga hired some former Graver employees and bought some equipment from Graver when the latter exited the market,[477] the Chattanooga witness testified that it has never created any strategic plans or pricing strategy for designing, engineering, fabricating, or erecting LIN/LOX tanks, and that it has not been participating in the LIN/LOX market.[478]

In certain instances, potential entrants like Chattanooga can have a competitive influence on incumbents by bidding, even though they have not yet won a bid. However, in the LIN/LOX tank market such influence does not come from submitting a bid alone. Rather, customers must take the bid seriously, and the bid must be competitive if the bid is to have any constraining effect. As discussed above, customers also have extensive qualifications that a manufacturer must satisfy.

LIN/LOX tank customers may acknowledge a bid from a firm, but they will not take it seriously if it is too high, as has been the case with Chattanooga. For example, MG Industries testified that it ignored Chattanooga's March 2002 bid on MG's new Johnsonville, Tennessee, project, which was 30 percent higher than CB&I's bid.[479] The MG Industries witness also questioned

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[476] IDF 325.

[477] Tr. at 6318.

[478] Tr. at 6421-22, 6426. The Chattanooga witness testified that LIN/LOX is a market it will be interested in pursuing when there is sufficient demand. Tr. at 6422.

[479] Tr. at 451, 461-62.

whether Chattanooga is a viable LIN/LOX tank supplier in light of its high costs.[480]

A firm like Chattanooga is at a further disadvantage because it lacks the experience and reputational assets of a firm such as CB&I. For example, Air Liquide was not even aware that Chattanooga competed for LIN/LOX tanks.[481] Consequently, Chattanooga has not been able to establish a foothold in this market. Based on the balance of the evidence, we agree with the Initial Decision's conclusion that Chattanooga "does not effectively compete in the LIN/LOX market."[482]

(4) BSL

BSL is a French company that has built LIN/LOX tanks in Europe and Asia.[483] BSL attempted to enter the U.S. LIN/LOX tank market through the use of subcontractors. It formed an alliance with a U.S. firm, Bay Construction, but customers did not consider BSL to be sufficiently qualified due to its lack of experience and proposed use of subcontractors.[484] As with Chattanooga, BSL's bids were too high,[485] and it never won a bid. BSL has since gone out of business.[486]

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[480] Tr. at 466.

[481] Tr. at 2027.

[482] IDF 325; *see also Merger Guidelines* § 3.4.

[483] Tr. at 1342-43.

[484] Tr. at 954, 2002-03; *see also* Tr. at 1577-78.

[485] Tr. at 955, 1378-80; CX 608 at CBI-PL023631.

[486] Tr. at 955, 1351, 1380, 2001.

(5) Conclusions on Entry in the LIN/LOX Tank Market

The competitive capabilities of the firms identified by Respondents as entrants in the LIN/LOX tank market are insufficient to replace the competition that was lost from the acquisition in a meaningful time frame. The LIN/LOX tank market is not "volatile and shifting," as the court found in *Baker Hughes*.[487] Indeed, the structure of the market today is not significantly different from what it was prior to the acquisition, except that PDM is now absent. We see no evidence that AT&V, Matrix, and Chattanooga have, in the aggregate, expanded their competitive presence post-acquisition or that they now constrain CB&I in the manner it was constrained prior to its acquisition of PDM.[488] While AT&V may have made some limited progress as

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[487] 908 F.2d at 986 (citing 731 F. Supp. at 11).

[488] MG Industries' experience with a LIN/LOX tank project bid after the acquisition is a good example of the dearth of competition provided by some of these firms. In April 2002, MG Industries received bids on a LIN/LOX tank project in New Johnsonville, Tennessee, from CB&I, Chattanooga, and Matrix. Tr. at 456-57. Matrix's and Chattanooga's bids were, respectively, 20 percent and 30 percent higher than CB&I's bid. MG Industries did not negotiate with either Matrix or Chattanooga, because those bidders would have had to drop their prices by 20 percent and 30 percent, and MG testified that it would have been concerned that such a price drop would be detrimental to the project. Tr. at 461. MG Industries attempted to bluff CB&I into giving it a lower price, but CB&I held firm on its price and was awarded the project. Tr. at 460-61; *see* IDF 306-10. MG Industries testified that the pre-acquisition PDM had bid lowest in its last three or four LIN/LOX projects and that it was able to use PDM in negotiations to get better prices from other suppliers. However, MG Industries testified that its negotiations concerning the New Johnsonville project were limited to making

a competitor in the few years before and after the acquisition – although even this progress may be questionable in light of AT&V's negative performance with Air Liquide – Matrix has lost ground. Prior to the acquisition, Matrix was gaining a foothold with a few completed tanks. Since the acquisition, however, Matrix has not won any bids and, by its own admission, is not as competitive as it used to be because of the sale of its Brown Steel fabrication facility. Chattanooga was an insufficient entrant prior to the acquisition and continues to be insufficient. Consequently, Respondents have not presented any evidence of "dramatic changes in the market"[489] that would lead us to believe that future attempts at new entry or expansion will be any different from the past experiences recounted above. Respondents also have not demonstrated that entry into the LIN/LOX market would be sufficient to replicate the competition lost from the acquisition, nor is there evidence that firms other than AT&V, Matrix, or Chattanooga plan to enter.

We should note that it is not surprising that customers have attempted to develop suppliers to replace PDM in the LIN/LOX tank market; customers testified that they prefer to have multiple suppliers.[490] Even before the acquisition, the exit of Graver – the only firm that approached CB&I's and PDM's level of experience and reputation – led to a highly concentrated market. The acquisition further concentrated it.

However, the mere fact that a customer may try to develop an additional supplier in an attempt to enhance competition does not mean that the competition lost from an acquisition has been

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the best deal it could get from CB&I. Tr. at 462. AT&V was not invited to bid on this project because MG Industries was not aware of AT&V. Tr. at 482.

[489] OA at 4.

[490] Tr. at 347-49, 1531-32, 2030, 4618-19, 4673-75.

replaced. Section 7 of the Clayton Act would be meaningless if a weak showing of entry sufficed to rebut a prima facie case. Consider Air Liquide's experience with AT&V. Air Liquide testified that it contracted with AT&V because it believed that it needed to develop a new supplier in the wake of PDM's removal from the market.[491] Air Liquide also testified that it would have been far less likely to take the risk of contracting with AT&V had PDM still been in the market and submitted a competitive bid.[492] [redacted redacted] Air Liquide expects that it will have cost Air Liquide $100,000 to $150,000 above and beyond the $200,000 price advantage in AT&V's bid.[493] [redacted redacted].[494] For obvious reasons, this project is hardly an example of *sufficient* entry or of a restoration of the competition lost from the acquisition.

We also note that the decline in demand for LIN/LOX tanks may make entry/expansion of existing or bidding firms even less likely. Chattanooga testified that the demand for LIN/LOX tanks has decreased, making it less desirable for Chattanooga to enter the LIN/LOX market.[495] While both Matrix and Chattanooga testified that the acquisition has created an opportunity for them because customers will be looking to replace PDM,[496] the fact remains that neither has been able to win a bid post-acquisition.

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[491] Tr. at 2235-36 (*in camera*).

[492] Tr. at 2236 (*in camera*).

[493] Tr. at 2254-55 (*in camera*).

[494] *See* Tr. at 2252 (*in camera*), 5036.

[495] Tr. at 6380-82.

[496] Tr. at 2182-83, 6367-68.

b. Post-Acquisition Bids in the LIN/LOX Tank Market

Respondents point out that AT&V has won three of four competitively bid LIN/LOX tank projects in support of their argument that entry into this market rebuts a prima facie case.[497] It is true that AT&V has gained a foothold in the LIN/LOX tank market by continuing the efforts to compete that it began prior to the acquisition. However, AT&V does not have nearly the reputation or capacity of CB&I.[498] AT&V testified that it can construct only four tanks at a time[499] and has turned down the opportunity to bid for LIN/LOX tanks due to capacity constraints.[500] In addition, as we discussed in the previous section, AT&V's competitive viability is now marred by its recent negative performance on Air Liquide's Freeport project. AT&V will not receive a favorable reference from Air Liquide, and this will have some impact on its ability to get future work.[501] Thus, we find that AT&V's post-merger wins do not establish that it can restore the competition lost from CB&I's acquisition of the PDM assets.

4. Actual Entry in the TVC Market

The record evidence shows no attempted entry into the TVC market by any suppliers. There is record testimony that new entry is unlikely because the market is small and because field-

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[497] RAB at 18.

[498] IDF 315-19.

[499] Tr. at 2376.

[500] Tr. at 2375.

[501] *See* Tr. at 2400. Customers are very careful to check a firm's references before awarding a LIN/LOX tank. Before Air Liquide hired AT&V, it visited BOC and inspected the tank that AT&V built for BOC. Tr. at 2239 (*in camera*).

erected TVC tank fabrication has more exacting "design engineering," "leak testing and cleanliness" requirements than tank fabricators encounter in other markets.[502] In addition, entry by a foreign supplier is unlikely, since many of these projects require security clearances and may have "Buy America" requirements as well.[503]

5. Conclusions on Actual Entry

Given the evidentiary record, we believe Respondents' reliance on *Baker Hughes* is misplaced. It is certainly true that the district court in *Baker Hughes* relied on the fact that two companies had each won a contract for hydraulic rig orders in the U.S. to support its conclusion that the acquisition was unlikely to harm competition over the long term.[504] However, those findings were corollaries of the court's determination that barriers to entry and expansion were low – as evidenced by one firm's entry and expansion to become the market leader. Indeed, the court of appeals in that case highlighted this growth as the rationale for its conclusion that competitors not only could, but probably would, enter the market in response to supracompetitive pricing.[505]

In contrast, and as explained at length above, the relevant markets in the instant case are not prone to such activity. The LNG tank market, for instance, has been dominated by CB&I and PDM for nearly three decades. These two companies not only won the vast majority of projects but in many instances were the only bidders. Moreover, while it appears that some new suppliers have decided to compete in the LNG tank market following the

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[502] Tr. at 1272.

[503] Tr. at 1147-49.

[504] 731 F. Supp. at 10.

[505] 908 F.2d at 989.

acquisition, we find them unable to constrain CB&I sufficiently. Similarly, in both the LIN/LOX and LPG tank markets, the firms to which Respondents point were present prior to the acquisition, and there is no evidence to suggest that these firms have increased their aggregate market presence. Thus, while other firms may enter and exit each of these markets, the evidence shows that their presence has not diminished the market dominance of the merged firm, nor have they undermined the conclusion that CB&I and PDM would have remained the only two major players in these markets absent the acquisition.

We therefore concur with the ALJ and find the markets in this case analogous to that at issue in *Tote*, where the court found, among other things, that the technical requirements associated with creating a totalisator system coupled with the customers' need for reliability would "hinder both new entrants and incumbents in their efforts to gain market share or affect prices."[506] In reaching this conclusion, the court rejected defendants' argument that a new entrant's submission of a number of bids and contacts with customers constituted evidence of entry.[507] The court did not agree that the mere submission of a bid made the new entrant a genuine competitor. Rather, the court examined the likely strength of those bids and their ability to constrain anticompetitive price increases by the incumbents.[508] We have employed that same approach in this case and conclude that the entry pointed to by Respondents is insufficient to constrain CB&I post-acquisition.

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[506] 768 F. Supp. at 1081.

[507] *Id*. at 1080-81.

[508] *Id.* at 1081-82.

C. Potential Entry

Respondents assert that evidence of potential entry in both the LNG tank and LPG tank markets rebuts Complaint Counsel's prima facie case. They contend that the actual entrants they have pointed to "empirically demonstrat[e] that entry barriers are low."[509] In light of these assertedly low entry barriers, Respondents then argue that potential entrants either already constrain CB&I or can be expected to enter the market in the event of anticompetitive price increases by CB&I.[510] Of course, for a potential entrant or the threat of a potential entrant to act as a competitive constraint on incumbent firms, entry – at least for that firm – must be easy.[511] As discussed above, entry into both the LNG tank and LPG tank markets is extremely difficult and time-consuming.[512] We thus reject Respondents' arguments.

D. Critical Loss Analysis

Respondents also argue that the ALJ erred in disregarding their expert's conclusion (based on his critical loss analysis) that CB&I could not raise prices, and they assert that this evidence shows that the acquisition has not harmed competition.[513] Critical loss analysis provides a quantitative framework for testing whether a

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[509] RAB at 20.

[510] *Id*. at 19.

[511] *United States v. Marine Bancorporation Inc.*, 418 U.S. 602, 628 (1974) ("[E]ase of entry . . . is a central premise of the potential-competition doctrine."); *FTC v. Procter & Gamble Co.*, 386 U.S. 568, 581 (1967) (Procter exerted influence on the market because, *inter alia*, "barriers to entry by a firm of Procter's size and with its advantages were not significant").

[512] *See* discussion, *supra* at Parts III.C.1-2.

[513] RAB at 47-48.

hypothesized price increase of a certain magnitude will be profitable. The first step in a critical loss analysis is to calculate the critical loss threshold, *i.e.*, the fraction of current sales that would need to be lost to render a hypothesized percentage price increase unprofitable.[514] To accomplish this, one must weigh the profits forgone on the sales that would be lost as a result of the price increase against the increased profits on the retained sales. The critical loss is the fraction of sales that would need to be lost to balance exactly those countervailing effects. The second step is to estimate the likely loss in sales that would result from the hypothetical price increase. If the hypothetical price increase results in a loss of sales that exceeds the critical loss, then the price increase would not be profitable and would be unlikely to occur.

Critical loss analysis is a still-evolving analytical approach that some courts have applied for delineation of markets[515] and for competitive effects analysis.[516] Although we do not doubt the soundness of the logic underlying critical loss analysis (*i.e.,* that businesses are unlikely to impose price increases that will, on balance, be unprofitable), we are mindful that recent economic literature has cautioned that the analysis has certain vulnerabilities. The literature informs us that, if misapplied, critical loss analysis (like any other tool of economic analysis) can suggest results that are contrary to real-world experiences and inconsistent with established economic principles.[517] To take a

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[514] Tr. at 7259.

[515] *FTC v. Tenet Health Care Corp.,* 186 F.3d 1045 (8th Cir. 1999); *FTC v. Occidental Petroleum Corp.*, 1986-1 Trade Cas. (CCH) ¶ 67,071 (D.D.C. Apr. 29, 1986).

[516] *FTC v. Swedish Match*, 131 F. Supp. 2d at 169.

[517] *See generally* Michael L. Katz & Carl Shapiro, *Critical Loss: Let's Tell the Whole Story*, 17 Antitrust 49 (Spring 2003); Daniel P. O'Brien & Abraham L. Wickelgren, *A Critical Analysis*

simple example, critical loss principles hold that a firm may not have the power to increase prices profitably for products with high profit margins. This is so because price increases typically cause a loss of some sales and the profits earned from them. When the profit per unit is high, even a small loss of sales will produce a large loss in profits – so much so, that the higher profits on retained sales may not make up for the lost profits from the lost sales. In that situation, a critical loss analysis might conclude that a merged firm does not have the market power to profitably increase prices, because it will lose too many sales to its competitors (or due to consumers foregoing purchase of the product altogether). However, basic economic principles also tell us that high profit margins may be a sign of products with relatively inelastic demand (*i.e.*, products for which the quantity demanded is relatively insensitive to price, as could be the case if, for example, there are few or no substitutes). A merger between two firms that enjoy high profit margins and relatively inelastic demand may very well result in a price increase, because the merged firm may not anticipate losing any sales if it increases its price. Information on pre-merger and post-merger elasticities of demand is thus important to determine whether this condition is present. Accordingly, both critics of and adherents to critical loss analysis agree that critical loss analysis is only as good as the factual premises and the data that underlie it.[518] In particular, a solid evidentiary basis must support any assumptions used in the analysis and the actual loss of sales posited for a given price increase.

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of Critical Loss Analysis, 71 Antitrust L.J. 161 (2003). *But see* David T. Scheffman & Joseph J. Simons, *The State of Critical Loss Analysis: Let's Make Sure We Understand the Whole Story*, The Antitrust Source (Nov. 2003).

[518] *See* Katz & Shapiro, *supra*, note 517 at 52; Scheffman & Simons, *supra* note 517, at 4 n.11.

Here, Respondents proffered a critical loss analysis by their expert, Dr. Barry Harris. Dr. Harris testified that CB&I cannot profitably impose a price increase as a result of its acquisition of PDM, because post-acquisition CB&I has already lost actual sales far in excess of the level that would have been consistent with a profitable price increase.[519] He further stated that new entrants and fringe suppliers have simply been able to defeat CB&I post-acquisition.[520] We have carefully considered Dr. Harris's analysis, but in the end, we are not convinced that he has reached the correct conclusion for this case – especially because that conclusion is at odds with the competitive effects that established economic principles conclude likely follow from the extraordinarily high concentration levels that we discussed in Part III.A, *supra*, the state of pre-acquisition competition that we discussed in Part III.B, *supra*, and the nearly insurmountable entry barriers that we found to predominate in Part III.C, *supra*.

Besides finding that his analysis is outweighed by the contrary evidence in this case, we conclude for several other reasons that we must reject Dr. Harris's analysis. First, it appears from the record that Dr. Harris did not perform a critical loss analysis for each distinct relevant market.[521] Instead, he combined the post-merger sales for all four relevant markets and concluded generally CB&I has lost "in excess of half" of the bids[522] and roughly 82 to 83 percent of the dollars available from the post-merger

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[519] Tr. at 7263, 7265-66.

[520] Tr. at 7345-46 (Dr. Harris noting that, in contrast to Dr. Simpson, he believes that the entrants have been successful competitors).

[521] In addition to this general analysis, Dr. Harris performed a separate critical loss analysis for the LNG tank market, which we discuss below.

[522] Tr. at 7356.

projects.[523] Even if one assumes, *arguendo*, the validity of Dr. Harris's underlying factual assumptions – several of which we discuss below – this approach is not informative of CB&I's ability to raise prices in any particular relevant market and thus does not convince us that CB&I cannot raise prices in the relevant markets. Although the four relevant markets share some characteristics, each is distinct. For example, none of the markets has the same mix of new entrants or fringe competitors, and the strength of these new entrants or expanded fringe firms in *each* of the relevant markets is a crucial consideration in the assessment of CB&I's ability to raise price. In addition, grouping the sales of multiple relevant product markets together can skew results. For example, AT&V's three post-merger wins in the LIN/LOX tank market in large part form the basis for Dr. Harris's conclusion that CB&I has lost in excess of half the bids in all four relevant markets.[524] Dr. Harris did not explain why it was appropriate to group all four relevant product markets together in his critical loss analysis, and his testimony did not shed light on how (or whether) he might have accounted for market differences. Nor can we, on our own, discern any compelling reason to treat the four separate markets as a single market. Accordingly, we do not find his critical loss analysis helpful in assessing CB&I's ability to sustain price increases in any relevant market.

We have other concerns about Dr. Harris's analysis. For example, he included CB&I's sole-source contract with CMS, but excluded CB&I's sole-source contract with El Paso and CB&I's

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[523] Tr. at 7357. Dr. Harris did not have the aid of a calculator in testifying and thus qualified these figures as being approximate.

[524] RX 951. (RX 951 was admitted into evidence for demonstrative purposes only. However, we reviewed it because it forms the basis for Dr. Harris's general discussion about CB&I's post-acquisition losses.)

three sole-source contracts with BP.[525] The omission of the El Paso and BP contracts significantly changes CB&I's post-merger win-to-loss ratio,[526] and, as discussed below, Dr. Harris included three projects that we believe should not have been counted. We also question Dr. Harris's assumption that both the Dynegy and Trinidad projects represented instances of CB&I's losing a bid to new entrants in the LNG tank market. These concerns lead us to reject his analysis in this case.

Indeed, we find that the record does not support Dr. Harris's inclusion of at least three of the projects included in his analysis, because they either did not involve a relevant product or occurred before the acquisition. For example, Dr. Harris included a TVC award to XL/Votaw. Although he noted that this project was small – approximately the size of a shop-built tank – he testified that he included it because it was field-erected.[527] However, no evidence suggests – and indeed, Respondents do not even assert – that Votaw is a competitor in the large, field-erected TVC market. We thus conclude that this award should not have been included in Dr. Harris's calculations. Similarly, without sufficient explanation for doing so, Dr. Harris included BOC's Midland, North Carolina, project, which was solicited in late 2000[528] and awarded prior to the acquisition.[529] Given the timing of this

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[525] *Id.*

[526] Dr. Harris concluded that CB&I won 4 out of 10 projects post-merger. Even if we assume that Dr. Harris is correct and that CB&I has won only 40 percent of the post-merger bids, inclusion of these other 4 bids would have increased CB&I's win-to-loss ratio to 8 out of 14, or roughly 60 percent.

[527] Tr. at 7355-56.

[528] Tr. at 4599.

[529] *See* RX 951 (project awarded Feb. 1, 2001); *see also* RX 208.

project, we think it was inappropriate to consider it without some explanation of its relevance. Finally, we question Dr. Harris's decision to include CB&I's Praxair win. Scorsone, the President of CB&I's Industrial Division, testified that this project was not bid competitively, because CB&I – as a result of its acquisition of the PDM assets – "inherited the responsibilities" from PDM to construct Praxair's LIN/LOX/LAR tanks at a 4 percent margin.[530]

We now turn to Dr. Harris's examination of the LNG tank market. As with his more general analysis, he found that CB&I lost more sales post-acquisition than would have been profitable from a price increase.[531] This conclusion is premised on an assumption that CB&I's not winning the Dynegy and Trinidad bids shows that it cannot profitably impose a 5 percent price increase in the LNG tank market. We find this assumption unsupported by the evidence.

We conclude that the Dynegy project is not illustrative of the alleged new entrants' ability to constrain CB&I effectively. As we discussed earlier, time and again, CB&I refused to bid for the tanks on this project and repeatedly insisted that Dynegy contract with it on a turnkey basis. Only after the bidding process was nearly complete did CB&I approach Dynegy to submit a bid. We find that Dynegy's refusal to accept CB&I's bid at such a late stage does not represent the result of a competition on the merits, and this outcome therefore tells us little about whether an

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[530] Tr. at 5019-20. Although the history of the CB&I/Praxair agreement is not corroborated by other evidence, we mention it out of an abundance of caution – the exclusion of this project would benefit Dr. Harris's calculation, because it would reduce the number of CB&I's post-merger wins.

[531] Tr. at 7263.

attempted exercise of market power by CB&I would lead to a loss of sales that exceeded a critical loss threshold.[532]

Dr. Harris similarly included the Trinidad project in his analysis because he found "a lot of similarities between Trinidad and the United States."[533] In addition to Trinidad's close geographic proximity to the United States, Dr. Harris emphasized that LNG tanks in Trinidad are built to standards similar to those in effect in the U.S. and that CB&I, which had built the previous tank at the site, had "some local advantages."[534] However, as we have already stated, the Trinidad project provides little or no relevant information with which to assess LNG sales in the United States. Trinidad has no domestic incumbent LNG tank providers, and therefore all LNG tank suppliers stand on more equal footing. Despite Dr. Harris's assertion that CB&I has local advantages, the evidence shows that CB&I is not an incumbent firm in the same sense that it is in United States market, where it has participated for decades. Thus, we are not convinced by his rationale for including this project, and we conclude that this outcome does not

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[532] Moreover, even if we accepted Dr. Harris's assumption that CB&I lost the Dynegy project, we could not conclude (based on the evidence) that CB&I could not raise prices post-merger. Like any other supplier, CB&I's pricing is constrained at some level. However, the mere fact that buyers switch awards to new entrants at some point tells us nothing about the effectiveness of the new entrants' ability to constrain CB&I's prices to pre-acquisition levels. This concept, commonly referred to as the "Cellophane Fallacy," derives from criticism of the approach taken by the Supreme Court in *United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377 (1956). *See, e.g.,* Steven C. Salop, *The First Principles Approach to Antitrust, Kodak, and Antitrust at the Millennium*, 68 Antitrust L.J. 187, 197 (2000).

[533] Tr. at 7268.

[534] *Id.*

shed light on whether a price increase in the United States market would lead to a loss of sales that exceeds a critical loss threshold.

Because Respondents sponsored Dr. Harris's testimony, it was, of course, up to Respondents and Dr. Harris to show that his conclusions were sound and well supported.[535] Based on the problems that we have identified, we find that Respondents have not carried this burden and that the ALJ correctly disregarded the analysis.

E. Customer Sophistication

There is some support for Respondents' point that sophisticated customers with bargaining power can ameliorate the anticompetitive effects of a merger.[536] However, many of the cases in which courts have accepted buyer power or customer sophistication arguments have also found easy entry and expansion and have relied on both facts to determine that the prima facie case has been rebutted.[537] At a basic level, customers must have alternative suppliers in order to have any real bargaining power. Despite the instant case's similarities to *Baker Hughes – e.g.*, customers in all four relevant markets have

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[535] Rules of Practice for Adjudicative Hearings, 16 C.F.R. § 3.43(a).

[536] *See* RAB at 30 ("[T]he sophistication and bargaining power of buyers play a significant role in assessing the effects of [an acquisition].") (brackets in original) (citations omitted). *See Baker Hughes*, 908 F.2d at 986-87.

[537] *See, e.g., Advo Inc. v. Philadelphia Newspapers*, 854 F. Supp. 367, 375 (E.D. Pa. 1999) (noting the ability of customers to bring in other suppliers); *R.R. Donnelley & Sons Co.*, 120 F.T.C. 36, 191-92 (1995) (finding that buyers in the relevant market "use procurement designed to ensure negotiating leverage" and have the ability to "solicit and obtain *multiple* bids") (emphasis added).

elaborate bidding procedures and engage in competitive bidding – there is one determinative difference: the buyers in this case have no real alternatives to the monopolist. As we have discussed at length, the alternatives to CB&I are weak at best in the LNG, LPG, and LIN/LOX tank markets and non-existent in the TVC market. For example, the new entrants in the LNG tank market do not have a long-term presence or experience in the market and thus cannot effectively compete with CB&I – a fact that CB&I itself recognizes in its dealings with customers. The new entrants' inexperience also appears to have played a central role in CB&I's success in securing some of its post-acquisition sole-source contracts. Similarly, although there are more alternative suppliers in the LPG and LIN/LOX tank markets, they still face a variety of obstacles, including capacity constraints, lack of experience, and poor performance records.[538] Indeed, many of the alternative suppliers in these two markets competed at least to some degree with CB&I prior to the acquisition, and there is no indication that they have collectively increased their presence after the acquisition. We conclude from this evidence that the competition to which Respondents refer does not provide a viable alternative to CB&I in the relevant markets and does not provide customers with any real ability to thwart price increases post-merger.

In addition, some evidence suggests that customers in the LNG, LPG, and LIN/LOX tank markets may suffer from inadequate information on pricing and thus may be unable to constrain CB&I from increasing prices post-acquisition.[539] Any particular

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[538] *See, e.g.*, Tr. at 1588, 1609, 2021-22, 2155, 2252 (*in camera*), 2365-66, 2379-80; JX 27 at 72-73. Respondents point to AT&V, Matrix, Wyatt, Chattanooga, and Pasadena Tank as alternatives to CB&I for the construction of LPG tanks. As we discussed above, however, these suppliers face a variety of difficulties.

[539] The Supreme Court has recognized that a lack of information can impede a buyer's ability to exert its bargaining

customer in each of these markets purchases a tank infrequently[540] and therefore is unlikely to have the necessary information on hand to know whether it has been subjected to a price increase. For example, CMS testified that in order to evaluate CB&I's price for its Lake Charles expansion, it looked at the FERC filing for Cove Point's expansion, because that was the only place CMS could find costs.[541] CMS further testified that because the projects are not identical, the comparison was difficult to make.[542] Similarly, El Paso testified that it is "operating a little bit in the dark in terms of knowing . . . the costs . . . for LNG tank suppliers."[543] There is also no evidence that customers in these various markets share information about the cost of their purchases with other potential customers.

On the other hand, other evidence indicates that at least some tank customers may have access to information they would need to adequately assess whether CB&I has raised prices. For example, in the LNG tank market CMS employed a consultant to help it evaluate CB&I's price, and the consultant provided a rough

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power by switching (or threatening to switch) to an alternative supplier. *See, e.g., Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451 (1992). In *Kodak*, the Court found that a lack of information regarding the cost of service and parts of Kodak's equipment explained why an increase in those costs did not affect Kodak's market share in the original sale of equipment. *Id.* at 473. While the facts of this case, of course, are not analogous to those of *Kodak*, we believe the broader point – that lack of the necessary information may impede a buyer's ability or incentive to switch to alternative suppliers – is relevant to our inquiry.

[540] IDF 204, 210-11, 233-34, 269, 292-93.

[541] Tr. at 6290 (*in camera*).

[542] *Id.*

[543] Tr. at 6238; IDF 207.

benchmark for what level of pricing to expect.[544] In addition, there may be better price information in the LIN/LOX and LPG tank markets because customers have traditionally purchased these types of tanks more frequently. ITC, an LPG tank customer, testified that it regularly evaluates confidential bids from multiple tank suppliers.[545] Similarly, MG Industries, a LIN/LOX tank customer, testified that it purchased 14 tanks in the 1990s[546] and decreased its costs prior to the merger by informing vendors that their prices were too high.[547]

However, even if customers had access to the pricing information for multiple projects, such information would not necessarily assist them in detecting a price increase. In seeking to rebut Complaint Counsel's proof of anticompetitive effects, Respondents elicited a large volume of testimony to demonstrate that it is difficult, if not impossible, to compare prices of various tanks because the specifications vary so widely from project to project. This conclusion appears sound, yet it leads to the related conclusion – not helpful to Respondents' argument – that it would be difficult, if not impossible, for customers to look at these projects and determine whether the prices they pay after the acquisition exceed what they would have paid but for the acquisition.

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[544] Tr. at 6290-91 (*in camera*); *see also* Tr. at 6239 (consultants "can provide a rough
benchmark" and inform customers, "based on their experience, [that] a tank should cost [a certain amount] per cubic meter of storage").

[545] Tr. at 7082-83.

[546] Tr. at 478.

[547] Tr. at 350; IDF 354.

Therefore, we conclude that Respondents have not carried their burden to produce evidence of customer sophistication sufficient to rebut Complaint Counsel's prima facie case.

V. Competitive Effects of the Acquisition and Conclusions

Based on the totality of the evidence, we find that Complaint Counsel established that CB&I's acquisition of PDM is likely to lessen competition substantially throughout the United States in each of the four relevant product markets. Complaint Counsel presented a strong prima facie case through both extraordinarily high levels of concentration and other evidence of Respondents' dominance in sales over the last decade. The evidence shows that CB&I purchased its closest competitor in the LNG tank, LPG tank, LIN/LOX tank, and TVC markets. Complaint Counsel's case was enhanced by proof that entry in each of the relevant markets is difficult and that new entry or expansion by existing firms cannot replicate the competition lost as a result of the acquisition.

Respondents' evidence of entry into the LNG tank market and expansion of smaller incumbents in the LPG and LIN/LOX tank markets establishes neither that entry or expansion into these markets is easy nor that it has actually occurred at a level that will meaningfully constrain CB&I post-acquisition. Although some companies have shown interest in these markets, we find that this mere interest and intention to compete does not make them competitors sufficient to replace the competition lost from CB&I's acquisition of PDM. In addition, we are not persuaded by Respondents' critical loss argument or by their argument that sophisticated customers will be able to thwart a price increase by CB&I. This is especially true here because there are no alternative suppliers to which customers can turn in the face of supracompetitive pricing by CB&I. In accord with Complaint Counsel's economic expert, we find that customers in these markets will likely be harmed post-acquisition, because CB&I can significantly increase price or reduce quality before other suppliers

can begin to constrain it.[548] For these reasons, we conclude that Respondents have not rebutted Complaint Counsel's prima facie case.

VI. Anticompetitive Price Increases

Based on our analysis in Parts III-V, *supra*, we have concluded that the acquisition violates Section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act.[549] We need not consider Complaint Counsel's cross-appeal to the extent that they argue that the ALJ erred in declining to find that the acquisition resulted in actual anticompetitive effects. Because Respondents have not rebutted Complaint Counsel's prima facie case, Complaint Counsel are not required to come forward with additional evidence to show actual anticompetitive effects. As several courts have observed, "Congress used the words 'may be substantially to lessen competition' . . . to indicate that its concern

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[548] *See* Tr. at 3072-73. For example, Matrix testified that it is at a competitive disadvantage in the LIN/LOX market due to the sale of its Brown Steel subsidiary and that its costs are now higher. Tr. at 1590. The same Matrix witness testified later that the acquisition created some potential opportunities for the company in some limited circumstances. Tr. at 2182. One way to interpret this later statement is that it is consistent with an anticompetitive effect: if a higher-cost firm begins to see more market opportunities, the acquisition may have raised price levels in the market.

[549] *See United States v. Penn-Olin Chem. Co.*, 378 U.S. 158, 171 (1964) (a Section 7 violation is established when a reasonable likelihood of a substantial lessening of competition is shown); *United States v. SunGard Data Sys.*, 172 F. Supp. 2d 172, 180 (D.D.C. 2001) (same).

was with probabilities, not certainties."[550] Nonetheless, Complaint Counsel argue that CB&I has engaged in several instances of actual anticompetitive conduct since the acquisition and that these instances provide the Commission another reason for finding liability under the antitrust laws.[551] In light of our holdings above, we decline to address these arguments.

VII. Exiting Assets

Respondents' final argument is that absent the acquisition, PDM's Erected Construction Division would have ceased operating in the relevant markets and that CB&I's acquisition of these assets therefore had no impact on competition.[552] First, we want to be clear that Respondents are not arguing that PDM's EC Division met the requirements of the failing firm defense recognized under the *Merger Guidelines*.[553] Rather, they rely on the so-called "exiting assets" defense outlined in a 1986 law review article, which suggests that where a company has made exhaustive efforts to sell assets that would actually have exited the relevant market absent the acquisition, such facts might justify an otherwise anticompetitive acquisition.[554] The Commission, however, has not yet sustained this defense in any of the cases that

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[550] *SunGard*, 172 F. Supp. 2d at 180 (citations omitted); *see also Heinz*, 246 F.3d at 708 (quoting *Brown Shoe Co. v. United States*, 370 U.S. 294, 323 (1962)).

[551] *See* CCACAB at 51-60 (alleging actual post-merger price increases for several LNG, LIN/LOX and TVC projects).

[552] RAB at 58-61.

[553] OA at 30.

[554] John E. Kwoka, Jr. & Frederick R. Warren-Boulton, *Efficiencies, Failing Firms, and Alternatives to Merger: A Policy Synthesis*, 31 Antitrust Bull. 431 (1986).

have raised this issue,[555] and this case is no different. We agree with the ALJ that Respondents did not present persuasive evidence that PDM had made the decision to close the business in the near future,[556] nor did Respondents show that PDM conducted an exhaustive search for alternative buyers.[557] Instead, PDM chose to sell its assets to its closest competitor, thereby creating a firm with unmatched market dominance. Even were we to accept the exiting assets defense in theory, we agree with the ALJ that Respondents have not established the defense on these facts.

VIII. Remedy

After concluding that Complaint Counsel had presented sufficient evidence to prove that the acquisition violated Section 5 of the FTC Act and Section 7 of the Clayton Act, the ALJ fashioned a remedy to address the law violation he found. In relevant part, his Order directed CB&I to divest: (1) all the assets (including PDM's Water Division) that it acquired from PDM along with any additional assets that it has acquired to replace or maintain the acquired PDM assets; (2) all intellectual property and rights to such property, including the PDM name, that it acquired from PDM; (3) all contracts that it acquired from PDM, to the extent they have not been fully performed; and (4) "if possible," a sufficient revenue base to assure the divested assets can actively compete in the LNG market.

In their appeal, Respondents object that the ALJ's Order may actually harm competition by reducing the number of competitors

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[555] *See Olin Corp*, 113 F.T.C. at 618 (finding that management of the acquired company had not conducted an exhaustive search).

[556] ID at 116-17; IDF 504-14.

[557] Tr. at 2931; ID at 116-18; IDF 517-20, 524.

who are able to bid on large projects.[558] They also argue that the divestiture will result in two "higher cost companies" instead of one low cost company and accordingly that Complaint Counsel failed to show the efficacy of divestiture as a remedy in this case.[559] Respondents also object to the divestiture of PDM's Water Division assets, arguing that there is no evidence to show that another firm could not "compete in the relevant markets without the Water Division assets."[560]

Complaint Counsel in a cross-appeal argue that aspects of the ALJ's Order are vague and ambiguous and that it does not go far enough. Specifically, Complaint Counsel assert that, in addition to divesting all the assets identified by the ALJ, Respondents must also assign to the prospective buyer a percentage share of all work in progress so that the firm can be assured of becoming a viable competitor in the relevant markets. In addition, Complaint Counsel argue that Respondents must be compelled to take affirmative steps to ensure that a sufficient number of experienced employees are transferred to the buyer and to provide the buyer with necessary technical and administrative assistance for a period of time. Finally, Complaint Counsel argue in favor of the appointment of a monitor trustee who will oversee the divestiture process. In response, Respondents assert that they have had insufficient notice of all the relief demanded by Complaint Counsel and that they have not had a fair opportunity to respond to the final order proposed by Complaint Counsel.

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[558] RAB at 52.

[559] RAB at 55-56.

[560] RAB at 57. Respondents' appeal brief actually states: "Nor is there evidence that a party purchasing the EC Division could compete in the relevant product markets without Water Division assets." We assume, however, that Respondents meant to say that there is no evidence that a purchaser could *not* compete without the Water Division assets.

This Part of our opinion is divided into two sections. In the first section, we discuss the remedy that we have fashioned to address the law violation and ensure that meaningful and effective competition is restored to the market. In the process of expounding on our Order provisions and our rationale for adopting them, we address all the arguments raised by Complaint Counsel and most of the arguments raised by Respondents. In the second section, we examine any remaining arguments, to the extent they are not addressed in the first section.

A. Standard and Explanation of Remedy

CB&I's acquisition of PDM's Erected Construction and Water Divisions resulted in a monopoly or a near-monopoly in all four relevant markets, and violated both Section 7 of the Clayton Act and Section 5 of the FTC Act. We thus must determine how most effectively to "pry open to competition [the] market[s] that [have] been closed by defendants' illegal restraints."[561] Based on our review of the record, we agree with the Initial Decision's determination that divestiture is the most appropriate remedy to effectuate this outcome. The Clayton Act itself contemplates that, upon our finding that Section 7 of the Act has been violated, we order Respondents to divest themselves of "the stock, or other share capital, or assets held" in violation of that section.[562] Much of the case law has echoed this sentiment and found divestiture the most appropriate means for restoring competition lost as a consequence of a merger or acquisition. In the *du Pont* case, the Supreme Court stated that "[t]he very words of §7 suggest that an undoing of the acquisition is a natural remedy"[563] and that divestiture "should always be in the forefront of a court's mind

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[561] *Du Pont*, 366 U.S. at 323.

[562] 15 U.S.C. § 12(b).

[563] *Du Pont*, 366 U.S. at 329.

when a violation of § 7 has been found."[564] Similarly, the Court stated in *Ford Motor* that "[c]omplete divestiture is particularly appropriate where asset or stock acquisitions violate the antitrust laws."[565] In this case, the evidence shows that in four separate markets, CB&I acquired its closest competitor and thus obtained monopoly or near- monopoly power, entry is extremely difficult, and no new entry or fringe expansion has been able to challenge CB&I effectively. Given these facts, we find it highly unlikely that the relevant markets will return to their pre-acquisition state absent divestiture. In addition, as we will discuss in this portion of our Opinion, we find that a number of ancillary provisions are crucial to establishing a viable entrant to replace the competition lost from CB&I's acquisition of PDM.[566]

We order CB&I to reorganize its Industrial Division (and, to the extent necessary, its water tank unit) into two separate, stand-alone divisions (New PDM and New CB&I) and to divest New PDM within six months after our Order becomes final. We have taken this approach to give CB&I, which is best positioned to know how to create two viable entities from its current business, the opportunity to do so. We also believe this approach will remedy the anticompetitive effects of the merger more quickly than would immediately appointing a divestiture trustee, who would have to learn the business before recommending a divestiture package. While we recognize that this approach places the burden of unscrambling the merger on CB&I's shoulders, we find this burden justified. CB&I proceeded with its acquisition of PDM with the knowledge that the Commission was still

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[564] *Id*. at 331.

[565] *Ford Motor Co. v. United States*, 405 U.S. 562, 573 (1972).

[566] Section 11(b) of the Clayton Act and pertinent case law afford the Commission broad remedial powers. 15 U.S.C. § 21(b) (granting the Commission the power to order divestiture "in the manner and within the time fixed by said order").

investigating the transaction. Because Respondents have created – at least to an extent – any problems associated with unwinding the transaction (and restoring competition), equity necessitates that they help solve them.

In addition, because common sense tells us that Respondents' self-interests will be best served by creating less rather than more competition from the divested assets, we have also included two provisions to ensure that CB&I creates a viable business and divests it to an appropriate buyer within a reasonable time frame. First, if CB&I has not divested New PDM under the requirements of our Order within 180 days of the Order's becoming final, we reserve the right to appoint a divestiture trustee[567] to divest either New PDM or New CB&I. This provision should ensure that CB&I has an incentive to assemble a package of assets that will be sufficient to create a viable competitor and readily attract an acceptable buyer. It also provides CB&I with the incentive to maintain the strength and viability of the to-be-divested assets. Second, we have appointed a monitor trustee. Experience has shown not only that a seller has the incentive to create a weak competitor with its divestiture package, but also that buyers may lack the necessary information to assess properly the asset package. A monitor trustee will ensure that a good mix of assets is made available to the acquirer and that the acquirer receives what it needs to maintain a viable business. A monitor trustee also will make certain that the divestiture proceeds smoothly by providing a conduit between the acquirer and Respondents and promptly notifying the Commission of any problems.

In addition to the general requirement that CB&I create two viable, stand-alone businesses, the Order contains a number of

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[567] Our Final Order specifies that the monitor trustee, who will oversee the divestiture requirements of our that Order, may be the same person as the divestiture trustee (whom we may appoint if Respondents fail to divest the required assets in accordance with the Order). Final Order ¶ V.C.

specific provisions that warrant discussion. We begin this discussion by noting that the Supreme Court has recognized that "[t]he relief which can be afforded" from an illegal acquisition "is not limited to the restoration of the status quo ante."[568] "There is no power to turn back the clock. Rather, the relief must be directed to that which is 'necessary and appropriate in the public interest to *eliminate the effects* of the acquisition offensive to the statute.'"[569] With this standard in mind, we explain the ancillary relief we have ordered in this matter.

We have included in the assets to be divested not only those assets necessary to build the four relevant products but also those necessary to build water tank products, similar to those tanks historically built by PDM's Water Division. Respondents argue that such additional relief is inappropriate, because it does nothing to restore the competition in the relevant markets.[570] They also argue that there is no evidence that a purchaser needs other tank assets to compete in the relevant markets.[571] Complaint Counsel, on the other hand, point to the irregular timing of sales in the relevant markets and the facts that PDM's EC and Water Divisions were inter-related before the acquisition and were sold together as a going concern. They assert that given these facts, PDM's Water Division assets are necessary to ensure the viability of a newly-created entrant.[572]

We think that Complaint Counsel have the stronger argument but acknowledge that it is impossible to know whether a new entrant must have the assets similar to those of PDM's Water

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[568] *Ford Motor Co.*, 405 U.S. at 573 n.8.

[569] *Id*. (emphasis in original) (citations omitted).

[570] RAB at 56-57.

[571] *Id*. *See supra* note 560.

[572] CCACAB at 78.

Division in order to compete in the relevant markets. However, there is no evidence to suggest that a smaller set of assets than those illegally acquired by CB&I will suffice to restore competition, and what we know with certainty is that this combination of assets has made a saleable package in the past. Thus, we follow the Supreme Court's guidance in *du Pont* and resolve this dispute in favor of including broader rather than narrower relief. The Court in *du Pont* stated that "it is well settled that once the Government has successfully borne the considerable burden of establishing a violation of law, all doubts as to the remedy are to be resolved in its favor."[573] We find this rule especially compelling where – as here – Complaint Counsel have established such a strong prima facie showing, including the fact that entry is extremely difficult in each of the relevant markets. Moreover, to ensure that narrower relief is available if it is warranted by market conditions, we have included a provision that allows the exclusion of the water tank assets if the acquirer and monitor trustee both find them unnecessary and agree to exclude them.

The Order also requires CB&I to divide its customer contracts between its newly-created subsidiaries (New CB&I and New PDM) as successors to CB&I. While this may seem a drastic step at first blush, we find it a necessary one under the circumstances of this case. As we discussed in Part III.C, *supra*, a supplier must gain experience and a good reputation from past jobs to compete effectively in each of the relevant markets. This task is difficult not only because of technical requirements, customer preferences, and the need to match the long-honed experience and reputation of the incumbent firm, CB&I, but also because the irregular timing of the sales in these markets. Without a division of customer contracts, a purchaser would have virtually no on-going business on which to build a reputation and would have no way of knowing when – or if – it might make a sale.

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[573] *Du Pont*, 366 U.S. at 330.

The Supreme Court has recognized the importance of a customer base. In response to a vertical merger by which Ford Motor Company acquired a spark-plug manufacturer with a 15 percent market share, the Court upheld ancillary relief designed to provide the divested entity "an assured customer while it struggles to be re-established as an effective, independent competitor."[574] We find that approach equally valid where CB&I, through its illegal acquisition of PDM, has gained monopoly or near-monopoly power in markets characterized by extremely difficult and time-consuming entry. We thus conclude that a division of contracts is necessary to ensure that the purchaser will be able to gain the requisite experience in these markets and restore the vibrant competition lost from the acquisition. Moreover, to the extent that CB&I is unable to transfer or assign customer contracts, the Order requires CB&I – the party best-situated to deal with these issues – to "enter into such agreements, contracts, or licenses as are necessary to realize the same effect as such assignment or transfer."[575]

We have also required CB&I to facilitate the transfer of employees so that New PDM and New CB&I each have the technical expertise to complete the customer contracts assigned to them and to bid on and complete new customer contracts. The evidence overwhelmingly demonstrates that experience is the lynchpin to success in any of the relevant markets, which logically means that the transfer of employees is crucial to this divestiture's success. To effectuate this transfer and to ensure the employees are fairly allocated, our Order further requires CB&I to: (1) provide the acquirer with information about its employees, (2) remove contractual impediments that could prevent employees

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[574] *Ford Motor Co.*, 405 U.S. at 576-577.

[575] Final Order ¶ III.B.

from accepting employment with the acquirer,[576] (3) provide certain financial incentives to employees who accept offers of employment from the acquirer, and (4) refrain from inducing employees hired by the acquirer to terminate their employment with the acquirer.

Finally, we turn to issues concerning the provision of technical assistance and administrative services. Complaint Counsel object to the ALJ's failure to order technical assistance and administrative services. Like the ALJ, we recognize that such requirements raise the possibility of coordination in markets with few major participants. As we have noted throughout this Opinion, the relevant products all require a great deal of technical competence and knowledge to produce – some of which is proprietary information known only to CB&I. We anticipate, however, that the transfer of employees will likely provide the

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[576] Such impediments can include, but are not limited to, "any non-compete or confidentiality provisions of employment or other contracts with CB&I that would affect the ability of the Relevant Business Employee to be employed by the Acquirer." Final Order ¶ IV.D.2.(ii). Respondents argue that this provision "encourages the exchange of confidential business information between competitors and denies CB&I confidentiality regarding issues unrelated to the relevant products." RRCARB at 56. Respondents' first argument in fact supports the need for a monitor trustee, who can ensure that any problems related to an information exchange are resolved without violating the law. With regard to Respondents' second point, we note that the purpose of the provision is to ensure that current CB&I employees are not prevented from working for the acquirer by a breach of contract suit (or the threat of it). The provision is thus qualified as requiring a waiver only as to contractual provisions that "would affect the ability" of the transferred employee "to be employed by the [a]cquirer." Final Order ¶ IV.D.2.(ii). This qualifier should protect CB&I's interest with respect to those products not involved in the divestiture.

technical competence and knowledge needed for the acquirer to produce the relevant products without the technical assistance of CB&I. Because technical knowledge typically resides with the people who implement it, we believe that the acquiring firm's need for technical assistance and administrative services may be inversely proportional to the quantity and quality of experienced personnel who transfer from CB&I to the acquiring firm.

Of course, apart from directing CB&I to provide incentives and remove obstacles to facilitate employee transfers, we cannot control the degree to which the transfers occur. We are also unable to predict at this point in the divestiture process whether a critical mass of employees will make the transfer to adequately provide the necessary knowledge and technical competence to the acquirer (and obviate any need for the acquiring entity to seek either assistance or services from CB&I).[577] Given these uncertainties, we conclude, as we did with respect to the divestiture of PDM's Water Division assets, that the monitor trustee must determine whether, and if so to what extent, these services may be necessary to restore the competition lost through the acquisition. We believe this issue needs to be finally resolved in the context of our review of a specific divestiture package for prior approval.

Accordingly, we direct the monitor trustee to include in the final report to the Commission concerning the sale of the divested assets, a recommendation regarding the need for such services

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[577] We also note that even with transfer of experienced personnel, there remains the possibility that technical assistance may be required. As we have stated, constructing the relevant products is extremely difficult and draws on the knowledge and experience of a variety of CB&I employees. Therefore, it is possible that transferred employees, while experienced and able to construct these products in a general sense, may have gaps in their knowledge that would necessitate assistance (at least in the short term).

and, if he or she believes there is such a need, a recommendation with respect to the provision, manner, and duration of these services.[578] We will consider this recommendation along with the acquiring firm's need for such assistance when we exercise our right of prior approval of the final divestiture package. If we determine that the provision of such services is a necessary part of the divestiture package, we will allow CB&I to recover its costs from any assistance it provides, which should ensure that the acquirer seeks CB&I's help only to the extent necessary. While we prefer a complete disentanglement between CB&I and the acquiring firm, we recognize that some level of assistance may be necessary to enable the acquiring firm to compete successfully.

Even though we did not accept Complaint Counsel's Proposed Order in its entirety, a number of our Order's provisions raise issues similar to those that Respondents raised in opposition to Complaint Counsel's proposals. Specifically, Respondents objected to the requirements that: (1) CB&I transfer employees to the divested entity,[579] (2) CB&I assign customer contracts other than those formerly held by PDM,[580] (3) CB&I waive contractual impediments to its employees' working for the acquirer,[581] and (4) CB&I provide transitional assistance.[582] Respondents argue that

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[578] We require the monitor trustee's assessment because we recognize that an information imbalance may exist between CB&I and the acquiring firm, which may not be in the best position to assess fully all of its needs before acquiring the divested assets. Given the monitor trustee's neutral role in the process, we anticipate that he or she will have access to information that the acquiring firm may not be able to get.

[579] RRCARB at 50-52.

[580] *Id*. at 52-56.

[581] *Id*. at 56.

[582] *Id*. at 57.

the evidence does not establish that any of these requirements are necessary for an effective divestiture and that these requirements may, in fact, harm competition.[583] However, as we have just discussed, we find that the evidence provides clear support for these requirements.

In sum, we find that the additional water tank assets, allocation of customer contracts, and transfer of employees are necessary to ensure that the divested entity can compete effectively in the relevant markets. Depending on the details of the divestiture package, we also find it possible that the provision of technical assistance and administrative services may be needed for the divestiture to be effective. The record is replete with evidence that these markets are very difficult to enter and that a new entrant must have experience and a solid reputation. With these provisions, both New PDM and New CB&I will have on-going projects upon which to build a reputation as well as knowledgeable and skilled employees to do the work. Therefore, the Order should thus insert a competitive acquirer into the market and help replicate the competition lost from the acquisition.

B. Respondents' Other Arguments

Respondents make three additional arguments in opposition to divestiture and ancillary relief. First, they assert that a divestiture would harm competition by reducing "the number of competitors that can bid on large LNG projects."[584] Second, Respondents argue that they did not receive proper notice of the provisions of Complaint Counsel's Proposed Order and that Complaint Counsel's attempt to "raise new arguments" in the form of their cross-appeal to supplement the ALJ's order should be "rejected on

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[583] *See generally* RRCARB at 49-58.

[584] RAB at 52.

fundamental grounds of fairness."[585] Third, Respondents argue that before we consider implementing any of Complaint Counsel's Proposed Order, we should remand this case for additional evidence on remedy issues. We find that Respondents' arguments are not supported in the record or the law.

With respect to Respondents' first argument, we note at the outset that prior to its acquisition of PDM, CB&I had no trouble convincing LNG customers to consider its bids, and Respondents presented no evidence to show why returning CB&I to its pre-acquisition state will preclude it from being a viable supplier. Instead, they point to testimony from three customers in support of their argument. We find that this testimony – when read in context – does not support Respondents' position.

Calpine and CMS both testified that the financial and bonding capability of the two new companies would be of concern to them. However, we view their general testimony *in its totality* as stating the obvious – that LNG tank customers consider financial stability and bonding capacity in selecting a tank supplier. For example, in addition to testifying that he would be concerned about the new companies' ability to guarantee a job,[586] the Calpine representative testified that he "would have to take a fresh view of whether they would be put on the bid list."[587] Similarly, CMS did not testify "that a break-up would create two companies that CMS would not

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[585] RRCARB at 48.

[586] Tr. at 6510-11.

[587] Tr. at 6511. Respondents also cite testimony by a witness from Calpine that he did not believe that PDM would make Calpine's bid list and that CB&I's inclusion on the list would depend on what was left of the company. RAB at 53. However, he also testified that he had no knowledge of how either company would look post-divestiture and that he was merely speculating about the post-divestiture world. Tr. at 6538.

want to deal with" as Respondents suggest,[588] but rather testified that it "would have to look at" the impact a break-up would have on either company's ability to guarantee a job.[589]

We also find Respondents' reliance on testimony from El Paso misplaced. El Paso testified that the acquisition gave it some comfort in CB&I's ability to guarantee a job (because El Paso can now seek more assets in the event CB&I fails to construct the tank). However, this testimony says nothing about El Paso's comfort level with CB&I pre-merger or the impact of a Commission-required divestiture on El Paso's assessment of either CB&I or a new company going forward. It is thus not probative of the impact a divestiture will have in the LNG tank market. In fact, in its speculation about a post-divestiture world, El Paso did not testify that a break-up might cause it not to consider buying from either CB&I or a new company, but rather that "it would be less inclined to do any more than maybe one or two jobs with them total."[590] For obvious reasons, this testimony does not suggest that either New CB&I or New PDM will be unable to compete post-divestiture.

We have also considered Respondents' argument that they did not receive proper notice of Complaint Counsel's Proposed Order.

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[588] RAB at 54.

[589] Tr. at 6265. Furthermore, the quote from a CMS employee that CMS "wouldn't have wanted anyone smaller than CB&I," which Respondents cite as evidence of the potential harm that will flow from a divestiture, is taken out of context. *See* RAB at 54. Rather than discussing the potential impact of a divestiture, this testimony discusses the ability of the new entrants to guarantee their work. Tr. at 6288-89 (*in camera*). Given the context, it is inappropriate to interpret this customer's testimony as a commentary on divestiture.

[590] Tr. at 6155-56.

We reject this assertion as lacking factual support. Far from providing the "barest" sketch, the Notice of Contemplated Relief that accompanied the Complaint in this matter stated that if CB&I's acquisition of PDM was found to violate either Section 5 of the FTC Act or Section 7 of the Clayton Act, the Commission could order, among other things, "[r]eestablishment by CB&I of two distinct and separate, viable, and competing businesses, one of which shall be divested by CB&I." Later in the same paragraph, the Notice elaborated that a divestiture could include "such other businesses as necessary to ensure each [new business's] viability and competitiveness" in the relevant markets, and "all intellectual property, knowhow, trademarks, trade names, research and development, customer contracts, and personnel, including but not limited to management, sales, design, engineering, estimation, fabrication, and construction personnel . . ." We thus reject Respondents' claim that they were not on notice that the relief in this case might include the assignment of contracts, the transfer of employees, and the divestiture of water tank assets similar to those acquired by CB&I from PDM's Water Division.[591]

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[591] We note that the technical assistance and administrative services requirements are not specifically enumerated in the Notice but rather are covered under the language "and such other arrangements as necessary or useful in restoring viable competition in the lines of commerce alleged in the complaint." Plainly, "such other arrangements" encompass terms that were not specifically enumerated but are related to the enumerated relief and geared to make such relief effective. As discussed above, that is precisely the nature of the additional terms at issue. Moreover, Respondents have not proffered any new evidence – in their appeal or cross-appeal response, or at oral argument – to counter the evidence that suggests such a provision will be necessary to ensure effective competition. In any event, as we have discussed, the requirement to provide such assistance or services may be rendered unnecessary, depending on the contours of the final agreement negotiated by CB&I and the Acquirer and approved by

Furthermore, it should hardly come as a surprise that the type of general language contained in the Notice of Contemplated Relief often triggers the types of specific provisions set forth in our Order. For example, a number of consent orders that the Commission has entered into over the last several years included provisions that required the respondents to effectuate employee transfers by both removing contractual impediments[592] and

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the Commission. In addition, we note that the provisions allow Respondents to recover their costs for providing these services, so the provisions should result in no economic harm to CB&I. Thus, having weighed these factors, we conclude that the inclusion of these provisions is equitable.

[592] *See Baxter Int'l Inc. and Wyeth,* Dkt. No. C-4068 (Feb. 3, 2003) (Decision and Order), *available at* http://www.ftc.gov/opa/2003/02/baxter_wyethdo.pdf (requiring respondent to "remove any impediments within the control of Respondents that may deter these employees from accepting employment with the . . . [a]cquirer, including, but not limited to, any non-compete provisions of employment or other contracts with Respondents that would affect the ability or incentive of those individuals to be employed by the . . . [a]cquirer" (¶ II.H)); *MSC.Software Corp.*, Dkt No. 9299 (Oct. 29, 2002) (Decision and Order), *available at* http://www.ftc.gov/os/2002/11/mscdo.pdf (requiring that respondent shall "eliminate any non-compete restrictions that would otherwise prevent employment of such employees by the Acquirer; and shall eliminate any confidentiality restrictions that would prevent employees who accept employment with the Acquirer from using or transferring to the Acquirer any information or Intellectual Property that is in the employee's memory or that is part of the Licensed Rights" (¶ V.C.3.)); *Amgen, Inc. and Immunex Corp.*, Dkt. No. C-4056 (Sept. 3, 2002) (Decision and Order), *available at* http://www.ftc.gov/os/2002/09/amgendo.pdf (requiring respondents to "remove any impediments within the control of Respondents that may deter these employees from accepting

providing financial incentives.[593] In addition, while the issue of contract allocation does not occur as frequently as the other provisions Respondents have challenged, it should be noted that in cases involving such issues, the Commission's orders have set forth a requirement that the respondents realize the same effect of a transfer or assignment in the event that they are unable to transfer contractual rights.[594] We are mindful that a consent order is not binding authority in a legal sense. Nonetheless, the fact that these provisions appear time and again – and without substantial variation – demonstrates that those same provisions could logically be part of a remedy for an acquisition that has been adjudged illegal.

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employment with the Commission-approved Acquirer, including, but not limited to, any non-compete provisions of employment or other contracts with Respondents that would affect the ability or incentive of those individuals to be employed by the Commission-approved Acquirer" (¶ II.I)).

[593] *See Baxter/Wyeth, supra* note 592 (requiring respondents to provide employees with incentives to accept employment with the acquirer, including a bonus equal to 10 percent of the employee's current salary and commissions (including any annual bonuses_ (¶ II.H.4.)); *Amgen/Immunex, supra* note 592 (requiring respondents to provide employees "an incentive equal to three (3) months of [an] . . . employee's base annual salary" to accept employment with the Commission-approved acquirer (¶ II.J)).

[594] *See, e.g., Conoco Inc. and Phillips Petroleum Co.,* Dkt. No. C-4058 (Feb. 7, 2003) (Decision and Order), *available at* http://www.ftc.gov/os/2003/02/conocophillipsdo.htm (requiring respondents to assign customer contracts (¶ II.B.) and to "substitute equivalent assets or arrangements" in the event that they are unable to effectuate a transfer of contractual rights (¶¶ II.J, II.L., V.E)).

Respondents' last argument is that Complaint Counsel were required to present some evidence that their remedy is likely to be efficacious and that their failure to do so "deprived [Respondents] of proper judicial resolution on the issue of remedy."[595] They thus contend that before we implement any provisions of Complaint Counsel's Proposed Order, we must remand this case to take evidence on the remedy issue. Respondents are certainly correct that a "party has the right to judicial resolution of disputed facts not just as to the liability phase, but also as to appropriate relief."[596] It is also true that Complaint Counsel did not introduce evidence showing definitively that their proposed remedy will be efficacious and feasible once it is implemented. However, the standard Respondents propose is not grounded in the law, which asks only whether "the relief required effectively . . . eliminate[s] the tendency of the acquisition condemned by §7."[597] In this vein, Complaint Counsel presented evidence – discussed at length in this Opinion – that demonstrates that a new entrant would need experience, knowhow, and a solid reputation to compete effectively. This is, of course, the type of evidence that courts have consistently used to determine whether ancillary relief is warranted to reverse the anticompetitive effects of an illegal acquisition.[598] As we discussed in the previous section, this evidence led us to find that the relief ordered in the Initial Decision "leaves a substantial likelihood that the tendency

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[595] RRCARB at 49; *see generally Id.* at 49-57.

[596] RRCARB at 49 (citing *du Pont*, 353 U.S. at 607); *see also United States v. Microsoft Corp.*, 253 F.3d 34, 101 (D.C. Cir. 2001) ("A hearing on the merits – *i.e.*, a trial on liability – does not substitute for a relief-specific evidentiary hearing unless the matter of relief was part of the trial on liability, or unless there are no disputed factual issues regarding the matter of relief.").

[597] *Du Pont*, 366 U.S. at 325.

[598] *See, e.g.*, *Ford Motor Co.*, 405 U.S. at 572-78 (finding the ancillary provisions necessary given certain market conditions).

towards monopoly of the acquisition condemned by §7 has not been satisfactorily eliminated."[599] We thus have decided to include additional water tank assets, to order Respondents to divide current contracts and to effectuate the transfer of employees to the new companies, and to require Respondents to provide the new company with technical assistance and administrative support.

We also decline to remand this case to receive evidence on remedy. Although Respondents assert that the appellate court's decision in *Microsoft* requires a remand, we do not agree. As the ALJ concluded, *Microsoft* is inapposite, because it is not a merger case and that decision "does not impose on Complaint Counsel the burden of presenting evidence related to the effectiveness of Complaint Counsel's proposed remedy for this violation of the Clayton Act."[600] In addition, unlike in the *Microsoft* case, Respondents have not proffered any new evidence to dispute the remedy provisions they challenge.[601] Instead, they argue that Complaint Counsel did not present evidence to demonstrate the efficacy of their remedy and that the customer testimony *in the record* demonstrates that a divestiture may harm competition. Because we have already resolved these disputes in our analysis, we find no reason to delay these proceedings further, and accordingly we have issued a Final Order.

In addition, the other case law that Respondents cite – *du Pont*, *Ford Motor*, and *Ward Baking* – does not support their argument.[602] In *du Pont*, the Supreme Court ordered divestiture and remanded as to the specifics of any ancillary relief, because

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[599] *Du Pont*, 366 U.S. at 331-32.

[600] ID at 120.

[601] *United States v. Microsoft Corp.*, 253 F.3d at 98-103.

[602] *See* RAB 54-56; RRCARB at 49-50.

the record bore "on the tax and market consequences for the owners of the du Pont and General Motors stock" rather than on "the competition-restoring effect of the several proposals."[603] As we have discussed, the evidence in case before us forms the basis of the relief we have ordered. Therefore, *du Pont* does not apply to these facts. Respondents also point out that the Court in *Ford Motor* required the remedy at issue to be supported in the evidence. Yet in finding support for the ancillary relief in that case, the Court looked to the very types of evidence that exist in the record of the present case – the structure and competitive conditions of the market.[604] Finally, we find *Ward Baking* wholly inapplicable to this case. The issue before the Court in *Ward Baking* was whether the district court properly entered a consent judgment without the actual consent of the government (which had objected to the judgment and asked for stronger relief).[605] Indeed, the Court in *Ward Baking* held that the government could not be foreclosed from a right to go to trial and returned the case to the trial court so the government could prove the scope of the alleged law violation.[606]

Thus, having found that CB&I's acquisition of PDM's Erected Construction Division violates both Section 7 of the Clayton Act and Section 5 of the FTC Act, we order divestiture and ancillary relief as prescribed by our attached Order.

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[603] *Du Pont*, 366 U.S. at 320-21.

[604] *See generally Ford Motor Co.*, 405 U.S. at 572-77.

[605] *United States v. Ward Baking Co.*, 376 U.S. 327 (1964).

[606] *Id*. at 334-35.

FINAL ORDER

This matter having been heard by the Commission upon the appeal of Respondents and the cross-appeal of Complaint Counsel, and upon briefs and oral argument in support thereof and opposition thereto, and the Commission for the reasons stated in the accompanying Opinion having determined to sustain the Initial Decision with certain modifications:

It is ordered that the Initial Decision of the administrative law judge be, and it hereby is, adopted as the Findings of Fact and Conclusions of Law of the Commission, to the extent not inconsistent with the findings of fact and conclusions contained in the accompanying Opinion.

Other findings of fact and conclusions of law of the Commission are contained in the accompanying Opinion.

It is further ordered that the following Order to cease and desist be, and it hereby is, entered:

Order

I.

It is ordered that, for the purposes of this Order, the following definitions shall apply:

A. "Acquirer" means an entity approved by the Commission to acquire the Relevant Business and assets of New PDM or New CB&I pursuant to this Order.

B. "Acquisition" means the transaction between CB&I and PDM, consummated on February 7, 2001, in which CB&I acquired the assets and business of PDM's Water Division and Engineered Construction Division.

C. "Administrative Services" means accounting, purchasing, warehousing, and other administrative services needed to operate the Relevant Business.

D. "CB&I" means Respondent Chicago Bridge & Iron Company N.V. and Respondent Chicago Bridge & Iron Company, individually and collectively, as well as their respective directors, officers, employees, agents, representatives, predecessors, successors, and assigns; each subsidiary, division, group, and affiliate controlled by Chicago Bridge & Iron Company N.V. or Chicago Bridge and Iron Company, and the respective directors, officers, employees, agents, representatives, successors, and assigns of each such entity.

E. "CB&I License" means (i) a worldwide, royalty-free, perpetual, irrevocable, transferable, sublicensable, non-exclusive license to all Intellectual Property owned by or licensed to CB&I for any use and (ii) such tangible embodiments of the licensed rights (including but not limited to physical and electronic copies) as may be necessary or appropriate to enable the Acquirer to utilize the licensed rights.

F. "Commission" means the Federal Trade Commission.

G. "Customer Contracts" means all agreements and rights under agreements (including sole-source arrangements, phased contracting, and phased bidding arrangements) between Respondents and any Person(s) pursuant to which Respondents supply services or products relating to the Relevant Business to such Person(s).

H. "Direct Cost" means the cost of direct material and direct labor used to provide the relevant assistance or service.

I. "Divestiture Trustee" means a person appointed with the Commission's approval to effect the divestiture requirements of this Order.

J. "Intellectual Property" means, without limitation, (i) all trade names, registered and unregistered trademarks, service marks and applications, domain names, trade dress, copyrights, copyright registrations and applications, in both published works and unpublished works; (ii) all patents, patent applications, and inventions and discoveries that may be patentable; and (iii) all know-how, trade secrets, confidential information, customer lists, customer records and files, bidding and estimating documents, software, technical information, data, registrations, applications for governmental approvals, processes and inventions, practices, standards, formulae, recipes, methods, and product and packaging specifications.

K. "Monitor Trustee" means a person appointed with the Commission's approval to oversee the divestiture requirements of this Order.

L. "New CB&I" means the Relevant Business and assets that must be organized pursuant to Paragraph III of this Order but need not be divested except in the manner and to the extent provided in Paragraph V of this Order.

M. "New PDM" means the Relevant Business and assets that must be organized pursuant to Paragraph III of this Order and that the Commission requires to be divested pursuant to Paragraph IV of this Order.

N. "PDM" means Pitt-Des Moines, Inc., its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; its subsidiaries, divisions, groups, and affiliates controlled by Pitt-Des Moines, Inc., and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.

O. "Person" means any individual, partnership, firm, corporation, association, trust, unincorporated organization, governmental body, or other entity.

P. "Relevant Business" means all employees, managers, and supervisors and all assets of every description, including but not limited to:

1. All real property (including fee simple interests and real property leasehold interests), including but not limited to the fabrication facilities wherever located;

2. All personal property;

3. All inventories, stores, and supplies;

4. All rights under any contract, including but not limited to any lease, Customer Contract, supply agreement, sole-source arrangement, and procurement contract;

5. All Intellectual Property;

6. All governmental approvals, consents, licenses, permits, waivers, or other authorizations;

7. All rights under warranties and guarantees, express or implied;

8. All items of prepaid expense; and

9. All books, records, and files

engaged, directly or indirectly, in all aspects of engineering, designing, estimating, bidding, procuring, fabricating, erecting, rehabilitating, or selling any: water storage tank or system; industrial process system, including but not limited to any digester, absorber, reactor, and tower; flat bottom tank; pressure vessel or sphere; low temperature or cryogenic tank or

system; vacuum chamber or system; steel plate fabrication; and specialty structure, including the Relevant Products.

Q. "Relevant Business Employee" means any person currently or previously employed by CB&I in the Relevant Business, including but not limited to management, sales, and marketing personnel, engineers, draftsmen, estimators, purchasers, and field personnel.

R. "Relevant Products" means those products identified and described in the accompanying Opinion as (1) thermal vacuum chambers, (2) liquified natural gas tanks, (3) liquid petroleum gas tanks, and (4) liquid nitrogen, liquid oxygen, and liquid argon tanks.

S "Technical Assistance" means providing expert advice, assistance, and training with respect to the operation of the Relevant Business.

II.

It is further ordered that:

A. Within thirty (30) days after this Order is final, Respondents shall retain a Monitor Trustee, acceptable to the Commission, to monitor Respondents' compliance with their obligations under this Order, consult with Commission staff, and report to the Commission regarding Respondents' compliance with their obligations under this Order.

B. If Respondents fail to retain a Monitor Trustee as provided in Paragraph II.A of this Order, a Monitor Trustee, acceptable to the Commission, shall be identified and selected by the Commission's staff within forty-five (45) days after this Order is final.

C. Respondents shall consent to the following terms and conditions regarding the powers, duties, authorities, and

responsibilities of the Monitor Trustee selected under Paragraph II.A or II.B of this Order:

1. The Monitor Trustee shall have the power and authority to monitor Respondents' compliance with the terms of this Order and shall exercise such power and authority and carry out the duties and responsibilities of the Monitor Trustee pursuant to the terms of this Order and in a manner consistent with the purposes of this Order, in consultation with Commission's staff.

2. Within ten (10) days after Commission's approval of the Monitor Trustee, Respondents shall execute an agreement that, subject to the approval of the Commission, confers on the Monitor Trustee all the rights and powers necessary to permit the Monitor Trustee to monitor Respondents' compliance with the terms of this Order in a manner consistent with the purposes of this Order. If requested by Respondents, the Monitor Trustee shall sign a confidentiality agreement prohibiting the use, or the disclosure to anyone other than the Commission (or any Person retained by the Monitor Trustee pursuant to Paragraph II.C.5 of this Order), of any competitively sensitive or proprietary information gained as a result of his or her role as Monitor Trustee, for any purpose other than performance of the Monitor Trustee's duties under this Order.

3. The Monitor Trustee's power and duties under this Paragraph II shall terminate three (3) business days after the Monitor Trustee has completed his or her final report pursuant to Paragraph II.C.8, or at such other time as directed by the Commission.

4. Respondents shall provide the Monitor Trustee with full and complete access to Respondents' books, records, documents, personnel, facilities and technical information relating to compliance with this Order, or to any other

relevant information that the Monitor Trustee may reasonably request. Respondents shall cooperate with every reasonable request of the Monitor Trustee. Respondents shall take no action to interfere with or impede the Monitor Trustee's ability to monitor Respondents' compliance with this Order.

5. The Monitor Trustee shall serve, without bond or other security, at the expense of Respondents, on such reasonable and customary terms and conditions as the Commission may set. The Monitor Trustee shall have authority to employ, at the expense of Respondents, such consultants, accountants, attorneys and other representatives and assistants as are reasonably necessary to carry out the Monitor Trustee's duties and responsibilities. The Monitor Trustee shall account for all expenses incurred, including fees for his or her services, subject to the approval of the Commission.

6. Respondents shall indemnify the Monitor Trustee and hold him or her harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Monitor Trustee's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for or defense of any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from the Monitor Trustee's gross negligence or willful misconduct. For purposes of this Paragraph II.C.6, the term "Monitor Trustee" shall include all Persons retained by the Monitor Trustee pursuant to Paragraph II.C.5 of this Order.

7. If at any time the Commission determines that the Monitor Trustee has ceased to act or failed to act diligently, or is unwilling or unable to continue to serve, the Commission may in its discretion appoint a substitute to serve as

Monitor Trustee in the same manner as provided by Paragraph II.A or II.B of this Order.

8. The Monitor Trustee shall report in writing to the Commission (i) every sixty (60) days from the date the Monitor Trustee is appointed, (ii) at the time a divestiture package is presented to the Commission for its approval, such report to include appropriate recommendations regarding (a) the sale of the flat bottom tank, pressure vessel or sphere, and low temperature tanks or systems, (b) the need for, and, if appropriate, the terms applicable to the provision of technical assistance and administrative services, and (c) the qualifications of each proposed acquirer, and (iii) at any other time as requested by the staff of the Commission, concerning Respondents' compliance with this Order.

D. On its own initiative or at the request of the Monitor Trustee, the Commission may issue such additional orders or directions as may be necessary or appropriate to assure compliance with the requirements of this Order.

III.

It is further ordered that:

A. Within ninety (90) days after the date on which this Order becomes final, CB&I shall reorganize its Relevant Business into two independent, stand-alone operating divisions or subsidiaries, respectively New PDM and New CB&I, each fully, equally, and independently engaged in all aspects of the Relevant Business. The purpose of this Paragraph III is to create two stand-alone business entities, each having approximately equal shares of the markets for the Relevant Products, each fully capable of being divested, and each fully (and, to the extent practicable, equally) engaged in all aspects of the Relevant Business.

B. In connection with the reorganization mandated by Paragraph III.A of this Order, and in consultation with the Monitor Trustee and the Commission's staff, CB&I shall accomplish all actions necessary to ensure that New PDM and New CB&I are each assigned Customer Contracts, equitably apportioned among the types of products relating to the Relevant Business, to the extent necessary to effect the purpose of Paragraph III.A; *provided, however*, that if for any reason CB&I is unable to accomplish such an assignment or transfer of Customer Contracts, it shall enter into such agreements, contracts, or licenses as are necessary to realize the same effect as such transfer or assignment.

C. Respondents shall transfer to New PDM and to New CB&I all necessary Relevant Business Employees so that each such entity shall possess the technical experience and expertise: (i) to complete all Customer Contracts assigned or transferred to it, (ii) to bid on and obtain new Customer Contracts relating to the Relevant Business, and (iii) to complete any new Customer Contracts relating to the Relevant Business in substantially the same manner and quality employed or achieved by CB&I in the conduct of the Relevant Business prior to the date on which this Order becomes final.

IV.

It is further ordered that:

A. No later than one hundred eighty (180) days from the date this Order becomes final, Respondents shall divest New PDM, absolutely and in good faith, at no minimum price, only to an Acquirer that receives the prior approval of the Commission and only in a manner that receives the prior approval of the Commission (including an executed divestiture agreement, which shall not vary from or contradict, or be construed to vary from or contradict, the terms of this Order); *provided, however*, that if the Acquirer, with the concurrence of the Monitor Trustee, determines that acquiring any or all of the following

assets is not necessary to achieve the purposes of this Order, then Respondents need not divest assets that involve no Relevant Products and are related exclusively to engineering, designing, estimating, bidding, procuring, fabricating, erecting, rehabilitating, or selling any water storage tank or system; any industrial process system, including but not limited to any digester, absorber, reactor, and tower; any flat bottom tank; any pressure vessel or sphere; any low-temperature or cryogenic tank or system; any vacuum chamber or system; any steel plate fabrication; or any specialty structure.

B. Respondents shall comply with all terms of the divestiture agreement approved by the Commission pursuant to this Order, which agreement shall be deemed incorporated by reference into this Order, and any failure by Respondents to comply with the terms of such divestiture agreement shall constitute a failure to comply with this Order.

C. No later than the date New PDM is divested, CB&I shall grant to the Acquirer a CB&I Licence for use in the conduct of all business acquired under Paragraph IV.A of this Order.

D. Respondent shall take all actions necessary to assure the employment by the Acquirer of any Relevant Business Employee whose transfer to the Acquirer is required by this Order, including but not limited to:

1. No later than four (4) weeks before the execution of an agreement to divest New PDM, CB&I shall (i) provide to the Acquirer a list of all Relevant Business Employees; (ii) provide any available contact information, including last known address for any Person formerly employed by any Respondent in the Relevant Business, and whose employment ended after September 8, 2000; (iii) provide the Acquirer an opportunity to interview any Relevant Business Employee; and (iv) allow the Acquirer to inspect the personnel files and other documentation relating to such employees or to any Person formerly employed by any

Respondent in the Relevant Business, to the extent permissible under applicable laws.

2. CB&I shall (i) not offer any incentive to any Relevant Business Employee to decline employment with the Acquirer; (ii) remove any contractual impediments that may deter any Relevant Business Employee from accepting employment with the Acquirer, including but not limited to any non-compete or confidentiality provisions of employment or other contracts with CB&I that would affect the ability of the Relevant Business Employee to be employed by the Acquirer; and (iii) not interfere with the employment by the Acquirer of any Relevant Business Employee.

3. CB&I shall provide such Relevant Business Employees with financial incentives to accept a position with the Acquirer at the time of divestiture, including but not limited to (i) vesting of all current and accrued pension benefits as of the date of transition of employment to the Acquirer; (ii) continuation of all employee benefits offered by CB&I until the date New PDM is divested; and (iii) no later than thirty (30) days from the date CB&I divests New PDM, payment of a bonus to any Relevant Business Employee who accepts an offer of employment from the Acquirer.

4. For a period of two (2) years following the date on which the divestiture of New PDM to the Acquirer is completed, CB&I shall not, directly or indirectly, solicit, induce, or attempt to solicit or induce any Relevant Business Employee who has accepted an offer of employment with the Acquirer to terminate his or her employment relationship with the Acquirer unless that individual has been terminated by the Acquirer; *provided, however,* a violation of this provision will not occur if: (i) Respondents advertise for employees in newspapers, trade publications, or other media not targeted specifically at Relevant Business Employees, or (ii) Respondents hire employees

who apply for employment with Respondents, as long as such employees were not solicited by Respondents in violation of this Paragraph IV.D.4.

E. Respondents shall submit the following reports to the Monitor Trustee: (i) no later than forty-five (45) days from the date this Order becomes final, a report that identifies all assets of the Relevant Business (including but not limited to those listed in Paragraph I.P of this Order) and all Customer Contracts existing at the time this Order becomes final; and (ii) no later than sixty (60) days from the date this Order becomes final, a report that identifies and lists all contracts, assets, and employees that relate to the operation of the Relevant Business.

F. If in a divestiture agreement that receives the prior approval of the Commission, the Commission approves a Technical Assistance provision:

1. CB&I shall provide Technical Assistance to the Acquirer sufficient to enable the Acquirer to conduct the Relevant Business in substantially the same manner as that employed by CB&I prior to the date this Order becomes final.

2. In connection with such Technical Assistance, CB&I shall allow the Acquirer reasonable and timely access to CB&I's fabrication facilities for the purpose of inspecting fabrication operations relating to the operation of New PDM's Relevant Business.

Provided, however, that CB&I shall not (i) require the Acquirer to pay compensation for Technical Assistance that exceeds the Direct Cost of providing Technical Assistance; (ii) terminate its obligation to provide Technical Assistance because of a material breach by the Acquirer of any agreement concerning the provision of Technical Assistance, in the absence of a final order of a court of competent jurisdiction; or (iii) seek to limit the damages (such as indirect, special, and

consequential damages) that the Acquirer would be entitled to receive in the event of CB&I's breach of any agreement to provide Technical Assistance

G. If in a divestiture agreement that receives the prior approval of the Commission, the Commission approves an Administrative Services provision, CB&I shall provide Administrative Services to the Acquirer at substantially the same level of quality and efforts as those provided by CB&I in connection with CB&I's Relevant Business prior to the date this Order becomes final; *provided, however*, that CB&I shall not (i) require the Acquirer to pay compensation for Administrative Services that exceeds the Direct Cost of providing such Administrative Services; (ii) terminate its obligation to provide Administrative Services because of a material breach by the Acquirer of any agreement concerning the provision of Administrative Services, in the absence of a final order of a court of competent jurisdiction; or (iii) seek to limit the damages (such as indirect, special, and consequential damages) that the Acquirer would be entitled to receive in the event of CB&I's breach of any agreement to provide Administrative Services.

H. The purpose of the divestiture of New PDM is to remedy the lessening of competition alleged in the Commission's complaint in Docket No. 9300, to restore the competition lost as a result of the Acquisition, and to ensure the continued operation of the Relevant Business by New PDM and New CB&I in the same manner in which such business was operated at the time of the announcement of the Acquisition.

V.

It is further ordered that:

A. If Respondents have not divested, absolutely and in good faith, New PDM within the time and in the manner required by Paragraph IV.A of this Order, the Commission may at any time

appoint a Divestiture Trustee, who upon his or her appointment shall undertake to divest, in his or her discretion with the approval of the Commission, either New PDM or New CB&I in a manner that satisfies the purposes and requirements of this Order. In the event the Divestiture Trustee divests New CB&I, the terms of Paragraph IV of this Order shall apply to the divestiture of New CB&I in the same way in which they apply to New PDM.

B. In the event that the Commission or the Attorney General brings an action pursuant to Section 5(*l*) of the Federal Trade Commission Act, 15 U.S.C. § 45(*l*), or any other statute enforced by the Commission, Respondents shall consent to the appointment of a Divestiture Trustee in such action. Neither the appointment of a Divestiture Trustee nor a decision not to appoint a Divestiture Trustee under this Paragraph shall preclude the Commission or the Attorney General from seeking civil penalties or any other available relief, including appointment of a court-appointed Divestiture Trustee, pursuant to Section 5(*l*) of the Federal Trade Commission Act or any other statute enforced by the Commission, for any failure by the Respondents to comply with this Order.

C. The Commission shall select any Divestiture Trustee appointed under this Order, subject to the consent of Respondents, which consent shall not be unreasonably withheld. The Divestiture Trustee shall be a Person with experience and expertise in acquisitions and divestitures and may be the same Person as the Monitor Trustee appointed under Paragraph II of this Order. After receiving notice by the Commission's staff of the identify of any proposed Divestiture Trustee, Respondents shall have ten (10) days in which to submit a written statement to the Commission stating their reasons, if any, for opposing the selection of the Divestiture Trustee. Absent the timely submission of written objections, Respondents shall be deemed to have consented to the selection of the proposed Divestiture Trustee.

D. If a Divestiture Trustee is appointed by the Commission or a court pursuant to this Paragraph V, Respondents shall consent to the following terms and conditions regarding the Divestiture Trustee's powers, duties, authority, and responsibilities:

1. Subject to the prior approval of the Commission, the Divestiture Trustee shall have the exclusive power and authority to effect the divestiture for which he or she has been appointed pursuant to the terms of this Order and in a manner consistent with the purposes of this Order.

2. Within ten (10) days after appointment of the Divestiture Trustee, Respondents shall execute an agreement that, subject to the prior approval of the Commission and, in the case of a court-appointed Divestiture Trustee, of the court, transfers to the Divestiture Trustee all rights and powers necessary to permit the Divestiture Trustee to effect the divestiture for which he or she has been appointed.

3. The Divestiture Trustee shall have twelve (12) months from the date the Commission approves the agreement described in Paragraph V.C.2 of this Order to accomplish the divestiture of either New PDM or New CB&I, which shall be subject to the prior approval of the Commission. If, however, at the end of the twelve-month period the Divestiture Trustee has submitted a plan of divestiture or believes that divestiture can be achieved within a reasonable time, the divestiture period may be extended by the Commission or, in the case of a court appointed Divestiture Trustee, by the court.

4. Respondents shall provide the Divestiture Trustee with full and complete access to the personnel, books, records, and facilities related to the assets to be divested, or to any other relevant information, as the Divestiture Trustee may request. Respondents shall develop such financial or other information as the Divestiture Trustee may reasonably request and shall cooperate with the Divestiture Trustee.

Respondents shall take no action to interfere with or impede the Divestiture Trustee's accomplishment of the divestiture. Any delays in divestiture caused by Respondents shall extend the time for divestiture under this Paragraph in an amount equal to the delay, as determined by the Commission or, for a court-appointed Divestiture Trustee, by the court.

5. The Divestiture Trustee shall use his or her best efforts to negotiate the most favorable price and terms available in each contract that is submitted to the Commission, but shall divest expeditiously at no minimum price. The divestiture shall be made only to an Acquirer that receives the prior approval of the Commission, and the divestiture shall be accomplished only in a manner that receives the prior approval of the Commission; *provided, however,* if the Divestiture Trustee receives bona fide offers from more than one acquiring entity, and if the Commission determines to approve more than one such acquiring entity, the Divestiture Trustee shall divest to the acquiring entity or entities selected by Respondents from among those approved by the Commission; *provided, further,* that Respondents shall select such entity within five (5) business days of receiving written notification of the Commission's approval.

6. The Divestiture Trustee shall serve, without bond or other security, at the cost and expense of Respondents, on such reasonable and customary terms and conditions as the Commission or a court may set. The Divestiture Trustee shall have the authority to employ, at the cost and expense of Respondents, such consultants, accountants, attorneys, investment bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the Divestiture Trustee's duties and responsibilities. The Divestiture Trustee shall account for all monies derived from the divestiture and all expenses incurred. After approval by the Commission and, in the case of a court-

appointed Divestiture Trustee, by the court of the account of the Divestiture Trustee, including fees for his or her services, all remaining monies shall be paid at the direction of the Respondents, and the Divestiture Trustee's power shall be terminated. The Divestiture Trustee's compensation shall be based at least in significant part on a commission arrangement contingent on the Divestiture Trustee's divesting the assets.

7. Respondents shall indemnify the Divestiture Trustee and hold the Divestiture Trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Divestiture Trustee's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for or defense of any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from gross negligence or willful misconduct by the Divestiture Trustee. For purposes of this Paragraph V.C.7, the term "Divestiture Trustee" shall include all Persons retained by the Divestiture Trustee pursuant to Paragraph V.C.6 of this Order.

8. If the Divestiture Trustee ceases to act or fails to act diligently, the Commission may appoint a substitute Divestiture Trustee in the same manner as provided in this Paragraph V for appointment of the initial Divestiture Trustee.

9. The Divestiture Trustee shall have no obligation or authority to operate or maintain the assets to be divested.

10. The Divestiture Trustee shall report in writing to the Commission every sixty (60) days concerning the Divestiture Trustee's efforts to accomplish the divestiture.

E. On its own initiative or at the request of the Divestiture Trustee, the Commission (or, in the case of a court-appointed Divestiture Trustee, the court) may issue such additional orders or directions as may be necessary or appropriate to accomplish the divestiture required by this Order.

VI.

It is further ordered that from the date this Order becomes final until the date New PDM or New CB&I is divested to an Acquirer pursuant to this Order:

A. Respondents shall take such actions as are necessary to maintain the viability, marketability, and competitiveness of the Relevant Business of New PDM and New CB&I and all their assets, and shall prevent the destruction, removal, wasting, deterioration, sale, disposition, transfer, or impairment of the Relevant Business or the assets, except for ordinary wear and tear.

B. Respondents shall maintain the operations of the Relevant Business by New PDM and New CB&I in the ordinary course of business and in accordance with past practice (including regular repair and maintenance of the assets of the Relevant Business), and shall use best efforts to preserve the existing relationships with customers, suppliers, vendors, employees, landlords, creditors, agents, and others having business relations with New PDM, New CB&I, and the Relevant Business. Among other things as may be necessary, Respondents shall:

1. Use best efforts to maintain and increase sales of the Relevant Business by New PDM and New CB&I, and proportionately to maintain all administrative, technical, and marketing support for the Relevant Business of New PDM and New CB&I at the year 2002 or budgeted levels for the year 2003 (whichever are higher);

2. Use best efforts to maintain the current workforce and to retain the services of employees and agents relating to New PDM and New CB&I, including payment of bonuses as necessary;

3. Assure that Respondents' employees with primary responsibility for managing and operating New PDM and New CB&I are not transferred or reassigned to other areas within Respondents' organization, except for transfer bids initiated by employees pursuant to Respondents' regular, established job posting policy;

4. Provide sufficient working capital to maintain the Relevant Business of New PDM and New CB&I as economically viable and competitive ongoing businesses; and

5. Except as part of a divestiture approved by the Commission pursuant to this Order, not remove, sell, lease, assign, transfer, license, pledge for collateral, or otherwise dispose of New PDM or New CB&I Relevant Business assets.

C. Respondents shall cooperate with the Monitor Trustee appointed pursuant to Paragraph II of this Order and any Divestiture Trustee that may be appointed pursuant to Paragraph V of this Order in the performance of his or her obligations.

VII.

It is further ordered that:

A. Except in the course of performing their obligations under this Order, Respondents shall not (i) provide, disclose, or otherwise make available any trade secrets or any sensitive or proprietary commercial or financial information relating to New PDM or New CB&I to any Person or (ii) use any such information for any reason or purpose.

B. Respondents shall disclose trade secrets or sensitive or proprietary commercial or financial information relating to New PDM or New CB&I (i) only in the manner and to the extent necessary to satisfy their obligations under this Order and (ii) only to Persons who agree in writing to maintain the confidentiality of such information.

C. Respondents shall enforce the terms of this Paragraph VII as to any Person and take such action as is necessary, including training, to cause each such Person to comply with the terms of this Paragraph VII, including any actions that Respondents would take to protect their own trade secrets or sensitive or proprietary commercial or financial information.

VIII.

It is further ordered that, no later than ten (10) days from the date on which this Order becomes final, Respondents shall provide a copy of this Order to each of Respondents' officers, employees, or agents having managerial responsibility for any of Respondents' obligations under this Order.

IX.

It is further ordered that:

A. Respondents shall file a verified written report with the Commission setting forth in detail the manner and form in which they intend to comply, are complying, and have complied with this Order (i) no later than thirty (30) days from the date this Order becomes final, (ii) every thirty (30) days thereafter (measured from the due date of the first report under this Order) until the divestiture of New PDM is accomplished, and (iii) thereafter, every sixty (60) days (measured from the date of divestiture) until the Commission's staff advises Respondents in writing that, based on information available to the staff at that time, Respondents have substantially complied

with their obligations under Paragraphs II though VIII of this Order; *provided, however*, that Respondents shall also file the report required by this Paragraph IX at any other time as the Commission or its staff may require.

B. Respondents shall include in their compliance reports, among other things required by the Commission, a description of all substantive contacts or negotiations relating to the divestiture required by this Order, the identity of all parties contacted, copies of all written communications to and from such parties, internal documents and communications, and all reports and recommendations concerning the divestiture, the date of divestiture, and a statement that the divestiture has been accomplished in the manner approved by the Commission.

X.

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

XI.

It is further ordered that for the purpose of determining or securing compliance with this Order, and subject to any legally recognized privilege, and upon written request with reasonable notice, Respondents shall permit any duly authorized representative of the Commission:

A. Access, during office hours and in the presence of counsel, to all facilities and access to inspect and copy all non-privileged books, ledgers, accounts, correspondence, memoranda, and other records and documents in the possession or under the

control of Respondents relating to any matter contained in this Order; and

B. Upon five (5) days' notice to Respondents and without restraint or interference from them, to interview their officers, directors, or employees, who may have counsel present, regarding any such matters.

INITIAL DECISION

By D. Michael Chappell, Administrative Law Judge

I. INTRODUCTION

A. Federal Trade Commission Complaint

The Federal Trade Commission ("FTC") issued its Complaint in this matter on October 25, 2001. The Complaint charges that Chicago Bridge & Iron Company N.V., a foreign corporation, Chicago Bridge & Iron Company, a corporation (collectively, "CB&I") and Pitt-Des Moines, Inc. ("PDM"), a corporation, entered into an agreement in violation of Section 5 of the Federal Trade Commission Act ("FTC Act"), as amended. 15 U.S.C. § 45. The Complaint alleges that on or about February 7, 2001, CB&I acquired, pursuant to agreement with PDM, PDM's Water Division and Engineered Construction ("EC") Division for approximately $ 84 million ("the Acquisition"). The Complaint alleges that the relevant geographic market is the United States as a whole and that the relevant product markets are large, field-erected: (1) liquefied natural gas ("LNG") storage tanks (individually, or as a component of an import terminal or a LNG peak shaving plant); (2) refrigerated liquid petroleum gas ("LPG") storage tanks; (3) liquid nitrogen, oxygen and argon ("LIN/LOX") storage tanks; and (4) thermal vacuum chambers ("TVCs").

The Complaint charges two violations. Count I alleges the effect of the Acquisition may be substantially to lessen competition or tend to create a monopoly in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act. Count II alleges that CB&I and PDM ("Respondents"), through the Acquisition and the Acquisition agreement have engaged in unfair methods of competition in or affecting commerce in violation of Section 5 of the FTC Act.

B. Respondents' Answers

Following the issuance of the Complaint, the parties filed

three joint motions seeking extensions of time for Respondents to file the Answer to the Complaint. In each motion, the parties represented an extension was needed in order for the parties to pursue settlement of this action. CB&I and PDM each filed an Answer on February 4, 2002. Respondents denied most of the allegations of the Complaint. CB&I admitted that on February 7, 2001, CB&I completed its acquisition of certain assets of PDM related to its Water Division and Engineered Construction Division. Respondents asserted that the Acquisition has caused a repositioning, which has given an incentive to previously dormant competitors to invest in this business to attempt to replace PDM as a bidder in the relevant markets.

C. Procedural History

On August 29, 2000, CB&I and PDM entered into a letter of intent for CB&I to acquire PDM's Engineered Construction and Water Divisions. Respondents made their filings under the Hart-Scott-Rodino Act ("HSR"), 15 U.S.C. § 18a, on September 12, 2000. The initial waiting period under HSR expired on October 12, 2000.

The FTC did not seek a preliminary injunction in a U.S. district court, pursuant to Section 13(b) of the FTC Act, 15 U.S.C. § 53(b), to halt CB&I's impending acquisition. On February 7, 2001, CB&I completed its acquisition of certain assets of PDM's Water Division and Engineered Construction Division.

On October 25, 2001, the FTC issued its Complaint. After extensive pretrial discovery, the administrative trial in this case commenced on November 12, 2002. By Order signed on June 18, 2002 by the previous Administrative Law Judge in this litigation, Respondents' motion for a 60 day extension was granted, extending the deadline for filing the Initial Decision to December 25, 2002. By Order issued December 17, 2002, because the trial in this matter was then still proceeding, an additional 60 day extension was granted, extending the deadline for filing the Initial Decision to February 24, 2003.

The administrative trial concluded on January 16, 2003. On January 21, 2003, the parties filed a joint motion to extend the deadline for filing the Initial Decision. By Order dated January 28, 2003, extraordinary circumstances were found to exist sufficient to extend the deadline for filing the Initial Decision by an additional 60 days, to April 28, 2003. The January 28, 2003 Order also revised the post trial briefing schedule and closed the hearing record pursuant to Commission Rule 3.44(c). On April 24, 2003, in response to a request made pursuant to Commission Rule 3.51(a), the Commission issued an Order extending the time to file the Initial Decision until June 12, 2003.

D. Evidence

The Initial Decision is based on the transcript of the testimony, the exhibits properly admitted in evidence, and proposed findings of fact and conclusions of law and replies thereto filed by the parties. Citations to specific numbered Findings of Fact in this Initial Decision are designated by "F."

The parties submitted extensive post-trial briefs and reply briefs. The Initial Decision addresses only material issues of fact and law. Proposed findings of fact not included in the Initial Decision were rejected, either because they were not supported by the evidence or because they were not dispositive to the determination of the allegations of the Complaint. The Commission has held that Administrative Law Judges are not required to discuss the testimony of each witness or all exhibits that are presented during the administrative adjudication. In re Amrep Corp., 102 F.T.C. 1362, 1670 (1983). Administrative adjudicators are "not required to make subordinate findings on every collateral contention advanced, but only upon those issues of fact, law, or discretion which are 'material.'" Minneapolis & St. Louis Ry. Co. v. United States, 361 U.S. 173, 193-94 (1959).

On March 7, 2003, Respondents filed a motion to strike, seeking an order striking certain exhibits that were never admitted into evidence and striking a number of Complaint Counsel's Proposed Findings of Fact ("CCPFF") from the record. Complaint

Counsel filed its opposition to the motion to strike on March 13, 2003. By separate Order issued June 12, 2003, Respondents' motion was granted. For the reasons set forth in that Order, proposed findings of fact that fail to cite any evidence or that cite to documents, graphs, or charts not in evidence have been disregarded.

Many of the documents and parts of the oral testimony were received into the record in camera. Where an entire document or where certain trial testimony was given in camera treatment, but the portion of the document or the trial testimony utilized in this Initial Decision does not rise to the level necessary for in camera treatment, such information is disclosed in the public version of this Initial Decision, pursuant to Commission Rule 3.45(a) (the ALJ "may disclose such in camera material to the extent necessary for the proper disposition of the proceeding"). Material that has been given in camera treatment is indicated in bold font and brackets in the in camera version and is redacted from the public version of the Initial Decision, in accordance with 16 C.F.R. § 3.45(f).

E. Summary

As fully set forth below, Complaint Counsel has established by reliable and probative evidence that the effect of the Acquisition of PDM's EC and Water Divisions by CB&I may be to substantially lessen competition in the relevant markets. CB&I's asserted exiting assets defense fails as a matter of fact and law. Complaint Counsel has met its burden of proof on Count I and Count II of the Complaint. The appropriate remedy is divestiture.

II. FINDINGS OF FACT

A. Respondents

1. Chicago Bridge and Iron

1. Respondent Chicago Bridge & Iron Company N.V. is a

foreign corporation organized and existing under the laws of the Netherlands, with its principal place of business at Polarisavenue 31, 2132 JH Hoofddorp, The Netherlands. (Complaint P1; Answer P1).

2. Respondent Chicago Bridge & Iron Company ("CB&I"), a wholly owned subsidiary of Chicago Bridge & Iron Company N.V., is a corporation, as "corporation" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44, organized and existing under the laws of the State of Delaware, with its principal place of business at 1501 North Division Street, Plainfield, Illinois 60544. (Complaint P2; Answer P2).

3. Among other products and services, CB&I is engaged in the business of designing, engineering, manufacturing and constructing field-erected LNG, LPG and LIN/LOX storage tanks and TVCs in the United States and abroad. (CX 1033 at 6; CX 212 at CBI-PL 031711).

4. In 1999, prior to the merger, CB&I had revenues of $ 674 million; in 2000, revenues were $ 612 million; in 2001, after the merger with PDM, revenues were approximately $ 1.081 billion. (CX 1033 at 22). CB&I's acquisition of Howe Baker, Inc. (a process contractor operating in gas refining and processing) in December 2000 accounts for an increase in CB&I's revenues. (Glenn, Tr. 4086, 4403-05).

5. CB&I's acts and practices, including the acts and practices alleged in the Complaint, are in or affect commerce as "commerce" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44. (Complaint P7; CB&I Answer at P7).

2. Pitt-Des Moines

6. Pitt-Des Moines, Inc. ("PDM") was a corporation organized and existing under the laws of the Commonwealth of Pennsylvania, publicly traded on the American Stock Exchange, with its principal place of business at 1450 Lake Robbins Drive,

Suite 400, the Woodlands, Texas, 77380. (CX 328 at CBI 001253-CHI; CX 21 at PDM-C 1000003; Byers, Tr. 6732). PDM's headquarters was located at 10200 Grogan's Mill Road, Suite 300, the Woodlands, Texas, 77380. (CX 661 at PDM-HOU017554).

7. In 1999, PDM had a total revenue of $ 629 million and Earnings Before Interest and Taxes ("EBIT") of $ 41 million. (CX 520 at TAN 1003289; Scheman, Tr. 2915-16). In 2000, PDM had a total revenue of $ 659 million and EBIT of $ 76 million. (CX 520 at TAN 1003289; Scheman, Tr. 2915-16). In 1999, PDM's EC and Water Divisions had total revenues of $ 281 million and EBIT of $ 16.1 million. (CX 525 at TAN 1000385). In 2000, PDM's EC and Water Divisions had total revenues of $ 268 million and EBIT of $ 0.7 million. (CX 525 at TAN 1000385).

8. Prior to the Acquisition, PDM was a diversified company with several divisions, two of which were PDM Engineered Construction (PDM EC) and PDM Water. Both divisions were acquired by CB&I. (CX 328 at CBI 001253-CHI).

9. Among other products and services, PDM was engaged in the business of designing, engineering, manufacturing and constructing field-erected LNG, LPG and LIN/LOX storage tanks and TVCs in the United States and abroad. (CX 522 at TAN 1003371; CX 850 at PDM-HOU 0129192-0129195, 0129199; CX 911 at CBI 028717-HOU -028726).

B. The Acquisition

10. In August 2000, CB&I offered $ 93.5 million to PDM. (CX 521 at TAN 1000328). On August 29, 2000, CB&I and PDM entered into a letter of intent for CB&I to acquire PDM's Engineered Construction and Water Divisions. (CX 21 at PDM-C 1000003).

11. CB&I's initial offer of $ 93.5 million to PDM was negotiated downward to $ 84 million in December of 2000 because of financial losses suffered by PDM EC in 2000. (Byers,

Tr. 6789-90). CB&I's purchase price of $ 84 million was eventually lowered to approximately $ 76 to $ 77 million because of losses in PDM's foreign subsidiary, PDM Venezuela, that did not become apparent until after the transaction was consummated. (Byers, Tr. 6793-94).

12. Respondents made their filings under the Hart-Scott-Rodino Act ("HSR") on September 12, 2000. (CX 56 at PDM-HOU 002331). The initial waiting period under HSR expired on October 12, 2000. (CX 56 at PDM-HOU 002331). The Federal Trade Commission did not seek an injunction to prevent CB&I from purchasing PDM EC and PDM Water. On February 7, 2001, CB&I acquired PDM EC and PDM Water ("the Acquisition"). (Byers, Tr. 6764-66).

13. The Complaint in this matter was filed on October 26, 2001. On November 12, 2002, the administrative trial began before D. Michael Chappell, Administrative Law Judge. (Tr. 4).

C. The Relevant Geographic Market

14. The relevant geographic market is the United States. F. 15-17.

15. The parties agree that the relevant geographic market in which to analyze the merger is the United States. (Respondents' Position on Each Element of the Case, October 21, 2002, p.1). Complaint Counsel's expert, Dr. John Simpson, and Respondents' expert, Dr. Barry Harris, agree that the relevant geographic market in which to assess the impact of the Acquisition is the United States. (Simpson, Tr. 3035 (LNG); Harris, Tr. 7192 (LNG); Simpson, Tr. 3361-62 (LPG) (citing CX 116); Harris, Tr. 7280 (LPG); Simpson, Tr. 3421 (LIN/LOX); Harris, Tr. 7300-01 (LIN/LOX); Simpson, Tr. 3488 (TVC); Harris, Tr. 7324 (TVC)).

16. By definition, field-erected LNG, LPG and LIN/LOX storage tanks and TVCs must be built at customers' sites in the United States. "LNG tanks are purchased as part of a larger facility that is designed to supply natural gas to gas users in a

particular area. As a consequence, the LNG tanks have to be located in a particular locality." (Simpson, Tr. 3034). "LIN/LOX/LAR tanks are purchased as part of a facility that makes liquefied gas, and those facilities are built close to a customer." (Simpson, Tr. 3420).

17. It is economically infeasible to import a field-erected storage tank from anywhere outside the United States. (Kistenmacher, Tr. 840, 881).

D. The Relevant Product Markets

18. The relevant product markets in which to analyze the Acquisition are large, field-erected: (1) liquefied natural gas ("LNG") storage tanks (individually, or as a component of an import terminal or an LNG peak shaving plant); (2) refrigerated liquid petroleum gas ("LPG") storage tanks; (3) liquid nitrogen, oxygen and argon ("LIN/LOX") storage tanks; and (4) large (over 20 feet in diameter) TVCs ("TVCs"). F. 19-45.

19. Respondents agree that the relevant product markets are field-erected LNG storage tanks, LPG storage tanks, and LIN/LOX storage tanks, and TVCs. (Respondents' Position on Each Element of the Case, October 21, 2002, p.1). Complaint Counsel's expert, Dr. John Simpson, and Respondents' expert, Dr. Barry Harris, agree on the relevant product markets, except that Dr. Harris believes that spheres should not be included in the LIN/LOX market. (Harris, Tr. 7301-02, 7192-95, 7280, 7324). (Simpson, Tr. 2989 (LNG); Harris, Tr. 7192 (LNG); Simpson, Tr. 3356-57 (LPG); Harris, Tr. 7280 (LPG); Simpson, Tr. 3416-17 (LIN/LOX); Harris, Tr. 7300 (LIN/LOX); Simpson, Tr. 3483 (TVC); Harris, Tr. 7324 (TVC)).

1. LNG tanks and facilities

20. Liquefied natural gas ("LNG") is natural gas that has been converted to a liquid by cooling and condensing the natural gas to about -162 [degrees] C (-260 [degrees] F). (Glenn, Tr. 4066; CX 1259 at CBI-HWH030454). LNG is composed primarily of

methane (typically at least 90%), but may also contain ethane, propane and heavier hydrocarbons. (Kistenmacher, Tr. at 889; CX 1259 at CBI-HWH030464). Neither LNG, nor its vapor, can explode by common ignition sources in an unconfined environment. (CX 1259 at CBI-HWH030469). LNG weighs approximately 45% as much as the same volume of water. (See CX 1259 at CBI-HWH030465).

a. LNG tanks

21. LNG storage tanks are a type of cryogenic tank that stores natural gas at a temperature of -260 [degrees] F. (Kistenmacher, Tr. 879; CX 1074 at CBI-001243-PLA). Due to these very cold temperatures, LNG storage tanks are made of 9% nickel steel which has certain crack arresting properties when containing LNG at low temperatures, and is less brittle than carbon steel. (Kistenmacher, Tr. 881-82; CX 1074 at CBI-001245-PLA; Glenn, Tr. 4109-10).

22. The purpose of an LNG tank is to contain natural gas in liquid form. (Glenn, Tr. 4066; Price, Tr. 530). When stored at ambient temperatures (i.e. room temperature), natural gas takes a gaseous form. (CX 1259 at CBI-HWH030454). When liquefied, natural gas is far easier to store, as natural gas in gaseous form takes up 600 times the volume of its liquid equivalent. (CX 1259 at CBI-HWH030454).

23. LNG tanks typically are double-walled and often use perlite insulation between the two shells and may have some form of concrete containment for safety reasons. (Glenn, Tr. 4110; Kistenmacher, Tr. 881-82; CX 1074 at CBI-001243-PLA). The outer walls of single containment tanks are carbon steel and the inner walls are nine percent nickel steel. (CX 1074 at CBI-001243-PLA).

24. An LNG tank often has a diameter of 200 feet or more and can store millions of gallons of LNG. (Price, Tr. 524-525; Kistenmacher, Tr. 879; CX 176 at CBI-PL010926, in camera; CX 162 at CBI-PL006153; Puckett, Tr. 4566; J. Kelly, Tr. 6260).

b. LNG import terminals

25. LNG import terminals are "facilities to receive an LNG tanker, offload LNG into LNG storage tanks, take the LNG from those storage tanks over time, vaporize it, pressurize the gas, and send it out into a pipeline." (Bryngelson, Tr. 6170). The terminals include storage tanks, ship loading/unloading facilities, send-out facilities and vapor handling systems. (CX 650 at CBI/PDM-H4019758). LNG is stored in the tanks, pumped out, vaporized and injected into pipelines for transmission to end users. (CX 853 at PDM-HOU011487).

c. LNG peak shaving plants

26. LNG peak shaving plants store LNG to provide an emergency reserve of LNG in the event that gas customers experience a severe shortage of natural gas. (CX 650 at CBI/PDM-H4019758). LNG peak shaving plants consist of a liquefaction unit, where the gas is turned into liquid, and LNG storage tanks. (Kistenmacher, Tr. 884-85). In LNG peak shaving facilities, natural gas from a pipeline is refrigerated in the liquefaction unit and stored in liquid form in an LNG tank during the warmer months when demand and prices are low. (CX 142 at CBI 000241-HOU). As gas demand increases in colder months, the stored LNG is heated, vaporized and put back into the supply stream to meet heating demand peaks, when prices are high. (CX 142 at CBI 000241-HOU; Hall, Tr. 1775-1776).

27. LNG tanks in peak-shaving facilities are similar to, but tend to be smaller than, LNG tanks used at import terminals. (Glenn, Tr. 4070; Bryngelson, Tr. 6141-42).

28. Luke Scorsone, President of CB&I Industrial and former President of PDM-EC, could not cite a single instance in which a potential customer of an LNG tank tried to get a lower price by threatening to switch to an alternative to an LNG tank. (Scorsone, Tr. 2845).

29. The large tanks required for LNG storage are much too large to practically shop-fabricate and ship to the site. (Andrukiewicz, Tr. 6697-98). Shop-fabricated tanks cannot provide the storage levels required for LNG facilities. A shop-fabricated tank provides less than 1% of the storage that a field-erected LNG tank provides. (RX 6 at CBI-PL 031593). Shop-built tanks have size limitations and are "not a direct substitute for larger quantities of LNG." (Davis, Tr. 3184). LNG tanks designed to hold above a certain volume of LNG must be field-erected. (Blaumueller, Tr. 287). The largest shop-built tanks "would pale in comparison to field tanks." (Davis Tr. 3184-85). For example, 420 shop erected tanks would be required to replace one large LNG tank. (Price, Tr. 536-37).

2. LPG tanks

30. Liquid petroleum gas ("LPG") tanks are field-erected, refrigerated tanks that store liquefied gases such as propane, butane, propylene and butadiene at refrigerated temperatures of around -50 [degrees] F. (Warren, Tr. 2275, 2306; CX 258 at CBI-H001793; CX 650 at CBI/PDM-H 4019758; CX 993 at PDM-HOU021479).

31. The LPG market does not include pressure vessels or tanks which store gases that are liquified using pressure and stored at ambient temperatures. There are two types of high pressure storage tanks used to store liquid petroleum gasses -- bullets and field-erected pressure spheres. Bullets are ambient temperature, low pressure spheres or storage vessels that are usually built in a shop. Pressure spheres are ambient temperature pressure vessels supported by columns or plate skirts. (JX 37 at 19 (Newmeister, Dep.)). These two types of storage tanks are not in the LPG market because they are not economic substitutes for field-erected, refrigerated tanks (which comply with the API 620, Appendix R standard). (JX 27 at 39-39, 141-42 (N. Kelley, Dep.); Crider, Tr. 6720).

32. LPG customers are oil and petrochemical companies, such as Marathon, Enron, and Texaco; owners of LPG terminals, such

as Sea-3, CMS Energy, and Intercontinental Terminals Co., that import/export LPG and transfer the LPG between ships and storage tanks via pipelines; and engineering, procurement, and construction ("EPC") contractors, such as Fluor, who subcontract tank suppliers to build LPG tanks for larger facilities. (CX 993 at PDM-HOU-021484).

3. LIN/LOX tanks

33. LIN is an industry expression for liquid nitrogen. A LIN tank is a special tank that stores liquid nitrogen at atmospheric pressure. LOX is the industry expression for liquid oxygen. A LOX tank stores liquid oxygen. (Kamrath Tr. 1982-83); V. Kelley Tr. 4596). LAR is the industry expression for liquid argon and a LAR tank stores liquefied argon. (Patterson, Tr. 340-41). Tanks to hold LIN, LOX or LAR are commonly referred to as LIN/LOX tanks. (Patterson, Tr. 340-41).

34. LIN/LOX tanks are field-erected cryogenic tanks that store various liquid gas products at cryogenic temperatures, typically at -300 [degrees] F or lower. (CX 650 at CBI/PDM-H4019758). LIN/LOX tanks typically hold 400,000 to 1,000,000 gallons and cost $ 500,000 to $ 1 million each. (CX 170 at CBI-PL009650).

35. The LIN/LOX market does not include spheres, which are constructed in a different manner, serve different functions, and are not a substitute for LIN/LOX tanks. (Harris, Tr. 7301-02).

36. LIN/LOX tanks typically include an inner and outer shell of steel material. (JX 37 at 13 (Newmeister, Dep.)). The inner tank is made of stainless steel to withstand cryogenic temperatures without becoming brittle and cracking. (Kistenmacher, Tr. 835). Between the two shells is perlite insulation. (Kistenmacher, Tr. 833-834). LIN/LOX tanks have dome roofs, safety relief valves and nozzles that connect to piping and other equipment. They are built to withstand wind and seismic conditions. (Kistenmacher, Tr. 864).

4. Thermal Vacuum Chambers

37. A thermal vacuum chamber ("TVC") is a large metal enclosure used to simulate the vacuum of space for the purpose of testing satellites and satellite components prior to launch. (Gill, Tr. 179-83; Neary, Tr. 1423-24). A TVC simulates the atmospheric and thermal conditions found in space. (Gill, Tr. 183; Proulx, Tr. 1722-23; Thompson, Tr. 2039-40; Higgins, Tr. 1264).

38. During a test, air is pumped out of the enclosure and, within the enclosure, liquid or gaseous nitrogen circulates through pipes to heat or cool the interior environment. Controls allow users to adjust the temperature and vacuum conditions inside the enclosure so that satellites can be tested in a space-like environment. (Thompson, Tr. 2039-40). Temperatures simulated within the chamber can range "from minus 180 degrees C to plus 150 degrees C" and the vacuum can range from 1 x 10-6 torr to 1x10-8 torr. (Higgins, Tr. 1262; Scully, Tr. 1143).

39. The customers of field-erected TVCs are aerospace companies such as Boeing Satellite Systems ("Boeing"), Raytheon Systems, Spectrum Astro and TRW Space & Electronics ("TRW"); and government agencies, such as NASA. TVCs are used to test satellites purchased by the Department of Defense, NASA and commercial buyers. (Neary, Tr. 1420; Glenn, Tr. 4074-75; see also CX 1196 at PDM-HOU011524-011525 (list of PDM customers)).

40. "Customers are typically testing satellites costing $ 50MM to $ 200MM in TVCs costing $ 5MM - $ 20MM." (CX 212 at CBI-PL031718). The satellites sold by TRW range in value from $ 750 million to $ 1.5 billion, while those sold by Spectrum Astro, a smaller satellite manufacturer, range in value from $ 10 million to $ 55 million. (Neary, Tr. 1420-21; Thompson, Tr. 2038).

41. TVCs are the only satellite testing equipment capable of

simulating the vacuum and thermal conditions of outer space. (Higgins, Tr. 1262-63). Other testing chambers are not substitutes for TVCs because they only simulate other conditions. (Scully, Tr. 1139; Proulx, Tr. 1729). Large satellite customers require that manufacturers test their satellites in TVCs. (Neary, Tr. 1424).

42. Scorsone could not recall an instance in which a potential customer of a TVC tried to get a lower price by threatening to switch to an alternative. (CX 646 at 76-77 (Scorsone, IHT)).

43. The construction of a shop-fabricated TVC is "markedly different" from the construction of a field-erected TVC. (Scully, Tr. 1101-02; Gill, Tr. 235). "In shop-built chambers, all of the equipment and capability, personnel capability, lies within the confines of the shop." (Scully, Tr. 1103). However, some shop-built TVCs still require field-erection, including for example, the small field-erected chambers being built by XL/Votaw for Raytheon Systems. (Hart, Tr. 406-07). In contrast, field-erected chambers require a crew that "virtually lives in the field for elongated periods of time. . . . It's a vastly different technology than what a shop-built chamber requires." (Scully, Tr. 1103).

44. Satellites above a certain size cannot be tested in shop-fabricated TVCs. (Scully, Tr. 1139; Neary, Tr. 1425). Consequently, shop-fabricated TVCs are not an alternative to large, field-erected TVCs for testing large satellites. (Scully, Tr. 1140).

45. Other products, such as "thermal cycling chambers" and "altitude chambers" are not functional equivalents because they cannot mimic the conditions a satellite will face in space. (Neary, Tr. 1463-64; see Scully, Tr. 1135-39).

E. Effects on Competition in the LNG Market

1. Overview of the LNG market

46. Construction of an LNG tank is "highly specialized" work. (Hall, Tr. 1831; Kistenmacher, Tr. 881; see Andrukiewicz, Tr. 6702 ("just in my own knowledge of LNG we're talking about a cryogenic fluid that is stored at minus 260 degrees Fahrenheit, clearly has different handling characteristics than the oil tank that may be located in my basement for heating fuel. So clearly there is a degree of specialized -- in fact, the preliminary engineering report speaks to the specialty nature of the construction of these facilities."). When addressing his investors, Mr. Gerald Glenn, Chairman, President and CEO of CB&I, emphasized that "a lot of owners out there, if they go to build a sophisticated project, like an LNG project or an LNG tank, they don't want to take a chance on a low price and a potential second class job or shoddy welding or any of that kind of stuff. The kind of work that we do is very specialized, very sophisticated." (CX 1731 at 44).

47. There is special expertise required in constructing an LNG tank, because "you would have to use the right welding technique to weld that particular type steel," which is a "different type of welding technique from ordinary carbon steel." (Hall, Tr. 1792). LNG tanks require sophisticated engineering analysis to take into account expansion and contraction because of differences in temperatures. (Newmeister, Tr. 1566; Kistenmacher, Tr. 881).

48. The engineering of an LNG tank entails special challenges. The inner tank of an LNG tank holds cryogenic fluid at a very low temperature while the outer tank is at ambient temperature. (Kistenmacher, Tr. 842). The inner tank shrinks when it comes into contact with the cryogenic fluid and there are differential rates of shrinking between the inner and outer tank. (Kistenmacher, Tr. 842). Consequently, an LNG tank engineer must have very specialized knowledge relating to how tank materials behave during the shrinking process; how to design piping for the tank; and how to avoid cracking of the tank components. (Kistenmacher, Tr. 842).

49. PDM EC used three fabrication facilities located in Warren, Pennsylvania, Clive, Iowa, and Provo, Utah. (Scorsone, Tr. 4892). CB&I Industrial utilizes fabrication shops in Houston, Texas and Provo, Utah. (Scorsone, Tr. 4893).

50. In assembling its labor force, CB&I uses a core team of 4-5 management employees, including a project manager and two or three key people to begin the project. (Rano, Tr. 5917-18, 5952-53). CB&I recruits local labor, workers who live less than 100 miles from the jobsite, to help construct the facility. (Rano, Tr. 5906-07).

51. To build a field-erected LNG tank requires constructing the foundation. (Rano, Tr. 5920). CB&I subcontracts the foundation work to a company with an expertise in concrete work. (Rano, Tr. 5920).

52. The field-erection process for an industrial tank involves erecting the structure in accordance with the plans and contract specifications and testing the work quality. (Scorsone, Tr. 4895-96). The construction of LNG tanks involves rigging, which is the practice of attaching cables, slings, and ropes to pieces and hoisting them into position. (Scorsone, Tr. 4897-98).

53. To weld a field-erected LNG tank, two different welding processes are used: (1) hand welding, in which the welder holds the welding cable in his hand; and (2) submerged arc welding, which involves the use of a welding machine. (Rano, Tr. 5930-31). These welding processes are not only used for LNG tanks, but also for LPG tanks, water tanks, and oil tanks. (Rano, Tr. 5931). Construction of LNG tanks requires welders trained in procedures unique to welding 9% nickel steel (a special alloy that is not widely used), that can weld together the tank's large steel pieces with a precision that eliminates leaks. (Cutts, Tr. 2379; Kistenmacher, Tr. 881-82; Fahel, Tr. 1628-29, in camera; Hall, Tr. 1792; JX 30 at 180-81 (Outtrim Dep.)). A CB&I due diligence report on PDM's construction practices states that "CB&I has some of the best welders in the industry . . . Over the years CB&I

has felt that our welding expertise is one of our core strengths." (CX 1357 at CBI-H 4000270-271).

54. Mr. W. T. Cutts, Vice President with American Tank & Vessel, Inc. ("AT&V"), states that LNG tanks are ". . . built out of fairly sophisticated materials. You don't just weld them up any old way. And its actually automated equipment that you weld them up with. The equipment is quite expensive to develop. You can go buy it, but the stuff you buy has to be modified and tailored, and then you have to build procedures around it. So it's not like you can go buy an automobile. It's unique equipment and the procedures that go with that make it very unique. . . ." (Cutts, Tr. 2379). Peter Rano, a CB&I vice president, testified that CB&I considers its welding procedures for LNG projects to be proprietary work product which it does not want to fall into the hands of its competitors. (Rano, Tr. 6028-29).

2. Demand in the LNG market

55. The LNG tank market is a "worldwide market" in which a few LNG contractors compete against each other all over the world. (Eyermann, Tr. 6994; J. Kelly, Tr. 6262). Demand for LNG in the United States had been very small over the past 20 to 30 years. (Glenn, Tr. 4091; Carling, Tr. 4513; J. Kelly, Tr. 6263). However, demand for LNG facilities has increased since the 1990s, as a number of companies are developing LNG import terminals in the U.S., the Caribbean, and Mexico. (Scorsone, Tr. 4934; Jolly, Tr. 4701-02, in camera). See generally F. 88-143. CB&I believes demand is rising and will continue to rise over the next 10 to 20 years, due to rising gas prices. (Glenn, Tr. 4091). [redacted] (Outtrim, Tr. 699, in camera).

56. There are three basic types of LNG tanks: (1) single containment; (2) double containment; and (3) full containment. (Puckett, Tr. 4541; Bryngelson, Tr. 6170-71).

57. Single containment LNG tanks store LNG in a nine percent nickel steel inner tank that is surrounded by a low earthen dike which would contain LNG in case of a leak. (Puckett, Tr.

4541; Bryngelson, Tr. 6170-71; CX 1074 at CBI 001243-PLA). Double containment tanks have the same nine percent nickel steel inner tank as a single containment tank, but offer a concrete outer tank to contain spillage from the inner tank. (Price, Tr. 530-32; CX 1074 at CBI 001243-PLA). Full containment tanks consist of a self-supporting inner tank and the outer tank used in a double-containment tank, but also include a concrete roof, so that the inner tank is completely encapsulated in a concrete shell. (CX 1074 at CBI 001243-PLA). Full containment tanks are designed to contain both the spillage of refrigerated liquid and the vapor resulting from leakage. (CX 1074 at CBI 001243-PLA- 1244).

58. With the exception of the tank built by PDM for Enron in Puerto Rico, all LNG tanks that have been built in the United States are single containment tanks. (CX 1645; Glenn, Tr. 4110-4111; Jolly, Tr. 4701-02, 4708-09, in camera).

59. Customers view full and double containment tanks as safer than single-containment tanks. (Glenn, Tr. 4112-13; Hall, Tr. 1843; Scorsone, Tr. 4922).

60. An owner can site a double and full containment LNG tank on a smaller piece of property than it could for a single containment tank in order to comply with federal laws relating to vapor dispersion and thermal radiation in the event of a spill. (Scorsone, Tr. 4922). Full-containment tanks are more likely to be used "if you are closer to population in more of an urban setting or close to an urban setting, full-containment typically is used just for the extra bit of safety it has." (Bryngelson, Tr. 6133).

61. Full-containment tanks are 30-100% more expensive than single-containment tanks. (RX 157 at BP 02 004; CX 124 at PDM-HOU2011156; CX 1075 at CBI-001240-PLA; CX 1161 at CBI/PDM-H4008131-133, in camera; JX 23a at 89 (Cutts, Dep.); Jolly, Tr. 4724-25, in camera).

62. Two expansion projects in Cove Point, Maryland ("Cove Point I," Williams Energy) and Lake Charles, Louisiana (CMS Energy) specify the use of additional single containment tanks.

(Eyermann, Tr. 7053-54). Southern Natural Gas, an affiliate of El Paso, is planning on building a single containment LNG tank at Elba Island, Georgia. (Bryngelson, Tr. 6214). Memphis Light Gas & Water will likely build a single containment tank when it expands its current facility. (Hall, Tr. 1831, 1842). The tanks for Dynegy's Hackberry facility will be full containment tanks. (Puckett, Tr. 4541-42). Cheniere Energy's Freeport LNG tank will be double containment. (Eyermann, Tr. 6968). Williams Energy's Cove Point II tanks will be full containment. (Scorsone, Tr. 4987-88). Yankee Gas and Calpine have not determined what types of tanks will be built. (Andrukiewicz, Tr. 6464-65; Izzo, Tr. 6522).

3. Market shares and concentration in the LNG market prior to Acquisition

a. Tank projects awarded

63. There are four LNG import terminals in the United States: Everett, Massachusetts; Cove Point, Maryland; Elba Island, Georgia; and Lake Charles, Louisiana. (Glenn, Tr. 4068-69). PDM constructed the storage tanks for the Cove Point, Maryland and Lake Charles, Louisiana terminals. (CX 853 at PDM-HOU011488). CB&I constructed an LNG tank in Everett, Massachusetts and built three LNG tanks in Elba Island, Georgia. (CX 154 at CBI-PL002958, 961).

64. There are seventy five LNG peak shaving plants in the United States. (CX 125, at CBI-HOU 2017163-167). CB&I and PDM have constructed all but six of these. (CX 125, at CBI-HOU 2017163-167). The last time a firm other than CB&I or PDM built an LNG tank in the United States was in 1975, by Graver, a company that is now out of business. (CX 125 at PDM-HOU2017165; CX 1546).

65. From 1990 to the Acquisition, there have been nine LNG tank projects awarded. Of the nine awarded projects, CB&I won five projects and PDM won four. A project for [redacted] and a project for Atlanta Gas Light Co. were subsequently canceled. (Simpson, Tr. 3046, 3052-54; CX 1210, in camera; CX 824; CX

1212, in camera; CX 26 at CBI-PL069530, in camera; RX 757).

66. LNG tank awards to CB&I are: South Carolina Pipeline Corp. (1991); Liquid Carbonic (1992); Memphis Light Gas & Water ("MLGW") (1995); [redacted]; Pine Needle LNG Co. (1995). LNG tank awards to PDM are: Citizens Gas & Coke Utility (1991); Enron (1997); Atlanta Gas Light Co. (1998); Cove Point I (2001). (Simpson, Tr. 3046, 3052-3055; CX 1210, in camera; CX 824; CX 1212, in camera; CX 26 at CBI-PL069530, in camera; RX 757).

67. No foreign company has ever built an LNG tank in the United States. (Jolly, Tr. 4683, in camera; CX 125).

b. HHI calculations

68. From 1990 to Acquisition, CB&I's market share, based on sales, is 45.3%. PDM's market share, based on sales is 54.7%. (See Simpson, Tr. 3055-58; CX 1646). The combined market share of the two companies is 100%. Assigning shares based on sales, Dr. Simpson testified that the premerger HHI was 5,044, the change in the HHI as a result of the Acquisition was 4,956, and the post-acquisition HHI is 10000. (Simpson, Tr. 3055 (referencing CX 1646)).

69. Dr. Simpson calculated LNG HHI based on data from 1990 to Acquisition. (Simpson, Tr. 3703). Dr. Simpson admitted that he chose 1990 as the beginning date for his HHI analysis because 1990 was the cut-off date for discovery and thus his information dated back to 1990. (Simpson, Tr. 3704-05).

70. If data dating back to 1996 instead is used to calculate HHI, CB&I had no sales over that time period and the change in the HHI based on sales in the LNG market would be zero. (Harris, Tr. 7228; Simpson, Tr. 3721-22, 3743-44).

71. The LNG tank market is a thin market, with very few data points to look at. (Harris, Tr. 7218).

c. Bidders on projects

72. For all but two LNG tank projects from 1990 to Acquisition (MLGW and Atlanta Gas & Co.), no company other than CB&I and PDM submitted bids. (Simpson, Tr. 3670; CX 161 at CBI-PL006114).

73. On the 1994 MLGW LNG tank, in addition to CB&I, PDM, Lotepro/Whessoe International, and Black & Veatch/Toyo Kanetsu K.K provided bids. (Hall, Tr. 1804-05).

4. Respondents were each others' closest competitors in the LNG market

74. Dr. Harris acknowledges that prior to the merger, United States LNG tanks were built entirely by CB&I and PDM. (Harris Tr. 7196, 7521-22). According to Dr. Harris, "until roughly 2001 I guess, the competitors in the market, . . . were almost entirely limited to CB&I and PDM." (Harris, Tr. 7220).

a. Respondents' views

75. An LNG/Aerospace marketing presentation, dated November 2000, states that CB&I was "PDM's competition for LNG tanks alone." (CX 116 at PDM-HOU019176).

76. PDM's 2000 Business Plan states that "CB&I is PDM EC's domestic competition for LNG tanks." (CX 94 at PDM-HOU017580).

77. PDM characterized CB&I as "PDM EC's only competitor on domestic cryogenic, LNG, LPG, Ammonia and thermal vacuum projects." (CX 107 at PDM-HOU005016).

78. In a 1997 PDM Customer Briefing, PDM determined that

with "only two capable LNG tank builders in the U.S. (PDM and CB&I) our teaming with Air Products has essentially put Lotepro and other liquefaction design companies out of the LNG business in the domestic U.S." (CX 113 at PDM-HOU014838).

b. Industry views

79. Industry participants recognize that prior to the merger, CB&I and PDM built nearly all of the field-erected LNG tanks in the United States. (Kistenmacher, Tr. 891; Outtrim, Tr. 714-15, in camera ("From 1965 through '97 or so, the only two companies pretty much across the board that built LNG plants in the United States were PDM and CB&I"); Cutts, Tr. 2390 (CB&I and PDM "dominated the marketplace significantly and the interpretation by most people would have been that any large cryogenic projects in the United States would have been built by CB&I or PDM.")).

80. Robert Davis, Director of HYCO Services for Air Products, testified that "virtually all, with just very few exceptions, of the LNG tanks in this country had been built by CB&I and PDM." (Davis, Tr. 3131-32).

81. John Newmeister, Vice President of Marketing and Business Development at Matrix Services, Inc., explained that historically the suppliers of LNG tanks in the U.S. were "CB&I, PDM and possibly Graver," but with Graver's exit and CB&I's acquisition of PDM, "the list of qualified LNG tank suppliers decreased to one." (Newmeister, Tr. 2166).

82. Brian Price, Vice President of LNG Technology for Black & Veatch, who competed against CB&I and PDM for the MLGW LNG project, saw first-hand that "the two competitors with the lowest prices were CB&I and PDM." (Price, Tr. 558).

c. Competition between Respondents lead to lower prices

83. In 1994, MLGW sought bids for the construction of a peak-shaving plant in Capleville, Tennessee. (Hall, Tr. 1778). Mr. James Clay Hall, project engineer and manager for MLGW,

believed that "essentially we had two viable companies in the United States that could compete" for the project - CB&I and PDM. (Hall, Tr. 1799-1800). Nevertheless, MLGW encouraged Black & Veatch, an engineering firm, "to team up with a foreign tank builder to compete," and also encouraged Lotepro, a German engineering firm, to compete in the bidding process. (Hall, Tr. 1799).

84. PDM was the lowest bidder for the MLGW project, but PDM's bid was rejected as non-conforming to the specifications. (Price, Tr. 560; Hall, Tr.1877-78). The prices quoted by CB&I and PDM were comparable. (Hall, Tr. 1876). CB&I provided the next lowest bid at $ 10,500,000. (Price, Tr. 560; Kistenmacher, Tr. 899; CX 829 at 5). Lotepro/Whessoe International's bid for the LNG tank was $ 15,000,000. (Kistenmacher, Tr. 899; CX 829 at 5). Black & Veatch/Toyo Kanetsu K.K's bid for the LNG tank was $ 16,700,000. (Price, Tr. 648).

85. The tank was awarded to CB&I and included an [redacted]. (Harris, Tr. 7501; CX 906 at CVI 031076-HOU, in camera).

86. In 1998, Atlanta Gas Light Company ("Atlanta") sent requests for bids to CB&I, PDM/Air Products, and a third competitor, Marlborough Enterprises, for a proposed LNG peak shaving facility. According to CB&I, "[Atlanta] considered the Marlborough bid more of a courtesy proposal with the real competition between CB&I and PDM/AP." (CX 161 at CBI-PL006113). Atlanta awarded the business to PDM because it offered a lower price than CB&I [redacted] and a shorter construction schedule. (CX 161 at CBI-PL006114; CX 1321 at CBI-PL 069518, in camera). The Atlanta project was never built. (Simpson, Tr. 3054).

87. In 2000, CB&I and PDM competed against each other to win a 750,000 barrel LNG tank for Columbia LNG to be built at Cove Point. (CX 293 at CBI/PDM-H 4008141). Prior to the Acquisition, CB&I and PDM bidding against each other constrained pricing for the Cove Point project. F. 184-85.

5. Competition in the LNG market from Acquisition to time of trial

88. The parties presented evidence on numerous LNG projects announced recently. LNG projects that are outside the United States are outside the relevant geographic market. Findings relating to tank projects in the relevant market follow.

a. Dynegy's Hackberry Facility

89. Dynegy is currently scheduled to build a large LNG import facility that will be located on the Calcasieu River, south of Lake Charles, Louisiana, in the town of Hackberry. (Puckett, Tr. 4539). The facility will contain three LNG full containment tanks, two docks for receiving LNG ships, pump and vaporization capacity of 1.5 billion cubic feet per day, and roughly 30 miles of pipeline to move the gas from the terminal to other interstate pipelines for delivery. (Puckett, Tr. 4539-40). When completed, the Hackberry facility will be the largest LNG regasification facility in the United States. (Puckett, Tr. 4540).

90. Dynegy estimates that the approximate dollar value for the entire project is somewhere between $ 550 to $ 700 million. (Puckett, Tr. 4565). Dynegy estimates that each of the three LNG tanks will cost around $ 40 or $ 50 million. (Puckett Tr. 4566).

91. Dynegy asked four tank builders, Toyo Kanetsu K.K. ("TKK"), S.N. Technigaz ("Technigaz"), Skanska AB ("Skanska")/Whessoe International ("Whessoe"), and CB&I, to provide lump-sum turnkey bids for the construction of the Hackberry LNG tanks. (Puckett, Tr. 4552-53).

92. As part of the bid procedure, Dynegy required CB&I to submit its drawings, technical information and a firm price to Black & Veatch, Dynegy's consultant. (Glenn, Tr. 4130-31).

93. Black & Veatch had concerns that if a domestic tank manufacturer did not participate in the bid contest, Dynegy would

receive higher prices for the tanks. (Price, Tr. 622).

94. CB&I met with Dynegy and indicated that it was uncomfortable providing a bid given that Black & Veatch, a major competitor, was acting as the EPC contractor, and was under contract with Skanska/Whessoe. Skanska/Whessoe was a bidder for the LNG tanks. (Glenn, Tr. 4411). CB&I did not want Skanska to obtain its bidding information or to gain access to its prices and designs. (Puckett, Tr. 4577-78). Further, given these circumstances, CB&I believed that its chances of being awarded the project were slim. (Glenn, Tr. 4411). Prior to the bid due date, CB&I indicated to Dynegy that it was not going to submit a bid, however, CB&I was prepared to submit a proposal to cover the construction of the entire project on a turnkey basis. (Puckett, Tr. 4559). CB&I told Dynegy that the "project as structured does not fit our corporate strategy." (CX 139 at CBI 019779-HOU).

95. Generally, "turnkey, design build projects typically return higher margins than standalone storage tank projects." (CX 660 at PDM-HOU 005013). Scorsone agreed that industry participants view a turnkey project to result in "higher margins." (Scorsone, Tr. 2812-13).

96. CB&I sent Dynegy a letter expressing its decision not to submit a tank-only bid. (Glenn, Tr. 4133-34; RX 143). In its letter, CB&I again offered to construct the Hackberry facility on a turnkey basis. (RX 143). Dynegy rejected CB&I's second attempt to propose a turnkey approach. (Puckett, Tr. 4559-60).

97. After learning of CB&I's decision not to bid, Dynegy further solicited a tank-only bid by offering to let CB&I submit its bid directly to Dynegy and promising not to share the information with Black & Veatch. (Puckett, Tr. 4578; Glenn, Tr. 4134-35; RX 144).

98. Dynegy received bids sometime after February 1, 2002 from TKK/AT&V, Skanska/Whessoe, and Technigaz/Zachry. (Puckett, Tr. 4556). All three of the bids Dynegy received met its

technical expectations and were within Dynegy's expected price range. (Puckett, Tr. 4557).

99. CB&I decided that if Dynegy would accept and evaluate the bids itself, CB&I would submit a tank-only bid. (Glenn, Tr. 4136). CB&I communicated its decision to Dynegy within two to three weeks after it received Dynegy's offer. (Glenn, Tr. 4136). CB&I requested to submit a tank-only bid in March of 2002. (Glenn, Tr. 4412; Puckett, Tr. 4578).

100. Dynegy responded to CB&I's request by informing CB&I that Dynegy was satisfied with the three tank-only bids it had received and telling CB&I that it was too late in the process to accept its bid. (Puckett, Tr. 4559-60; Glenn, Tr. 4137).

101. [redacted] (Jolly, Tr. 4690-91, in camera). [redacted] (Jolly, Tr. 4760, in camera).

b. CMS Energy, Lake Charles, Lousisiana Expansion

102. CMS Energy ("CMS") is planning to build one single containment tank expansion to its existing Lake Charles, Louisiana facility. (J. Kelly, Tr. 6260). The CMS expansion project will involve constructing an LNG tank on a site that already contains numerous single containment LNG tanks. (Eyermann, Tr. 7053-54).

103. [redacted] (J. Kelly, Tr. 6284, 6292, in camera). [redacted] (J. Kelly, Tr. 6293, in camera).

104. [redacted] (RX 595 at CBI 060850, in camera). [redacted] (Scorsone, Tr. 5075-76, in camera) [redacted] (RX 595 at CBI 060850, in camera).

105. CMS Energy has awarded the tank portion of the contract to CB&I over Skanska/Whessoe. (Glenn, Tr. 4399).

c. El Paso/Southern LNG: Elba Island

106. [redacted] (Scorsone, Tr. 5077-78, in camera). [redacted] (Scorsone, Tr. 5078, in camera).

107. [redacted] (RX 640 at CBI 069126, in camera). [redacted] (Scorsone, Tr. 5079, in camera).

d. Poten & Partners

108. CB&I is negotiating a sole-source contract to construct an LNG import terminal for Poten & Partners in the Northeastern United States. (Glenn, Tr. 4399).

e. British Petroleum

109. British Petroleum ("BP") is a global petrochemical company based in Britain with operations all over the world. (JX 33 at 19-20 (Sawchuk, Dep.)). BP is evaluating the possibility of constructing three new LNG import terminal facilities in the United States. (JX 33 at 9-10 (Sawchuk, Dep.)).

110. BP has decided to work with CB&I on the front end development of these projects. (Glenn, Tr. 4180). If BP is satisfied with CB&I's pricing, schedule and terms and if the projects move forward, BP has indicated that CB&I will be awarded those jobs. (Glenn, Tr. 4180).

111. Generally, a sole-source supplier can earn higher margins than if competing against other firms in a competitive bidding situation. (See Kamrath, Tr. 2030 ("we found that always a competitive bid resulted in a better cost for us, lower cost [than 'sole sourcing']"); Outtrim, Tr. 720-21, in camera (cost of sole-sourced LNG tank from CB&I was [redacted] more than comparable facilities). However, using one contractor may provide an owner with greater flexibility, lower costs, and may save time when a project is under development. (Bryngelson, Tr. 6134; Scorsone, Tr. 4959).

112. In an internal memorandum discussing the status of BP's LNG re-gas terminals and storage tanks and status of work with CB&I, BP noted, "there is less competition than we would like on a regional basis. Since their acquisition of PDM, CB&I now dominate the US market." (CX 693 at BP 01 027). Having assessed the firms that could supply the LNG tanks as a subcontractor or as a main contractor, BP asked what would be the best way of going forward. BP's "key choices in the US will be: - do we form a closer relationship with CB&I in order to guarantee access to the resources we need for our US regas projects? - or do we deepen the market in the US by encouraging competition?" (CX 693 at BP 01 028).

113. In an internal memorandum assessing competition in the LNG market in August 2001, BP stated: "since the acquisition of PDM, a couple of companies have come forward to state that they can build LNG tanks in the US. . . . [However], the reality for today is that in the US, [CB&I is] the leading company in the LNG Tank business and the other competitors will need to demonstrate their capabilities in this market." (CX 691 at BP 10 032).

f. Cove Point II

114. Williams Energy ("Williams") has plans to add between four and six new LNG tanks to its existing Cove Point facility in Cove Point, Maryland ("Cove Point II expansion").

(Scorsone, Tr. 4987-88). These additional tanks are required to be full-containment designs because of property limitations at Cove Point. (Scorsone, Tr. 4988).

115. CB&I has submitted budgetary pricing for the Cove Point II expansion. (Scorsone, Tr. 4962; Glenn, Tr. 4148).

116. TKK, in partnership with DYWIDAG and AT&V, submitted budgetary pricing to Halliburton KBR for the Cove Point II expansion. (RX 185 at TWC 000003). Under this arrangement, TKK would execute the engineering, procurement,

and select vendors/subcontractors. (RX 185 at TWC 000036). AT&V will be responsible, under TKK's direct control, for site construction and fabrication of materials done in the U.S. (RX 185 at TWC 000036). DYWIDAG will be responsible for the civil engineering aspects of the facility. (RX 185 at TWC 000035).

g. Yankee Gas

117. In 2001, Yankee Gas, a natural gas distribution company, initiated plans to construct an LNG peak shaving facility in Waterbury, Connecticut. (JX 21 at 17-18 (Andrukiewicz, Dep.); Andrukiewicz, Tr. 6439-40).

118. During the first quarter of 2001, Yankee Gas retained the services of CHI Engineering ("CHI"), a consulting firm, to perform a preliminary engineering and budget study. (JX 21 at 23 (Andrukiewicz, Dep.); CX 1507 at CBI 059483).

119. On April 23, 2001, CHI issued a request for prices exclusively for the LNG tank portion of the project rather than "facility turnkey pricing." (CX 1507 at CBI 059483). CHI's request was sent to CB&I, Skanska/Whessoe and Technigaz. (JX 21 at 24 (Andrukiewicz, Dep.)).

120. On May 4, 2001, CB&I wrote Chris Beschler, VP of Operations at Yankee Gas, that CB&I wanted to do the work on a turnkey basis but also expressed that CB&I would be "an excellent choice to support any project Yankee Gas Services Company may have in the LNG industry." (CX 417 at CBI 026845-HOU). Eric Frey, CB&I's representative to Yankee Gas, intended to "make every effort to restructure how the project will be bid and executed." (CX 430 at CBI 026934-HOU).

121. CB&I submitted its budgetary pricing to CHI on June 12, 2001. (RX 4 at 4). CB&I submitted rough pricing because: (1) the owner requested "broad" numbers; and (2) CB&I viewed CHI as a potential competitor. (CX 1507 at CBI 059483).

122. On October 26, 2001, Yankee Gas requested that CB&I submit a proposal for contracting for the facility directly to Yankee Gas. (CX 1507 at CBI 059484; see also CX 787 at CBI 065244, in camera) ([redacted]).

123. CB&I's budget estimate for the Yankee Gas project anticipates a margin of [redacted]. (RX 54 at CBI 026812-HOU, in camera; CX 421 at CBI 026843-HOU; Scorsone, Tr. 5317, in camera). CB&I cited the price paid for the Cove Point LNG tank in setting the price for Yankee Gas. (CX 421 at CBI 026843-HOU [redacted]).

124. [redacted] (CX 787 at CBI 065242, in camera).

125. CHI sent a second request of prices for the liquefaction process. (CX 1507, at CBI 059483). CHI received pricing information from Whessoe and Technigaz. (JX 21 at 24 (Andrukiewicz, Dep.); CX 1507 at CBI 059484).

126. Skanska/Whessoe sent CHI Engineering information regarding the Waterbury facility that included: preliminary design solutions; preliminary design data sheets complete with design drawings; and pricing information. (Andrukiewicz, Tr. 6445; RX 4 at 2). Skanska/Whessoe provided pricing information as part of its submission. (Andrukiewicz, Tr. 6446).

127. [redacted] (Jolly, Tr.4693, in camera). On June 12, 2001, in response to a request from Yankee Gas' consultant CHI Engineering, the alliance submitted a preliminary pricing proposal for an LNG storage tank. (RX 4 at 3). [redacted] (Jolly, Tr. 4693, in camera). [redacted] provided pricing information as part of its submission. (Andrukiewicz, Tr. 6446).

128. CHI no longer has a "contractual relationship" with Yankee Gas. (Andrukiewicz, Tr. 6460). CHI has been replaced by SEA Consultants. (Id. at 6445). Yankee Gas will "look to SEA to provide us with the potential builders of this facility." (Id. at 6452).

129. Yankee Gas has not determined whether Skanska/Whessoe or Technigaz are qualified to bid; the "pre-qualification" process has not started. (Andrukiewicz, Tr. 6451). SEA Consultants, the consultant that replaced CHI, will be responsible for evaluating the potential builders. (Andrukiewicz, Tr. 6451-52). At this stage, Yankee Gas has not "built the criteria by which we will evaluate any particular contract constructor of any component of the plant." (Andrukiewicz, Tr. 6453).

130. In the preliminary engineering report CHI submitted to Yankee Gas, CHI specifically proposed a double containment tank, with a concrete roof, in which both the inner tank and outer tank would be made of concrete. (Andrukiewicz, Tr. 6464-65). Mr. Andrukiewicz of Yankee Gas testified that Yankee Gas has "made no commitment on tank design." (Andrukiewicz, Tr. 6464-65).

131. An April 12, 2002 CB&I internal memo prepared by Eric Frey, the sales representative to Yankee Gas, states Yankee Gas was beginning to realize that concrete inner tanks were not common and not the norm and that more conventional designs using steel as the product container were equally as safe (or safer) and probably less expensive. Yankee Gas agreed to do their best to get the concrete inner tank requirement removed. (CX 1507 at CBI 059484).

132. CB&I has stated it might not bid on the Yankee Gas project if the design calls for a double concrete wall full containment LNG tank. (Scorsone, Tr. 4989-90; Glenn, Tr. 4141).

h. Freeport LNG

133. The Freeport LNG project is in the early design stages and may never be built. (Eyermann, Tr. 7043-44). At the time of trial, Freeport LNG had not yet filed for FERC approval of the terminal. (Eyermann, Tr. 6977).

134. Freeport LNG and its predecessor Cheniere Energy have never built an LNG facility before. (Eyermann, Tr. 7033).

Freeport LNG has not obtained any bids or selected a supplier for the LNG tanks planned for the Freeport, TX import terminal. (Eyermann, Tr. 7029). Mr. Volker Eyermann, LNG Technical Director of Cheniere Energy Company, has never been involved in evaluating or selecting an LNG tank supplier for a project, and has never reviewed the prices submitted by LNG tank bidders. (Eyermann, Tr. 7025-7028).

135. CB&I sent Freeport LNG a proposal to do the front end engineering and design to the level of detail that is required for FERC and as a first phase for the operation. (Eyermann, Tr. 7049-50). CB&I sought a sole-source arrangement; it wanted to be the complete engineer on the whole project from the start through the EPC contracting. (Eyermann, Tr. 7069).

136. Black & Veatch sent Freeport LNG a letter which indicated that it had formed an alliance with Whessoe to build LNG tanks in the Western Hemisphere. (Eyermann, Tr. 6992). Based on this document, Freeport LNG believes that Black & Veatch and Whessoe are "serious and trying to compete." (Eyermann, Tr. 6992).

137. Skanska/Whessoe met with Freeport LNG in August 2002 to discuss contracting strategies and general tank designs. (Eyermann, Tr. 6983). Skanska/Whessoe provided Freeport LNG with marketing materials. (Eyermann, Tr. 6983). Freeport LNG believes Skanska's worldwide LNG director expressed interest in competing for the Freeport LNG project. (Eyermann, Tr. 6981-82). Freeport LNG knows that Skanska/Whessoe has built LNG tanks in Dabhol, India, Trinidad, and Greece, and that Whessoe did a "very good" job on the Dabhol project. (Eyermann, Tr. 6980-81). Freeport LNG believes that Skanska/Whessoe is a potential supplier of LNG tanks and plans to solicit a bid from Skanska/Whessoe for the Freeport LNG project. (Eyermann, Tr. 6993).

138. TKK/AT&V approached Freeport LNG in 2001 for the proposed LNG project in Freeport, Texas. (Eyermann, Tr. 7000-01). TKK/AT&V prepared presentations on the companies'

capabilities, and discussed contracting capabilities. (Eyermann, Tr. 7000-01). Freeport LNG perceives that AT&V has quality welders which will be sufficient to perform the proposed LNG project in Freeport, Texas. (Eyermann, Tr. 7001-02). Freeport LNG also believes that TKK is a qualified tank constructor with the ability to adapt to different working conditions in different countries. (Eyermann, Tr. 7000, 7004-05). Freeport LNG plans on soliciting bids from TKK/AT&V, even though the partnership has never constructed a field-erected LNG tank in the U.S. (Eyermann, Tr. 7005).

139. Technigaz/Zachry approached Freeport LNG to present its alliance. (Eyermann, Tr. 6994). The alliance sent Freeport LNG marketing materials describing its expertise in liquefied gas facilities and Technigaz's experience building LNG tanks. (Eyermann, Tr. 6996-98). Freeport LNG believes that Technigaz is "keenly interested" in working on the Freeport LNG project. (Eyermann, Tr. 6996-98).

140. S&B contacted Freeport LNG and indicated it had combined its efforts with Daewoo to compete in the American market for LNG tanks. (Eyermann, Tr. 6976-77). Representatives from S&B and Daewoo had a meeting with Freeport LNG to discuss its capabilities, experience with current projects, and contracting strategies. (Eyermann, Tr. 6976-77; 7008). S&B and Daewoo also presented various brochures to Freeport LNG. (Eyermann, Tr. 7008). Based on these discussions, Freeport LNG requested Daewoo's LNG tank drawings to be used in connection with Freeport LNG's FERC application for its proposed LNG facility in Freeport, Texas. (Eyermann, Tr. 6976-77).

i. Calpine, Humboldt Bay

141. Calpine's Humboldt, California facility is "in the early stages of possible development;" there is only a 50% chance that the facility will be built. (Izzo, Tr. 6521-22). Calpine expects that new LNG tanks in the United States will be "at least double containment if not full containment," but if FERC authorizes the construction of a single containment LNG tank at Humboldt Bay,

Calpine will not build a double or full containment tank. (Izzo, Tr. 6492, 6522-23).

142. Calpine has not spoken to Skanska/Whessoe, Zachry/Technigaz or AT&V/TKK about the Calpine project. (Izzo, Tr. 6524-25). Mr. Lawrence Izzo, Calpine's Senior Vice President, testified that he would have to "guess" as to whether any of these three firms will provide a bid to Calpine, what the price will be, and how they would compare to CB&I's price. (Izzo, Tr. 6525). Izzo admits that he knows "nothing firsthand" about AT&V's capabilities, and that he has never "worked with any foreign firm on a U.S. LNG project." (Izzo, Tr. 6520, 6539). Whessoe is the only foreign firm with which Izzo has first-hand knowledge about its construction performance and prices, and this was based on Whessoe's work in India. (Izzo, Tr. 6519).

143. The only firms with which Izzo has worked with on a U.S. LNG construction project are CB&I and PDM. (Izzo, Tr. 6514-16). Further, the only firm with which Izzo has discussed the project is CB&I. (Izzo, Tr. 6524-25).

6. Recent entry in the LNG market

a. TKK/AT&V

144. Toyo Kanetsu K.K. ("TKK") is a Japanese company involved in the construction of low temperature and cryogenic tanks. (RX 872 at 2). TKK has completed 72 LNG storage tanks throughout the world. (RX 772 at 2-21; RX 818). TKK has built more double containment and full containment LNG tanks than any other constructor in the world. (Cutts, Tr. 2572-73). TKK's annual sales are approximately 34.9 billion Yen. (RX 872 at 24).

145. American Tank & Vessel, Inc. ("AT&V") is an engineering and construction firm that was incorporated in 1982. (RX 818). AT&V, based in Mobile, Alabama, offers complete turnkey services for, and has extensive experience in, the engineering, design, and fabrication of tanks, vessels and spheres. (RX 31 at 9; Carling, Tr. 4489). AT&V has engineering facilities

in Birmingham, Alabama; Houston, Texas; George County, Mississippi; and Mobile, Alabama. (RX 31 at 1). AT&V has fabrication facilities in George County, Mississippi and Houston, Texas. (RX 31 at 1).

146. TKK has extensive LNG experience outside the U.S., but has never built an LNG tank in the United States. (Cutts, Tr. 2336). AT&V has never built an LNG tank of any kind. (Cutts, Tr. 2393-94).

147. TKK has teamed with AT&V to supply LNG tanks in the United States. (Cutts, Tr. 2437-38). Pursuant to this partnership, TKK will "carry the lead responsibility" for engineering and design of the LNG tank. (Cutts, Tr. 2327). AT&V will supply the field labor for the erection of the LNG tank and share some of the responsibility for estimating the costs of the project. (Cutts, Tr. 2327-28). TKK will train AT&V employees on how to construct LNG tanks, including the use of TKK's welding equipment. (Cutts, Tr. 2379). Cutts anticipates that the newly trained AT&V employees will need a few years of experience constructing LNG tanks before they work as efficiently as experienced CB&I employees. (Cutts Tr., 2379-80). TKK's sales force will supplement AT&V's sales force in the LNG area. (Cutts, Tr. 2570).

148. AT&V has undertaken steps to research, design, and develop procedures associated with scheduling, welding technology, and general construction sequencing for LNG tanks. (Cutts, Tr. 2440). AT&V has researched and developed techniques to weld nine percent nickel steel. (Cutts, Tr. 2464).

149. Prior to its alliance with TKK, one LNG customer, BP, expressed that it did not view AT&V as an LNG tank supplier. AT&V "will need to demonstrate [its] capabilities in this market" first. (CX 691 at BP 01 032).

150. TKK/AT&V provided a bid to Dynegy for its Hackberry facility which met Dynegy's technical expectations [redacted]. F. 100-01. TKK, in partnership with DYWIDAG and AT&V, has

submitted budgetary pricing to Halliburton KBR for the Cove Point II expansion. F. 116. TKK/AT&V approached Freeport LNG to present their capabilities. F. 138.

b. Skanska/Whessoe

151. Skanska AB ("Skanska") is one of the world's largest construction groups, and is a well-established Swedish based civil contractor that has operated internationally for more than 50 years. (RX 839 at 4; RX 870 at 25). In 2002, Engineering News Record ("ENR"), a leading industry publication, ranked Skanska as the number one contractor in the world. (RX 736 at 1). Skanska earned an annual revenue of more than $ 14 billion in 2001. (RX 736 at 1). In August of 2000, Skanska acquired Whessoe International ("Whessoe"). (RX 770 at 33).

152. Whessoe is a 200 year old engineering and construction firm with a well established reputation in the international LNG business. (RX 908 at 1). Whessoe has been involved in various aspects of LNG storage for facilities throughout the world including India, Spain, Greece and Algeria. (RX 839 at 5-8).

153. Skanska/Whessoe has never built an LNG tank in the United States. (Eyermann, Tr. 6993).

154. Skanska/Whessoe is poised as a specialist EPC company combining contracting and risk management with engineering and design skills to offer its clients a complete package in the design and construction of facilities for cryogenic gas storage and handling. (RX 870 at 5). Skanska/Whessoe combines the engineering and construction skills of Skanska Construction with the design, engineering and procurement skill of Whessoe International. (RX 870 at 6). From its UK base, Skanska/Whessoe operates worldwide to design and build LNG tanks and terminals. (RX 870 at 5).

155. PDM noted Whessoe's historically poor performance in communications with consultants. In August 1999, Luke Scorsone wrote that he expected a potential customer, Unocal, to look

favorably upon PDM relative to Whessoe on a project, "given that Noell Whessoe has performed poorly at Trinidad and Dabhol." (CX 115 at PDM-HOU017554).

156. Skanska/Whessoe provided a bid to Dynegy for its Hackberry facility which met Dynegy's technical expectations [redacted]. F. 100-01. [redacted]. F. 103, 105. Skanska/Whessoe provided pricing information and preliminary design solution for the Yankee Gas project. F. 126. Skanska/Whessoe met with Freeport LNG to discuss contracting strategies and general tank designs. F. 137. Skanska/Whessoe spoke to [redacted] a number of times regarding its capabilities and desire to construct LNG tanks in the United States. (Sawchuck, Tr. 6087, in camera).

c. Technigaz/Zachry

157. French based SN Technigaz and its parent company earn an annual revenue of more than $ 3 billion and employ about 20,000 people. (Jolly, Tr. 4438). Technigaz has considerable experience in the design and construction of LNG tanks worldwide. (RX 43 at ZCC000005). Technigaz is one of the world's leading suppliers of liquefied gas facilities. (RX 773 at 1-2). Technigaz offers a broad range of services including: feasibility studies and conceptual design, basic and detail engineering, project management, procurement, quality control, construction, coordination of subcontractors, supervision and technical assistance, commissioning and start-up, and operation. (RX 773 at 3).

158. Technigaz has never built an LNG tank in the U.S. (Jolly, Tr. 4719, in camera). Technigaz currently has eight full-containment LNG tanks under construction around the world: Spain, Egypt and India. (Jolly, Tr. 4440). Technigaz believes it is the "largest contractor today in full-containment tanks worldwide." (Jolly, Tr. 4689, in camera).

159. [redacted] (Jolly, Tr. 4757, RX 738 at FTC001537 (Jolly, Dec.), in camera). [redacted] (RX 738 at FTC 001535 (Jolly, Dec.), in camera).

160. Texas-based Zachry Construction Corporation is a leading United States construction company, with sales of around $ 1.7 billion and more than 14,000 employees in 2001. (RX 43 at ZC 000002). In 2001, Zachry was ranked eighteenth in the annual ranking of top construction contractors by ENR. (RX 871 at 71). Zachry placed fifteenth overall among construction firms that also sold their own design work. (RX 871 at 71).

161. Zachry is an experienced civil contractor in the United States with licensed engineers and access to local labor in the United States. (Price, Tr. 656-57). Zachry began as a civil constructor and therefore has a great deal of knowledge about concrete construction. (Fahel, Tr. 1682-83, in camera). Zachry has unlimited bonding capacity. (RX 45 at ZCC 000039).

162. Zachry has never constructed an LNG tank. (Fahel, Tr. 1402).

163. In June or July of 2001, Technigaz took a step toward entering the United States market for LNG tanks by entering into a Memorandum of Understanding ("Memorandum") with Zachry. (Jolly, Tr. 4685, in camera). A press release announcing the joint venture was issued in January of 2002. (RX 43 at ZCC000002). In the press release, the alliance held itself out as pooling Technigaz's recognized turnkey LNG project expertise and broad-based knowledge of the market with Zachry's construction capabilities and strong positions in the Americas. (RX 43 at ZCC000002).

164. Since signing the Memorandum, Technigaz/Zachry [redacted] (Jolly, Tr. 4692, in camera; Fahel, Tr. 1650-51, 1689, in camera). Technigaz/Zachry provided a bid for Dynegy's Hackberry facility which met Dynegy's technical expectations [redacted] F. 100-01. [redacted] F. 127. Technigaz/Zachry approached Freeport LNG to present its expertise in liquefied gas facilities and Technigaz's experience building LNG tanks. F. 139.

165. Mr. Jean-Pierre Jolly, Vice President of Marking at SN Technigaz, stated that [redacted] (RX 738 at FTC001536 (Jolly,

Dec.); see also Jolly, Tr. 4753-54, in camera).

7. Barriers to entry in the LNG market

166. LNG tanks are "built out of fairly sophisticated materials. You don't just weld them up any old way . . . . The equipment is quite expensive to develop. You can go buy it, but the stuff you buy has to be modified and tailored, and then you have to build procedures around it. So it's not like you can go buy an automobile. It's unique equipment . . . ." (Cutts, Tr. 2379).

167. There are "tremendous safety considerations" regarding LNG tanks. (Price, Tr. 564-65). If LNG should leak from a tank, the vaporized LNG could lead to fires and death, and liability for losses. (Bryngelson, Tr. 6234-35; see also Blaumueller, Tr. 293-94).

168. To avoid catastrophes, customers seek experienced tank suppliers. "If you're going to be handling something like liquefied natural gas, you don't want some amateur putting it together. The results can be catastrophic." (Hall, Tr. 1789). Dr. Hans Kistenmacher, a vice president at Linde BOC Process Plants ("Linde"), testified that risks associated with leakage causes Lotepro to subcontract the design and construction of LNG tanks to companies that have a long track record of experience in constructing these facilities. (Kistenmacher, Tr. 903-05).

169. Companies, such as Black & Veatch and Air Products, that provide the liquefaction systems and other components, but not the LNG tanks, do not want to partner with an inexperienced LNG tank supplier. (CX 157 at CBI-PL003348 (Black & Veatch "are looking to partner on a project with a firm which has better experience"); Davis, Tr. 3190-01 (Air Products chose to partner with PDM "because we needed to have somebody who would be competent to work with and capable of project execution, and they had demonstrated those capabilities.")).

170. There is a learning curve in building LNG tanks, because "any time you perform work for the first time you would incur

experience that you can improve when you perform the same work the second or third time or subsequent times." (Fahel, Tr. 1637-38, in camera).

171. Builders of LNG tanks benefit from learning by doing. Samuel Leventry, CB&I's Vice President of Technology Services, testified: "Again, if you have the same people doing the same work more continuously there's going to be some efficiencies in that." (CX 497 at 68 (Leventry, Dep.); CX 392 at 4).

172. CB&I has worked many "years" to "streamline its processes" and lower its costs. (CX 392 at 3). Experience can reduce a firm's costs. A Strengths, Weaknesses, Opportunities, and Threats ("SWOT") Analysis of CB&I acknowledges that its precontract costs for LNG projects has decreased as CB&I moves up the experience curve. (CX 629 at CBI-PL033069, in camera).

173. Newmeister of Matrix testified that if it were to enter the LNG tank market, it would be likely to operate at a higher cost level than an experienced supplier like CB&I for some time while it learned from its mistakes. (Newmeister, Tr. 1605-06).

174. A new entrant would be disadvantaged by not having a fabrication facility. [redacted] testified that the lack of a fabrication plant currently obstructs the [redacted] partnership's penetration of the LNG market. ([redacted], Tr. 1635-37, in camera). Companies that have fabrication capabilities have lower total installed cost because they would not have to incur the additional markup that's normally associated with a third party subcontractor. ([redacted], Tr. 1635-37 in camera). [redacted] considered that its pricing will be perhaps higher than others who have their own fabrication facilities. ([redacted], Tr. 1635-37 in camera).

175. A new entrant must have a sufficiently large revenue base to enhance the tank supplier's ability to offer the financial guarantees necessary to win contracts. (CX 891 at 43, 47 (Glenn, Dep.); Izzo, Tr. 6511-12). Customers require the tank supplier "to provide a bond to the contractor . . . that guarantees the project

will get finished." (Stetzler, Tr. 6385). An entrant's ability to bond a project, or bonding capacity, "has to do with your financial strength, and also the size of your company." (Stetzler, Tr. 6385).

176. LNG facility contracts often impose large liquidated damage provisions on the constructor if the project is completed late. (CX 891 at 46 (Glenn, Dep.); Izzo, Tr. 6485-86; Bryngelson, Tr. 6154-55). Customers want suppliers with a large asset base, because there is a larger target to go after if the contractor is late in completing the project and the customer sues for liquidated damages. (Bryngelson, Tr. 6154-55; JX 27 at 69 (N. Kelley, Dep.); Izzo, Tr. 6485-86; CX 1121 at CBI-HWH 053087).

8. Alleged post-acquisition price increases

a. MLGW

177. In 2002, Memphis Light Gas & Water ("MLGW") sought budgetary prices for another LNG peak shaving tank. (Hall, Tr. 1824-1825). In January 2002, MLGW contacted CB&I's Eric Frey, a business development manager. MLGW called CB&I because MLGW has a "working relationship with CB&I", Hall has "contacts there," and MLGW believed CB&I is the ["only ones (sic)"] that can provide ["reliable"] tank pricing in the United States. (Hall, Tr. 1825-27). MLGW did not contact other LNG firms because MLGW cannot "trust" the pricing information from foreign firms. (Hall, Tr. 1827-28). Hall stated that he would need a lot of additional information from Whessoe and TKK to determine if they were viable competitors in the U.S. (Hall, Tr. 1832-33, 1846-48, 1853-54).

178. On January 15, 2002, Marty Smith, CB&I's Vice President of Global LNG Sales, instructed Frey to quote MLGW [redacted] for a 300,000 barrel tank. (RX 732 at CBI 071501, in camera; CX 422 at CBI-E 009500, in camera; Scorsone, Tr. 5323, in camera). Smith explained that Frey's original estimate was [redacted]. (CX 422 at CBI-E 009500, in camera.) Smith also

instructed Frey [redacted] (CX 422 at CBI-E 009500, in camera).

179. On January 15, 2002, Frey e-mailed Smith with the proposal to quote MLGW a price that [redacted] (RX 732 at CBI 071501, in camera).

180. Margins contained in budget prices are not representative of the actual profit margin that CB&I seeks in fixed, firm price bids. (Scorsone, Tr. 5003). Because CB&I's internal budget documentation does not contain a line item for these contingencies and uncertainties that exist when preparing budget pricing, CB&I accounts for these contingencies in the margin line calculation of the budget estimate. (Scorsone, Tr. 5002-03). Thus, although a margin line item on a budget price may be [redacted], this does not mean that CB&I will seek a [redacted] profit margin if, and when, a firm, fixed price bid is submitted. (Scorsone, Tr. 5003).

181. On January 16, 2002, Frey quoted MLGW a budget price of [redacted], almost [redacted] higher than what Frey had originally prepared. (RX 732 at CBI 071499-500, in camera; CX 422 at CBI-E 009500, in camera; Scorsone, Tr. 5323, in camera). [redacted] (RX 732 at CBI 071499, in camera). [redacted] (CX 422 at CBI-E 009500, in camera).

182. The budget price CB&I provided "was not a buying offer." (Scorsone, Tr. 5250). Rather, the estimate that CB&I provided to MLGW was a SWAG -- a "scientific wild assed guess." (Hall, Tr. 1865-66). Hall testified that MLGW did not provide CB&I nearly enough information to receive an accurate price, and agreed that "volumes more" information would be required for this purpose. (Hall, Tr. 1865-66). Because MLGW was asking CB&I to "extrapolate" into the future, and because it did not provide detailed information, Hall was not expecting a number of more than plus or minus 40% accuracy. (Hall, Tr. 1866-68).

183. On July 17, 2002, Clay Hall of MLGW e-mailed Frey to comment that "we all know that CB&I/PDM is, in fact, the only

qualified US based firm capable of executing the work." (CX 786 at CBI 065153). Hall added that MLGW is "concerned about where we're going to get competition for our bids in the next few years . . . because we don't see anyone out there with experience that could come into the market and compete with CB&I/PDM." (Hall, Tr. 1830).

b. Cove Point I

184. In 2000, CB&I and PDM competed against each other for a 750,000 barrel LNG tank for Columbia LNG ("Columbia") to be built at Cove Point. (CX 293 at CBI/PDM-H 4008141).

185. In January 2000, PDM's Mike Miles announced to PDM staff working on the Cove Point bid, including Jeff Steimer, that (a) "PDM is bidding against CB&I on this one;" and (b) PDM needed a "very competitive price to be successful." (CX 293 at CBI/PDM-H 4008141).

186. On March 29, 2000, Gary Marine of CB&I relayed minutes of a meeting that he had with a representative from Columbia. (CX 226 at CBI-PLO 44978, in camera). Marine wrote: "I told him I bet that by getting two bids, they saved a lot of money over whatever budget they had previously (from PDM). I told him I guessed the price came down at least [redacted] million, and he said it was more like [redacted] million. So PDM had given them a budget of something like [redacted] million for this work." (CX 226 at CBI-PL044978, in camera).

187. Marine advised that CB&I should reduce its price to [redacted] (CX 226 at CBI-PL044979, in camera).

188. Columbia sold Cove Point to Williams Energy ("Williams") in June of 2000. (See CX 863 at CBI/PDM-H 4018410; Harris, Tr. 7724-25). In June of 2000, PDM's Miles reminded the team that Cove Point was a "very competitive situation," and, "in accordance with Luke's [Scorsone's] direction," emphasized the need to get to "the lowest price possible" and to "save every dollar we can." (CX 863 at

CBI/PDM-H 4018410).

189. Williams considered an increase in the size of the Cove Point tank from 750,000 barrels to 850,000 barrels and initiated a second phase of bidding for the 850,000 barrel tank. (CX 863 at CBI/PDM-H 4018410; Scorsone, Tr. 4964-66).

190. On August 29, 2000, CB&I and PDM agreed to merge. (CX 21 at PDM-C 1000003).

191. Williams' modifications of the project's specifications and increasing the tank size from 750,000 barrels to 850,000 barrels required PDM to re-design and re-price the tank. (Scorsone, Tr. 4964). The re-design took approximately 200 hours, and the follow-up estimating for the project took between 100 and 200 hours. (Scorsone, Tr. 4964).

192. CB&I did not submit a price on the 850,000 barrel tank. (Scorsone, Tr. 4965).

193. On September 8, 2000, PDM quoted Williams a budget price of [redacted] for an 850,000 barrel tank and [redacted] for a 750,000 barrel tank. (CX 1388 at CBI/PDM-H 4015363, in camera).

194. After the September 8, 2000 budget price, PDM prepared a new estimate for the 850,000 barrel tank because the "tank geometry changed." (Scorsone, Tr. 4966).

195. PDM held a bid review meeting to discuss the re-estimated cost of the 850,000 barrel tank for the Cove Point facility. (Scorsone, Tr. 4967-68). The participants at the meeting included Luke Scorsone, acting as the chair of the meeting; Steve Owens, Vice President of Operations for PDM; Jeff Steimer, the sales representative for the project; Mike Wilson, a manager of PDM's estimating group; Kurt Schneider, a manager of the engineering group; and Ron Blum, who was the head of sales. (Scorsone, Tr. 4968). As reflected on a document created for evaluating an estimate in a formal bid review meeting, the

materials estimate and engineering estimate were revised at the bid review meeting. (Scorsone, Tr. 4971-73; CX-1160 at CBI/PDM-H 4007485, in camera). PDM's management team increased the cost estimates for the Cove Point project because there was "a very uncertain start date for this project . . . ." (Scorsone, Tr. 4978).

196. [redacted]. (CX 1160 at CBI/PDM-H 4007486-7487, in camera). [redacted] (CX 1160 at CBI/PDM-H 4007486-7487, in camera).

197. Overall, Steimer viewed the November 2 [redacted] bid for Cove Point as [redacted]. (CX 1160 at CBI/PDM-H 4007486, in camera).

198. Neither Scorsone nor the bid review group agreed with Steimer's comments with respect to the revised estimates for fabrication, field-erection, subcontracting, and project management or regarding the final bid submitted to Williams. (Scorsone, Tr. 4981-82).

199. PDM entered into sole-source negotiations with, and was granted a letter of intent by, Williams to construct the expansion of the Cove Point facility. (Scorsone, Tr. 4963). The letter of intent was ultimately transferred into a negotiated contract after PDM was acquired by CB&I in February 2001. (Scorsone, Tr. 4963).

200. The price of the Cove Point project that CB&I is constructing for Williams is currently at [redacted]. (Scorsone, Tr. 5333, in camera). Since November 3, 2001, the price increased from [redacted] to [redacted] for the 850,000 barrel tank. (Scorsone, Tr. 5333-34, in camera). Scorsone testified that this increase occurred because: [redacted] (Scorsone, Tr. 5334, in camera).

201. The current price of [redacted] million includes a gross profit margin of [redacted]. (Scorsone, Tr. 5334, in camera). The gross profit margin includes SG&A (sales and general administrative) costs plus profit. (Scorsone, Tr. 5335, in camera).

202. PDM's November 2, 2000 bid of [redacted] anticipates a profit of [redacted], or [redacted] on the sold price. (CX 1160 at CBI/PDM-H 4007485, in camera).

203. Scorsone testified that CB&I was able to increase its profit due to [redacted] (Scorsone, Tr. 5336, in camera). [redacted] (Scorsone, Tr. 5337, in camera). [redacted] (Scorsone, Tr. 5337-38, in camera).

9. Sophistication of customers

204. LNG owners do not routinely purchase LNG tanks. (Bryngelson Tr. 6060-61, 6208) (the last time El Paso purchased an LNG tank was in the late 1970's or early 1980's); (Eyermann, Tr. 7033) (Freeport LNG and its predecessor Cheniere Energy have never built an LNG facility before); (J. Kelly, Tr. 6257) (the tanks at CMS's only U.S. LNG terminal were built in the late 1970's).

205. Most owners of LNG facilities are not very knowledgeable about procuring LNG tanks. (Outtrim, Tr. 705, in camera; see CX 1507 at CBI 059484 (Yankee Gas must hire someone to evaluate pricing because "they know very little about the LNG industry and they were banking heavily on the report from CHI); CX 138 at CBI 019913-HOU ("Dynegy is not willing to take bids directly themselves since they do not have the staff, experience, and knowledge to analyze the bids and make an informed selection."); (JX 26 at 53 (J. Kelly Dep.) [redacted]

206. Past pricing for LNG tanks is "not something that's well known." (Bryngelson, Tr. 6207). Because of confidentiality provisions, "experienced engineering firms such as Kellogg . . . can provide a rough benchmark, but that's about the best we can do." (Bryngelson, Tr. 6239).

207. Even with open book sole-source contracts, customers do not know how a supplier's pricing compares to that of other suppliers. Bryngelson of El Paso, which has an open book contract with CB&I for its Bahamas LNG terminal, admits to being "in the dark in terms of knowing what the costs are for LNG tanks suppliers." (Bryngelson, Tr. 6238, see also 6177-78).

F. Effects on Competition in the LPG Market

1. Overview of the LPG market

208. Typically, LPG tanks are manufactured the same way as LNG tanks, but for storage at a lower temperature. (G. Glenn, Tr. 4073).

209. The time needed to fabricate and construct an LPG tank varies. For a small LPG tank, construction can take 8 to 10 weeks of fabrication in the shop -- from buying steel, fabricating, and preparing to send out the pieces. The tank construction process can take 16 weeks in the field. Finally, the remaining site work and piping systems occur after the tank is completed. (N. Kelley, Tr. 7109-10). In an example of a large LPG tank, 60 weeks to field-erect the tank was scheduled. (Maw, Tr. 6634).

2. Market shares and concentration in the LPG market prior to Acquisition

a. Tank projects awarded

210. From 1990 to the Acquisition, CB&I and PDM built the majority of LPG tanks constructed in the United States. Of the eleven LPG tank projects awarded in the United States between 1990 and 2001, CB&I won five and PDM won four. From 1994 to the Acquisition, of the five LPG tank projects built in the United States, CB&I won zero and PDM won three. Morse Tank and AT&V each won one in 1994 and 2000, respectively. (CX 486; CX 824; CX 1210, in camera; CX 1212 at 7, in camera; CX 397, in camera; (CX 396 at 2, in camera; RX 757; Simpson, Tr. 3368, 3372-3375).

211. LPG tank awards to CB&I are: Texaco Chemical (1990); Intercontinental Terminals (1991); Mitsui & Co. (1991); Hess Oil (1992); and Koch Refining (1993). LPG tank awards to PDM are: Koch Hydrocarbons (1991); Enron (1995); Sea-3 (1996); Sea-3 (1998). (CX 486; CX 824; CX 1210, in camera; CX 1212 at 7, in camera; CX 397, in camera; (CX 396 at 2, in camera; RX 757; Simpson, Tr. 3368, 3372-3375).

212. Dr. Simpson's calculated each company's market share from 1990 through 2001. In his calculation, he included the 2001 LPG project for BASF in Port Arthur, Texas that CB&I won. (Simpson, Tr. 3375). The Port Arthur project was awarded post-acquisition. (Simpson, Tr. 3686, 3829).

213. Using data dating back to 1990 and including a post-acquisition win by CB&I, Dr. Simpson calculated the data to the advantage of Complaint Counsel to conclude that, based on sales, PDM had a 34.5 percent market share, CB&I had a 56.7 percent market share, Morse Tank had an 8.2 percent market share, and AT&V had a 0.6 percent market share. (Simpson, Tr. 3404). Using this time frame, the combined market share of the merged company is 91.2 percent. (Simpson, Tr. 3404-3405). If the post-acquisition win is excluded, the combined market share of the merged company is 90.9 percent. (See CX 486; CX 824; CX 1210, in camera; CX 1212 at 7, in camera; CX 397, in camera; CX 396 at 2, in camera; RX 757; Simpson, Tr. 3368, 3372-3375).

214. On November 30, 2001, CB&I acquired Morse Tank, the firm that had accounted for the next most substantial share of LPG sales prior to the Acquisition. (Maw, Tr. 6545). If Morse's market share is added to CB&I's market share, the combined market share of Morse, CB&I and PDM is nearly 100%. See F. 213.

215. Respondents' expert, Dr. Harris acknowledged that CB&I and its two acquisitions, PDM and Morse, account for all but one of the sales of LPG tanks in the United States from 1990 to the time of the Acquisition. (Harris, Tr. 7522).

b. HHI calculations

216. Complaint Counsel's expert, Dr. John Simpson, calculated the HHI index for the LPG market from 1990 to early 2001. (Simpson, Tr. 3368).

217. Dr. Simpson's HHI calculation included the 2001 LPG project for BASF in Port Arthur, Texas that CB&I won. (Simpson, Tr. 3375). The Port Arthur project was awarded post-acquisition. (Simpson, Tr. 3686, 3829).

218. Dr. Simpson calculated that, using data from 1990 to 2001, CB&I's acquisition of PDM increased LPG market concentration, as measured by the HHI, by 3911 points to a level of 8380. (Simpson, Tr. 3404-3405).

219. If data dating back to 1994 is used and the 2001 post-acquisition win by CB&I is excluded, Dr. Simpson acknowledged that CB&I had no sales over that time period and that the change in the HHI based on sales in the LPG market would be zero. (Simpson, Tr. 3746-47).

220. Competition in the LPG market is extraordinarily thin, and the market is almost nonexistent. (Harris, Tr. 7281-82). HHI calculations are not accurate in determining the concentration in the LPG market due to the extraordinarily thin market and almost nonexistent demand. (Harris, Tr. 7281-82)

221. Use of data from 1990 to Acquisition does not accurately depict market concentration because it fails to take into account that CB&I had not won a job since 1993. (Harris, Tr. 7287).

c. Bidders on projects

222. For the Ferndale project that was won by Morse, there were four bidders: Morse, CB&I, PDM and San Luis Tank. (Maw, Tr. 6550.)

223. For the Tallaboa project that was won by PDM in 1995, the parties did not present sufficient evidence to determine which companies bid or whether competition constrained prices on this project.

224. For both Sea-3 projects, in 1996 and 1998, CB&I and PDM were the only bidders -- with PDM winning and constructing both projects based on a lower price (roughly 4% lower). (Warren, Tr. 2298-2300, 2302-04, 2305, 2306).

225. For the Deer Park project in 2000, CB&I, AT&V, and Matrix bid on the project. PDM was not a bidder. (N. Kelley, Tr. 7083-84).

226. The value of the 2000 Deer Park project built by AT&V is a small fraction of the value of the other LPG tanks sold during this period. (Simpson, Tr. 3394-95).

227. CB&I's acquisition of PDM combines the two strongest sellers of LPG tanks in the United States. (Simpson, Tr. 3406). According to Dr. Simpson: "Prior to the acquisition . . . CB&I's pricing was constrained principally by the presence of PDM EC. When CB&I acquired PDM EC, then CB&I's pricing would be constrained by much weaker competitors and constrained at a higher price." (Simpson, Tr. 3406). Dr. Simpson testified that he believed that CB&I's acquisition of PDM would lead to higher prices for LPG tanks. (Simpson, Tr. 3406).

3. Respondents were each others' closest competitors in the LPG market

228. Respondents referred to each other as a "formidable" competitor (CX 216 at CBI-PL-033886) or "major" competitor in the LPG market (CX 116 at PDM-HOU019181).

229. PDM believed CB&I was its "only competition on tanks over 100,000 bbl [barrels]." (CX 303 at CBI/PDM-H 4001285). PDM characterized CB&I as "PDM EC's only competitor on

domestic cryogenic, LNG, LPG, Ammonia and thermal vacuum projects." (CX 107 at PDM-HOU005016).

230. Scorsone testified that CB&I was "PDM EC's major competitor" for LPG tanks. (Scorsone, Tr. 5157, 5173-74; CX 94 at PDM-HOU017580). Scorsone also admitted that CB&I was PDM's only competitor on domestic LPG projects. (Scorsone, Tr. 5183; CX 660 at 5).

231. Dr. Harris testified that prior to the Acquisition, neither CB&I nor PDM could increase prices of LPG tanks in the United States without risking that each would lose sales to the other. (Harris, Tr. 7539-40, 7543-44).

232. Amy Warren, Contracts Administrator for Fluor testified that, in 1998, the only competitors were PDM and CB&I. (Warren, Tr. 2307-08).

4. Competition in the LPG market from Acquisition to time of trial

233. There has only been one LPG tank awarded since the Acquisition, the 2001 ABB Lummus project in Port Arthur, TX. CB&I won the Port Arthur, TX project. (Simpson, Tr. 3686, 3829; (G. Glenn, Tr. 4088-89, 4156).

234. The Port Arthur project included four ambient-temperature LPG spheres, one low-temperature LPG tank for butadiene and one flat bottom conventional storage tank. The total value of the project was $ 8.5 million. The LPG tank alone was $ 1.5 million. (Scorsone, Tr. 5039-40).

235. On the Port Arthur project, CB&I competed against Wyatt and AT&V in bidding for the project. (N. Kelley, Tr. 7086; Scorsone, Tr. 5040). CB&I initially bid a little above a 4 percent margin. ABB Lummus came back to CB&I after the initial round of bidding and informed CB&I that it was 3rd out of 3 bidders. (Scorsone, Tr. 5040).

236. Since it was instructed to by the customer, CB&I "sharpened its pencils" and developed an innovation whereby CB&I eliminated the need for one additional support column on each sphere. This innovation lowered the cost to the project overall. (Scorsone, Tr. 5040-41).

5. Recent entry in the LPG market

a. AT&V

237. AT&V constructed the 2000 project for Intercontinental Terminals Co. ("ITC") in Deer Park, Texas. (JX 27 at 117 (N. Kelley Dep.)). AT&V bid on the Port Arthur project in 2001. (N. Kelley, Tr. 7086; Scorsone, Tr. 5040).

238. AT&V is much smaller than CB&I. (CX 460 at CBI-E 007235; JX 23 at Exh. 1, in camera (Cutts, Dep.); Simpson, Tr. 3292-3315). AT&V's annual revenues are only 2-3 percent those of CB&I. (CX 460 at CBI-E 007235; JX 23 at Ex. 1, in camera (Cutts, Dep.); CX 1033 at 28). CB&I employs over 200 engineers. (CX 460 at CBI-E 007235). CB&I estimates that AT&V has only a small engineering staff. (CX 460 at CBI-E 007235).

239. AT&V is limited in its field capacity. (Cutts, Tr. 2375; Simpson, Tr. 3315 (citing JX 23a at 44 (Cutts, Dep.)). Capacity constraints at AT&V recently prevented AT&V from bidding on two cryogenic tanks. (Cutts, Tr. 2375). AT&V is limited in its capacity to bond projects in the United States, which could impede AT&V's ability to bid on large projects. (Cutts, Tr. 2366, 2375). Cutts, Vice President of AT&V, admitted that AT&V cannot compete with CB&I on large scale projects. (Cutts, Tr. 2375).

240. Cutts admits that his firm faces reputational and marketing disadvantages compared to Respondents. (Cutts, Tr. 2421-22). "AT&V is not a household name for cyrogenic tanks." (Cutts, Tr. 2385). Cutts contrasts CB&I by comparing it to the "Coca-Cola" brand-name. (Cutts, Tr. 2385). PDM had brand

name value also and, like CB&I, its name "could obviously break down a lot of walls and barriers." (Cutts, Tr. 2389).

b. Other domestic manufacturers

241. Matrix provided a bid on the 2000 Deer Park project for ITC. (N. Kelley, Tr. 7083-84). Matrix is capable of building LPG tanks and would pursue LPG opportunities in the future. (Newmeister, Tr. 2180-82).

242. Wyatt bid on the Port Arthur project. (Scorsone, Tr. 5040).

243. Chattanooga Boiler & Tank ("Chattanooga") has the capability to construct field-erected LPG tanks. (Stetzler, Tr. 6355). Chattanooga is familiar with how to construct LPG tanks. (Stetzler, Tr. 6354-55). Chattanooga builds similar API 650 storage tanks, API 620 storage tanks, and ASME pressure vessels. These tanks are both shop and field-erected. (Stetzler, Tr. 6356-59, 6308-09; RX 181 at 1-10).

244. Dr. Simpson testified that firms such as AT&V, Matrix Services, and Wyatt Field Services would not be able to restore the pre-acquisition level of competition in the LPG market. (Simpson, Tr. 3408-09). Dr. Simpson noted that all three firms lack the building experience and the reputation that PDM possessed. (Simpson, Tr. 3409).

c. Foreign manufacturers

245. Foreign tank suppliers build tanks around the world and advertise in U.S. trade journals. (N. Kelley, Tr. 7091, 7126; Harris, Tr. 7288-89, 7293). However, the testimony of one purchaser of LPG tanks, was that he has never sought a bid from a foreign tank supplier because he "didn't know who to go to, I guess. Went to the local boys." (JX 27 at 114 (N. Kelley, Dep.)). Moreover, his experience buying capital equipment is that he gets better pricing from buying equipment locally in the U.S. rather than from another country. (JX 27 at 74-75 (N. Kelley, Dep.)).

246. Respondents' economic expert Dr. Harris testified that he had no evidence that any foreign firms have chosen to produce LPG Tanks in the U.S. (Harris, Tr. 7778-79). No foreign tank supplier has won any U.S. LPG projects. F. 210, 215.

247. [redacted] testified that "[redacted] could not successfully compete against CB&I for single-containment LNG or LPG tank projects" in the U.S. ([redacted], Tr. 4711, in camera; RX 738 at P15, in camera). [redacted] has "no plans" to compete for single containment LPG tanks. (RX 738 at P15, in camera).

248. TKK has never built an LPG tank in the United States. (Cutts, Tr. 2351). Moreover, TKK is not interested in bidding on LPG tank projects in the United States. (Cutts, Tr. 2431).

249. Dr. Simpson testified that foreign companies, such as TKK, Skanska-Whessoe, and Technigaz, would not be sufficient to restore the pre-acquisition level of competition in the LPG market. (Simpson, Tr. 3407).

6. Barriers to entry in the LPG market

250. LPG tank suppliers must have sufficient personnel to design, engineer and construct an LPG tank. (RX 682 at MCG 000059 ("Texaco will verify that bidder is not overcommitted to perform that work."); Warren, Tr. 2295 (Before allowing a company to bid, Fluor reviews a potential LPG tank supplier's volume to ensure the supplier is capable of managing multiple projects simultaneously, and to ensure there is not too much backlog to prevent Fluor from accessing the supplier's resources promptly as needed); see CX 415 at 2).

251. LPG tank suppliers need sufficient personnel to handle adjustments to possible schedule changes. (Warren, Tr. 2296 (In order to bid on an LPG project, an LPG tank supplier needs enough staff to handle an adjustment if it becomes necessary to shorten the schedule or recover from delays); see CX 415 at 2).

252. LPG customers want a manufacturer with prior experience, at least in building API 620 tanks, and with experienced personnel. (N. Kelley, Tr. 7131-32). See also N. Kelley, Tr. 7104-05 ("I don't want to be a guinea pig"); JX 27 at 72 (N. Kelley, Dep.) (ITC would "definitely want [an LPG tank supplier] to have had prior experience building an LPG tank before [it] would hire them to build an LPG tank . . . .")).

253. Matrix's vice president of marketing testified that the LPG market presents the same barriers to entry as the LNG market and would be difficult to penetrate. (Newmeister, Tr. 1609-10).

7. Sophistication of customers

254. Intercontinental Terminals Company ("ITC") is the only recent LPG customer to testify in this case. ITC owns 10 field-erected low temperature tanks. (N. Kelley, Tr. 7093-94). Mr. Norman Kelley, Vice President of ITC, testified that during his 25 years at ITC he has procured LPG tanks over 23 of those 25 years. Tank procurement is Kelley's area of responsibility. (N. Kelley, Tr. 7079-80). Kelley regularly sorts confidential bids from multiple tank suppliers. (N. Kelley, Tr. 7082-83).

G. Effects on Competition in the LIN/LOX Market

1. Overview of the LIN/LOX market

255. LIN/LOX tanks are double-walled tanks made of stainless steel which store liquid oxygen and nitrogen at very low, even cryogenic, temperatures which allows them to be stored in a liquid form. (Stetzler, Tr. 6312). A LIN/LOX tank consists of an outer carbon steel shell and an inner tank, most commonly made out of stainless steel. There is insulation between the two shells to keep the temperature at minus 320 degrees. (Stetzler, Tr. 6312; Kistenmacher, Tr. 833-34).

256. LIN/LOX tanks are most commonly incorporated into the infrastructure of a functioning air separation facility. There are

no viable substitutes for storing liquid oxygen or nitrogen produced by such a plant. (Hilgar, Tr. 1386).

257. An air separation plant is a plant that liquefies ambient air, then distills the air into its component parts. The component parts of air are the industrial gases: oxygen, nitrogen, and argon. The liquefied gases are later cooled and stored in cryogenic storage tanks. Subsequently, the gases are delivered to the marketplace either in a gaseous form or liquid form. (Kamrath, Tr. 1980; V. Kelley, Tr. 4592; Kistenmacher, Tr. 824-25).

258. The cost to design and fabricate LIN/LOX tanks typically represents five to ten percent of the total cost of an air separation facility. (Hilgar, Tr. 1507). Construction of an air separation facility may cost $ 18 million. LIN/LOX tanks used at such a facility may cost from $ 1 to $ 1.5 million. (Kistenmacher, Tr. 836; Hilgar, Tr. 1507-08).

259. The following construction steps are taken for building LIN/LOX tanks: First, the project is engineered and drawings are developed in connection with the procurement of materials. Second, materials including the raw steel and steel components are procured. Third, steel materials are fabricated in fabrication shops. Next, tool and equipment lists are created and everything including the fabricated materials are shipped to the construction site. The structure is then erected on the project site and tested. (Scorsone, Tr. 4885-86).

260. The engineering phase involves the performance of calculations and an analysis to determine the size and shapes of the various components to be placed in the structure. This phase entails writing the specifications for the various materials and welding processes that will be used. Drawings are created to be used by fabrication shops, construction crews, and subcontractors. (Scorsone, Tr. 4886-87).

261. CB&I does not have an engineering staff that solely works on LIN/LOX projects. CB&I uses its engineers across several product lines. Engineers who design flat-bottom tanks

also have the capability to design LIN/LOX tanks. CB&I's engineers are located in Pittsburgh, Pennsylvania; Plainfield, Illinois; Houston, Texas; Canada, the Middle East, the Philippines, and Australia. (Scorsone, Tr. 4887-88).

262. The bill of materials contains a list of materials that are sent to the procurement group. The procurement group then procures these materials from a wide variety of vendors. (Scorsone, Tr. 4889-90).

263. The metal materials are fabricated in a fabrication shop by the same personnel and using the same equipment that is used to fabricate other types of tanks. (Scorsone, Tr. 4885; 4892-93).

264. The field-erection process for an industrial tank involves: (1) receiving the material from the fabrication source and the steel mills; (2) establishing a site office; (3) establishing a tool and equipment management system; (4) employing the field labor; (5) erecting the structure in accordance with the plans and contract specifications; and (6) testing the work quality. (Scorsone, Tr. 4895-96).

265. The field construction process used to field-erect a LIN/LOX tank is the same process that is used to erect any type of ambient-temperature flat-bottom tank. (Scorsone, Tr. 4885).

266. The welding processes used on a cryogenic tank are the same as the processes used for an ambient temperature tank. (Scorsone, Tr. 4899). The welding methods used for cryogenic tanks are an open art. (Scorsone, Tr. 4899).

267. CB&I does not regard LIN/LOX work as an important part of its business because it is so small. (Scorsone, Tr. 5016). The total revenue realized in the LIN/LOX market in the last two years for all construction vendors amounted to only approximately $ 5 million out of $ 2 1/2 to $ 3 billion. (Glenn, Tr. 4088). CB&I does not have any salespersons dedicated to the LIN/LOX market. (Scorsone, Tr. 5017).

268. Currently, there is overcapacity in the LIN/LOX market. Moreover, there will not be air separation plants requiring LIN/LOX tanks constructed in the next few years. (Hilgar, Tr. 1541-43). Demand for field-erected LIN/LOX tanks is not high. (Stetzler, Tr. 6382-83).

2. Market shares and concentration in the LIN/LOX market prior to Acquisition

a. Tank projects awarded

269. From 1990 to the Acquisition, CB&I, PDM, and Graver built nearly all the LIN/LOX/LAR tanks in the United States. From 1990 to Acquisition, 109 LIN/LOX tanks were constructed, with a total value of [redacted]. CB&I and PDM had a combined market share of 72.8% of the value of LIN/LOX awards. CB&I won 25 tanks (with a total value of [redacted] (33.9% of the total). PDM won 44 tanks (with a total value of [redacted] (38.9% of the total.) Graver won 34 tanks (23.3% of the total value). Matrix won 4 tanks (2.6% of total value), and AT&V won 2 tanks (1.4% of the total value). (Simpson, Tr. 3422, 3429-30; CX 26, in camera; CX 85; CX 155; CX 183; CX 260; CX 282; CX 397, in camera; CX 755; CX 1025, in camera; CX 1170; CX 1210 at 5-6, in camera; CX 1212 at 6, in camera; CX 1321, in camera; CX 1458; Cutts, Tr. 2451).

270. Graver went out of business, in 2001, and is no longer a competitor in the LIN/LOX market. (CX 1546; Hilgar, Tr. 1543). Graver's assets were sold at auction. (Harris, Tr. 7312, 7313).

271. MG Industries purchased [redacted] LIN/LOX tanks between 1994 and 1999. In all but perhaps one of these projects, MG Industries received bids from CB&I, PDM and Graver. (Patterson, Tr. 478-79, in camera).

272. Linde's policy in purchasing LIN/LOX tanks is to have at least three bidders. (Kistenmacher, Tr. 864). CB&I, PDM and Graver bid on tanks built for Linde. (Kistenmacher, Tr. 869.)

b. HHI calculations

273. Dr. Simpson calculated that, using data from 1990 to 2001, CB&I's acquisition of PDM increased LIN/LOX concentration, as measured by the HHI, by 2,635 points, to a level of 5,845. (Simpson, Tr. 3443).

274. Dr. Simpson's HHI calculations in the LIN/LOX market were based on sales from 1990 to the date of the Acquisition. (Simpson, Tr. 3704). Dr. Simpson admitted that he chose 1990 as the beginning date for his HHI analysis because 1990 was the cut off date for discovery and thus his information dated back to 1990. (Simpson, Tr. 3704-05).

275. In the LIN/LOX market, Dr. Simpson admitted that CB&I's spin off from Praxair, Incorporated, in 1997 was a significant competitive change, a fact which would justify beginning the HHI calculation in 1997 after the date of the sale. (Simpson, Tr. 3753).

276. Use of data from 1990 to Acquisition does not accurately depict market concentration because it fails to predict forward from the time of acquisition, fails to consider Praxair's sale of CB&I, and fails to account for recent entry. (Harris, Tr. 7311-12).

3. Respondents were each others' closest competitors in the LIN/LOX market

a. Respondents' views

277. In a July 1997 competitor report to Luke Scorsone, PDM's Bill Weber noted that "since last fall, CB&I has been the most aggressive competitor in increasing market share." (CX 108 at PDM-HOU005018).

278. In May 2000, Luke Scorsone warned the Board of PDM that "CB&I has been extremely aggressive on pricing work in North and South America. They have taken certain projects at levels which would be slightly over PDM EC's flat cost." (CX 64

at PDM-C 1002562).

279. According to an October 2000 e-mail from Bob Lewis, then CB&I's Vice President of Corporate Business Development, PDM had "[a] tendency to bid much lower than the market leaving a lot of money on the table." (CX 632 at CBI-PL 4000160). In April 1997, Rich Kooy compared CB&I and PDM's LIN/LOX prices and recognized that "in North America we [CB&I] could still be very handily undercut (by as much as 10%) by PDM if they wanted to work at a lower price level." (CX 178 at CBI-PL011835).

280. In competing for LIN/LOX jobs, CB&I and PDM would in some instances, set prices that would generate "negative margins." (CX 183). In fact, CB&I lost some projects to PDM because of PDM's "very low" pricing levels. (Crain, Tr. 2592; CX 624).

281. A CB&I document states that "PDM is the driver on negative margins on these LIN/LOX tanks. We understand that PDM can readily price the LIN/LOX work at -6% margin in the Gulf Coast and Southeast . . . . Unless there is a reason why PDM would be less aggressive or economical in NV, then I agree with Ron that -2% or -3% should get us on the high side of the target range." (CX 193 at CBI-PL020339).

282. Other documents of Respondents reflect the competitive pressure that PDM regularly placed on CB&I. (See CX 614 at CBI-PL039367 (for LOX tank project for Air Products in Eureka, Nevada, PDM's quoted price was "$ 100,000 lower than CB&I's and Matrix's price, and almost $ 200,000 lower than Graver's price"); CX 222 at CBI-PL037594 (PDM won a bid from CB&I for a pair of LIN/LOX tanks by dropping their bid on their best and final offer by $ 40,000); CX 191 at CBI-PL018948 (Air Products had awarded a LOX tank to PDM, which "was the very low bidder and met all of the technical requirements.")).

b. Industry views

283. William Cutts, Vice President of American Tank & Vessel ("AT&V") agreed that, prior to the merger of CB&I and PDM, customers preferred PDM or CB&I for their LIN/LOX tank projects, "almost exclusively [desiring] one or the other or pitting the two against the other." (Cutts, Tr. 2390).

284. Cleveland Fontenot, Jr., former Vice President of Procurement for Air Liquide Process and Construction ("Air Liquide"), testified that prior to the Acquisition, CB&I and PDM were the two most qualified LIN/LOX/LAR tank suppliers. Air Liquide's bid slate included, "CB&I, PDM and a little bit lower would be Matrix." (Fontenot, Tr. 2021-22). However, Air Liquide "didn't feel as comfortable" with Matrix because the "number of references they had weren't nearly what the other two suppliers [CB&I and PDM] had." (Fontenot, Tr. 2022).

285. David Kamrath, CEO of Air Liquide Process and Construction and a 30-year participant in the industrial gas business, believes that prior to the merger Air Liquide only "had PDM and CB&I" for the construction of LIN/LOX tanks. (Kamrath, Tr. 1988).

c. Competition between Respondents lead to lower prices

286. Prior to the Acquisition, Linde used PDM's prices as its "benchmark" to compare other firms' prices. (Fan, Tr. 967). Linde was able to leverage two manufacturers against each other to negotiate pricing and other concessions. (Kistenmacher, Tr. 867-8).

287. MG Industries, a producer of industrial gas products, purchased 16 LIN/LOX tanks in the last nine years. (Patterson, Tr. 338, 341). Before the merger, the same three firms bid on most of MG Industries' LIN/LOX projects: CB&I, PDM and Graver. (Patterson, Tr. 351, 355, 363, 365). On each of MG Industries' LIN/LOX projects after 1997, Mr. Michael Patterson, Director of Engineering, MG Industries, used each of the other

firms as bargaining chips to obtain lower prices on LIN/LOX tanks. (Patterson, Tr. 351-365).

288. There was vigorous competition between CB&I, PDM and Graver. CB&I and PDM would vigorously undercut each other's prices, to the extent that the firms sold LIN/LOX tanks at negative margins, e.g., -23%, -12%, and -2 to -3%. (CX 136 at CBI 014195-HOU; CX 193 at CBI-PL020339; CX 600 at CBI-PL012354). (See CX 455 at CBI-E 007334, in camera ([redacted]); id. at CBI-E 007335, in camera ([redacted]); id. at CBI-E 007335, in camera ([redacted]

289. In 1997, CB&I, PDM and Graver were competitors for the Rockport, Indiana project. According to Patterson, MG Industries' negotiating tactics "lowered the price." (Patterson, Tr. 351-52). Graver was the lowest bidder for the Rockport project, but after "verbal negotiations" using PDM's and CB&I's bids as leverage, Graver "knocked a few percent off [its] price." (Patterson, Tr. 351-53).

290. CB&I, PDM, and Graver also competed for the contract to the combined Chattanooga and Johnsonville, Tennessee projects in 1997. (Patterson, Tr. 355). PDM was the lowest bidder, with both Graver and CB&I bidding 15 percent higher than PDM. (Patterson, Tr. 356-57; see CX 194 at CBI-PL023449). Patterson informed the bidders that "they were way higher than what it would take to be awarded any of those type projects," and that "if they expected to receive any orders, they would have to significantly lower their price." (Patterson, Tr. 357-58). As a result of Patterson's negotiating, the firms "lowered their price." (Patterson, Tr. 358). The Johnsonville project was later postponed, while the Chattanooga tanks were built. (Patterson, Tr. 356).

291. MG Industries combined the LIN/LOX tanks for the Albany, New York; Delisle, Mississippi; and Johnsonville, Tennessee projects for one bidding process. (Patterson, Tr. 361-62, 355-56). PDM was the lowest bidder, Graver's bid was 4% above PDM's, and CB&I's bid was 7% above PDM's bid.

(Patterson, Tr. 362). Once again, Patterson used PDM as leverage, informing Graver that "somebody has a better price than they do." (Patterson, Tr. 363). The customer was again successful in promoting the most competitive environment he could, as "Graver dropped the price substantially." (Patterson, Tr. 364).

4. Competition in the LIN/LOX market from Acquisition to time of trial

292. Since CB&I's acquisition of PDM in 2001, five LIN/LOX projects have been awarded by LIN/LOX customers. (Scorsone, Tr. 5015-16). The five LIN/LOX projects that have been awarded since the Acquisition are: Midland, North Carolina (BOC Gases); Hillsboro, Oregon (BOC Edwards); Freeport, Texas (Air Liquide); New Johnsonville, Tennessee (MG Industries); and Kirkland, New Mexico (Praxair). (Scorsone, Tr. 5017).

293. Since the Acquisition, of the five LIN/LOX tank projects awarded, AT&V has won three and CB&I has won two. (Harris, Tr. 7308; Scorsone, Tr. 5015-16).

294. Of the five post-Acquisition LIN/LOX projects, four were competitively bid. (Scorsone, Tr. 5017). Of the four competitively bid projects, AT&V bid on three and won all three. (Scorsone, Tr. 5018). CB&I has never won a LIN/LOX project when AT&V was a competitor bidding on the project. (Scorsone, Tr. 5018).

a. Midland, North Carolina (BOC Gases)

295. AT&V won both tank awards for the BOC Gases Midland, North Carolina project. (V. Kelley, Tr. 4599; Scorsone, Tr. 5024; RX 273, in camera). In 2000, BOC Gases solicited bids for the Midland LIN/LOX project from PDM, CB&I, AT&V and Chattanooga Boiler & Tank. (V. Kelley, Tr. 4598; Scorsone, Tr. 5024-25; RX 273, in camera).

296. BOC Gases awarded the Midland project to AT&V

because of low cost and was satisfied with the price because it was below BOC Gas' budget for the project. (V. Kelley, Tr. 4599-601, Tr. 5272, Tr. 5282).

297. Dr. Kistenmacher, Vice President of BOC's successor, Linde BOC Process Plants, was told by his direct partner at BOC ". . . that the price was low in the beginning, but they [AT&V] had many change orders, that in the end the price was higher than of the conventional vendors." (Kistenmacher, Tr. 931-32).

298. BOC Gases had to budget 500 man-hours of additional BOC Gases engineering time to ensure that AT&V delivered the LIN/LOX tanks "on time, on schedule, on budget"; this was AT&V's first experience building LIN/LOX tanks. (JX 28 at 43-46 (V. Kelley, Dep.); RX 290 at CBI 046596-NEW).

b. Hillsboro, Oregon (BOC Edwards)

299. AT&V was awarded a LIN/LOX project for BOC Edwards in Hillsboro, Oregon. (Cutts, Tr. 2504-06; V. Kelley, Tr. 5291-92; RX 813).

300. CB&I submitted budget pricing for the LIN/LOX project in Hillsboro, Oregon. (Scorsone, Tr. 5018, 5031). BOC Edwards reviewed the budget prices submitted for the project and determined that AT&V had the low bid. (V. Kelley, Tr. 5292). Based on these budget prices, BOC Edwards awarded the project to AT&V. (V. Kelley, Tr. 5292; Scorsone, Tr. 5031).

c. Freeport, Texas (Air Liquide)

301. In 2001, Air Liquide solicited bids for a LIN/LOX project in Freeport, Texas. AT&V, CB&I, Matrix and BSL bid on the project. (Cutts, Tr. 2569; Scorsone, Tr. 5032; RX 627 at 2, in camera).

302. AT&V was awarded the Air Liquide LIN/LOX project in Freeport, Texas. (Kamrath, Tr. 2006; Scorsone, Tr. 5017). [redacted] (Kamrath, Tr. 2235, in camera). [redacted]. (Scorsone,

Tr. 5023-5024; Kamrath, Tr. 2235, in camera; RX 627 at 2, in camera).

303. Matrix's bid on Air Liquide's Freeport LIN/LOX tank [redacted] (Kamrath, Tr. 2235, in camera).

304. [redacted] (Kamrath, Tr. 2254-55, in camera).

305. [redacted] (Kamrath, Tr. 2241, 2251, 2253, in camera). [redacted] (Kamrath, Tr. 2252, in camera). Air Liquide asked CB&I to complete the project, but CB&I refused. (Scorsone, Tr. 5036).

d. [redacted] (MG Industries)

306. In April 2002, MG Industries sought pricing for a LIN/LOX tank project in [redacted]. (Patterson, Tr. 456-57, in camera).

307. Requests for prices were sent to [redacted]. (Patterson, Tr. 456-57, in camera). While [redacted] submitted budget pricing, it did not submit a formal bid. (Stetzler, Tr. 6351). [redacted] (Patterson, Tr. 482, in camera).

308. [redacted] was the lowest bidder. (Patterson, Tr. 457, in camera). [redacted] price was [redacted] higher than [redacted]. (Patterson, Tr. 457, in camera). [redacted] budget price was [redacted] higher than [redacted]. (Patterson, Tr. 457, in camera).

309. [redacted] (Patterson, Tr. 460-62, 482-83, in camera).

310. [redacted] (Patterson, Tr. 460, in camera). [redacted] (Patterson, Tr. 486-87, in camera). [redacted] (Patterson, Tr. 461, in camera).

e. Kirkland, New Mexico (Praxair)

311. CB&I was awarded a LIN/LOX project by Praxair in Kirkland, New Mexico pursuant to a partnering agreement.

(Scorsone, Tr. 5019-20). PDM had entered into an alliance agreement with Praxair which obligated Praxair to award non-union LIN/LOX tank projects to PDM, and PDM was obligated to construct the projects at a 4 percent margin level. (Scorsone, Tr. 5018-19; RX 87 at 4). In 2001, PDM and Praxair agreed to renew the agreement for another three years. (RX 87 at 2). The partnering agreement between Praxair and PDM was transferred to CB&I after the Acquisition. (Scorsone, Tr. 5019).

5. Recent entry in the LIN/LOX market

312. No foreign company has ever built a LIN/LOX tank in the United States. (Hilgar, Tr. 1385).

a. AT&V

313. AT&V is a recent entrant to the LIN/LOX market. AT&V has won all three LIN/LOX projects that it has bid on. (Scorsone, Tr. 5018). AT&V is committed to pursuing LIN/LOX projects in the United States. (Cutts, Tr. 2332). AT&V has submitted budget pricing for approximately six customers and has formally been pre-qualified as a bidder by one customer and informally pre-qualified by several others. (Cutts, Tr. 2452-53).

314. Reviews of AT&V's price and performance for BOC's Midland project are mixed. One BOC witness testified that he "was satisfied with the price" it received and "satisfied with the work that AT&V did at Midland." (V. Kelley, Tr. 5285). Another testified that, although the price was low in the beginning, because of the many change orders the price ended up higher. (Kistenmacher, Tr. 931-32). In addition, "there was a design run of pipe [on the BOC project] that could have caused liquid oxygen to settle and then dissipate, creating a hazardous atmosphere in that location." and a "welding error" during construction that caused the steel plate that comprises the tank to buckle at a weld joint. (V. Kelley, Tr. 5269, 5273-74).

315. AT&V does not compete on an equal footing with CB&I in the LIN/LOX market. AT&V is much smaller than CB&I. (CX

460 at CBI-E 007235; JX 23 at Ex. 1 (Cutts, Dep.), in camera; Simpson, Tr. 3292-3315). AT&V's annual revenues are only 2-3 percent of CB&I's revenue. (CX 460 at CBI-E 007235; JX 23 at Ex. 1 (Cutts, Dep.), in camera; CX 1033 at 28). AT&V is capacity constrained. (Simpson, Tr. 3315 (citing JX 23a at 44, (Cutts, Dep.)). AT&V lacks the field capacity to handle more than four LIN tanks at a time or one small LNG project at a time. (Cutts, Tr. 2376). Recently, AT&V had to refuse to bid on two cryogenic tank projects in the United States because of its limited field capacity. (Cutts, Tr. 2375).

316. Cutts admitted that CB&I will outperform AT&V on future projects for years to come. "There would still probably be a few years to catch up... [CB&I] would still probably be able to outperform us a little bit until we had a few years under our belt." (Cutts, Tr. 2380). Cutts stated that AT&V could compete with CB&I only "on certain fronts, on certain scale projects, okay, with certain assistance, if the customers are willing." (Cutts, Tr. 2374).

317. Customers that have done business with AT&V have found that any initial savings are often offset or exceeded by oversight costs and costs related to change orders. (Kistenmacher, Tr. 931-32; Kamrath, Tr. 2254-55, in camera). F. 297-98, 304, 314.

318. Air Products has not qualified AT&V as a LIN/LOX tank supplier, due to its concern over AT&V's performance and poor reputation. (Cutts, Tr. 2355-56; Hilgar, Tr. 1369). Another LIN/LOX customer, [redacted], thinks that [redacted] was "insane for buying a tank from an inexperienced tankee," and testified that it is concerned about working with AT&V, based on word of mouth reports of AT&V's performance on its LIN/LOX projects for [redacted]. (CX 41 at CBI-E 007336; Patterson, Tr. 472, in camera). [redacted] F. 305.

319. In Respondents' competitive profile of AT&V, Respondents state that AT&V's "quality" and "safety" are "poor." (CX 86 at PDM-CH 002617). The document notes that on past projects, AT&V performed poorly in terms of supplying a quality

tank or sphere and has not met customer safety standards. Kellogg and Bechtel threw AT&V off projects due to poor quality or poor safety practices. Moreover, in the past, Dupont, Shell-Norco and Exxon (Baton Rouge) would not let AT&V bid on their projects. (CX 86 at PDM-CH 002617). Respondents describe AT&V's safety practices as "severely lacking ... and are being labeled as an undesirable risk by many." (CX 263 at CBI-HOO-004606).

b. Matrix

320. Matrix is a recent entrant. Although Matrix won only 4 of the 83 awards prior to Acquisition, all 4 of these are recent LIN/LOX construction. In 1997, Praxair awarded Matrix a liquid oxygen and liquid nitrogen "cluster tank" project in Rossford, Ohio over CB&I. Matrix finished the work on time and to the satisfaction of Praxair. (Newmeister, Tr. 2174-75). Matrix built two LIN/LOX tanks for Praxair in Delaware City, Delaware, in 1998. (Newmeister, Tr. 2173; 2176-77). Matrix was awarded the Delaware City LIN/LOX project in 1998 over CB&I and it completed the project on time. (Newmeister, Tr. 2176-77). In 2000, Matrix was awarded a LAR tank for Praxair in East Chicago. Praxair was satisfied with the construction and the project was erected on schedule. (Newmeister, Tr. 2173; 2176-77). Also in 2000, Matrix was awarded a LIN tank by Air Products for a project in Kingsport, Tennessee. Air Products awarded the tank to Matrix over CB&I and PDM, despite the fact that Matrix had never built a tank for Air Products before. (Newmeister, Tr. 2173-74).

321. Matrix has been a high bidder, and consequently non-competitive, on recent LIN/LOX tank projects for several customers, including Air Liquide and Linde. (Newmeister, Tr. 2156-58). (See Fan, Tr. 960-62 (on 2002 project, Matrix bid over [redacted], while CB&I bid [redacted]); Kistenmacher, Tr. 860 (on preliminary bids, Matrix was eliminated from consideration because its pricing was high); Fontenot, Tr. 2029 (CB&I was at least [redacted] Matrix on Air Liquide's recent Longview, Texas project).

322. Matrix has been told that Matrix has not won these projects either because its pricing has been too high or because the customer did not believe that Matrix was sufficiently qualified. (Newmeister, Tr. 2155-58; Kamrath, Tr. 2000-01 (Matrix's prices have "never been below what we'd seen from any of the other competitors"); Fontenot, Tr. 2022 ("didn't feel comfortable with Matrix"); Hilgar, Tr. 1354, 1382-83 (Matrix has "more limited capacity to produce field-erected cryogenic storage tanks," as compared to CB&I or PDM)).

323. Air Product's supply manager, with responsibility for bidding out LIN/LOX tanks, testified that Matrix cannot replace PDM in the LIN/LOX marketplace from Air Products' perspective. (Hilgar, Tr. 1354).

324. Matrix is a diminished competitor in the LIN/LOX tank market as a result of the sale in August 2000 of its Brown Steel subsidiary, which owned the fabrication facility where Matrix fabricated LIN/LOX tanks. (Newmeister, Tr. 1590-91, 1595). Matrix determined that "once we sold Brown Steel Company, we lost some competitive advantage in the two primary areas, one of which - one of being able to do internal blasting and priming, and the other, impressing." (Newmeister, Tr. 2158-59). By losing its fabrication capability, Matrix is required to subcontract the fabrication work for these tanks, and subcontracting increases Matrix's costs. (Newmeister, Tr. 1569-70, 1590 (As a result of subcontracting its fabrication work, Matrix's "costs will be higher. They won't be as competitive.")).

c. Chattanooga Boiler & Tank

325. Chattanooga Boiler & Tank ("Chattanooga") does not effectively compete in the LIN/LOX market. Chattanooga has never built a LIN/LOX tank. (JX 2 at 2 (Respondents stipulate that Chattanooga has never built a LIN/LOX tank); CX 623 at FTC0000399; Stetzler, Tr. 6413-15). Chattanooga has never created any strategic plans or pricing strategy for designing, engineering, fabricating, or erecting LIN/LOX tanks. (Stetzler, Tr. 6421-22, 6426). Mr. Jerry Stetzler, Chattanooga's President,

testified that the supply of LIN/LOX tanks is "not really a business that we've been participating in." (Stetzler, Tr. 6422).

326. On one occasion when it recently bid on a LIN/LOX project, Chattanooga's price was higher than any other competitor. (CX 189 at CBI-PL015105; [redacted], Tr. 457, in camera) (Chattanooga's price was [redacted] higher than CB&I's).

327. LIN/LOX industry participants question Chattanooga's ability to build a LIN/LOX tank. MG Industries "has doubts" of Chattanooga's "abilities." (CX 41 at CBI-E007336). Cutts testified that AT&V does not consider Chattanooga for LIN/LOX tanks in the United States. (Cutts, Tr. 2333). Scorsone admitted that Chattanooga was never "on the radar screen for competing for LOX/LIN projects." (Scorsone, Tr. 4877).

6. Barriers to entry in the LIN/LOX market

328. It is very important to MG Industries that its suppliers have prior experience. (Patterson, Tr. 467, in camera).

329. To build a LIN/LOX tank takes very specialized know-how, including knowledge about the material shrinking process and how to avoid cracks. (Kistenmacher, Tr. 852).

330. If a LIN/LOX tank is not constructed properly, severe harm and destruction could occur. (Kistenmacher, Tr. 848).

331. Track record and experience of the vendor are important factors in selecting a manufacturer of LIN/LOX tanks. (Kistenmacher, Tr. 849).

332. A new entrant will need to establish the capability to perform specialized metal fabrication. (Hilgar, Tr. 1343-44 (fabrication of the pieces for a LIN/LOX tank is complex due to "the tolerances and the manufacturing processes. . . . [if the] pieces get to the field and don't fit, you have a major problem"); Kamrath, Tr. 1995 (customer "would be very concerned about how he manages that, the supervision he provides, the standards

and guidance he provides. It's not something that eliminates a supplier, but certainly it raises a concern.")).

333. A new entrant will need large amounts of cash to conduct physical tests of materials and tank prototypes or components. For example, Matrix spent [redacted] testing cellular glass and rigid insulation systems that form the ground insulation between the inner and outer tanks for a LIN/LOX tank. (Newmeister, Tr. 1584-85; Kamrath, Tr. 2235-36, in camera [redacted]

334. Air Liquide would not buy a LIN/LOX tank from someone who had not built a tank before, because of the risks, including technical and safety risks, and project execution risk. (Kamrath, Tr. 1995-96, 2236-37, in camera; see also Knight, Tr. 2628 (experience building LIN/LOX tanks provides customers with confidence that the product will be designed and built the way it was requested); JX 25 at 83-4 (Hilgar, Dep.) (describing safety hazards associated with LIN/LOX tanks).

7. Alleged post-acquisition price increases

335. In 2002, Linde and Praxair were competing against each other for the same air separation facility. (Scorsone, Tr. 5020). Linde lost the air separation facility to Praxair, therefore Linde did not pursue the pricing for its proposed project any further than the budget pricing stage. (Scorsone, Tr. 5020-21). Praxair won the contract for air separation facility and awarded the LIN/LOX project to CB&I. (Scorsone, Tr. 5019).

a. Linde-New Mexico Project

336. In 2002, Linde BOC Process Plant LLC ("Linde") requested budget pricing for a proposed 344,000 gallon LIN/LOX tank to be located in New Mexico ("Linde-New Mexico"). (Fan, Tr. 1002, 1064; CX 1344 at LPPI 0000259, LPPI 0000261).

337. Mr. Chung Fan is a proposal manager at Linde BOC Process Plants. (Fan, Tr. 947). In his request for proposal, Fan did not provide the following information: a construction schedule

(Fan Tr., 1073), where in the state of New Mexico the project would be located (Fan, Tr. 1075), the time of year that the tank would be constructed (Fan, Tr. 1076), the conditions of the project site (Fan, Tr. 1077), or the identity of the end-user (Fan, Tr. 1078; see also RX 860 at CBI 071847). Fan provided only a preliminary nozzle list (Fan, Tr. 1060) and requested that the pricing for the New Mexico project be submitted within two weeks time. (Fan, Tr. 1062). Fan admitted that he did not provide sufficient information to produce a firm-fixed price. (Fan, Tr. 1078).

338. AT&V quoted a price of approximately $ 600,000. (Fan, Tr. 960-961). Matrix responded with a price of over $ 900,000. (Fan, Tr. 962). CB&I responded with a budget price of $ 814,000. (CX 1344 at LPPI 0000261).

339. Fan stated that he did not consider AT&V's price "reliable" because it diverged so widely from CB&I and Matrix. (Fan, Tr. 963). Fan could not see how AT&V could do it so cheaply compared to CB&I. (Fan, Tr. 963). While AT&V's low price has caused some concerns for Linde, there has been pressure within Linde to use AT&V because of their low price. (Fan, Tr. 1016-18).

340. Fan dismissed Matrix because he believed its price was always high. (Fan, Tr. 1019).

341. Fan compared CB&I's budget price on the New Mexico project, which was based on incomplete information and was not the result of any negotiation, to a 3 year old PDM firm fixed price which was the result of significant negotiation, and believed that CB&I's price had gone up. (Fan, Tr. 1019, 1069-70).

342. Fan also compared CB&I's price with a pricing model that Linde routinely uses to distinguish between reasonable and unreasonable price quotes from vendors. (CX 1584; Fan, Tr. 966, 1024). Using his pricing model and the past price information from PDM, Fan concluded that the quote he received from CB&I

was higher than Linde would have paid to PDM. (Fan, Tr. 1009-10).

343. Prior to April 2002, the time of the New Mexico estimate, Fan had not updated his estimating spreadsheet for approximately two years. (Fan, Tr. 973). Fan stated that he uses the year 1998 as a baseline for his spreadsheet. Fan agreed that the further away from his baseline year of 1998 he gets, the less accurate his estimating attempts become. (Fan, Tr. 1069). Fan stated that his calculations do not account for price changes between the time the project is bid and the time it is awarded because that is not the purpose of his spreadsheet. (Fan, Tr. 1055-56).

344. Fan stated that his method was not accurate enough to determine if CB&I's prices went up because he did not have CB&I's metal pricing. (Fan, Tr. 1056). Fan does not know the quantity of perlite used for any of the tanks in his spreadsheet. (Fan, Tr. 1045). Fan stated that it is very difficult to calculate the amount of perlite and the thickness of the perlite required for a project because it shrinks when the tank is filled with cryogenic fluid. (Fan, Tr. 1045). Fan did not call up perlite suppliers to determine the current rate for perlite. (Fan, Tr. 1049). Fan did not call the foamglass supplier to determine the current rate for foamglass. (Fan, Tr. 1050). Fan did not call the concrete supplier to determine the current rate for concrete. (Fan, Tr. 1050). Fan did not know the thickness of the metal CB&I intended to use for the New Mexico project and attempted to calculate the metal thickness based upon drawings from other non-CB&I tanks. (Fan, Tr. 1047).

b. Praxair-New Mexico Project 1

345. On June 15, 2002, CB&I submitted a pricing proposal to Praxair for a [redacted] gallon LIN/LOX tank to be built in Farmington, New Mexico. (CX 1508 at CBI 059657, in camera). Pursuant to the sole-source exclusive partnership agreement Praxair negotiated with CB&I shortly prior to the Acquisition, Praxair is obligated to contract with CB&I for its domestic non-

union LIN/LOX tanks, and CB&I is required to provide open book pricing with a four percent margin. (Scorsone, Tr. 5019-20).

346. CB&I's quote to Praxair was [redacted]. (CX 1508 at CBI 059657, in camera).

347. CB&I provided a firm fixed price to Praxair pursuant to its partnering agreement; Praxair provided CB&I with all of the detail necessary to arrive at a firm price. (Scorsone, Tr. 5020-21). By contrast, CB&I had submitted a budget price to Linde because Linde had provided minimal detail and omitted the location of the project. (Scorsone, Tr. 5020-22; F.337).

348. The tanks proposed by Linde and Praxair for the same location were drastically different in scope and design. In contrast to the Linde tank, Praxair designed a more slender tank which resulted in an additional horizontal weld seam as well as required thicker steel throughout the tank. (Scorsone, Tr. 5021). The Praxair project scope also included a full-time welding supervisor, an increased 50 hour work week, additional subsistence in order to attract field labor to the remote site, and a more complex nozzle structure. (Scorsone, Tr. 5021-22). Praxair specifically defined the complex nozzle structure they wanted for their tank, while Linde provided only basic information concerning its anticipated nozzle configuration. (Scorsone, Tr. 5022). There are approximately $ 60,000 worth of additional cost items included in the-Praxair pricing that were not included in the Linde budget price. (Scorsone, Tr. 5022).

c. Praxair-New Mexico Project 2

349. On November 6, 2001, after the merger, Praxair asked CB&I to provide a budget price for an LR-60 LIN tank in Farmington, New Mexico. (CX 448 at CBI-E 007391).

350. CB&I estimating staff was instructed to use a 4% profit margin. (CX 448 at CBI-E 007391). CB&I estimating staff was also instructed to use PDM's price on the Colorado Springs tank as a basis for determining the price for the New Mexico project, if

necessary. (CX 448 at CBI-E 007393). PDM had provided a rough budget price of [redacted] for a 500,000 gallon LOX tank in Colorado Springs, Colorado for Praxair in November 2000. (CX 448 at CBI-E 007391; CX 449 at CBI-E 007401, in camera; see RX 90 at PDM-CH 002717).

351. CB&I submitted "tight budget pricing" of [redacted] for the New Mexico tank on April 30, 2002. (CX 449 at CBI-E 007411, 007403, in camera).

352. CB&I explained to Praxair that the increased price was a result of [redacted] (RX 92 at CBI-E 007401, in camera).

8. Sophistication of customers

353. BOC is an experienced purchaser of LIN/LOX tanks. BOC hired engineering consultants to assist it and AT&V in working through the Midland project. (V. Kelley, Tr. 4619-20).

354. MG Industries has experience purchasing LIN/LOX tanks in the past; it purchased [redacted] such tanks during the 1990s. (Patterson, Tr. 478-79, in camera). During the 1990s, MG Industries would often drive tank costs down by informing vendors that they were higher-priced than other vendors. (Patterson, Tr. 350).

355. Air Liquide Process is experienced at purchasing LIN/LOX tanks both domestically and overseas. (See Kamrath, Tr. 1979-80, 1983-85). [redacted] (Kamrath, Tr. 2235-36, in camera).

H. Effects on Competition in the TVC Market

1. Overview of the TVC market

356. A Thermal Vacuum Chamber ("TVC") is a large metal enclosure used to simulate the vacuum of space for the purpose of testing satellites and satellite components prior-to launch. (Gill, Tr. 179-83; Neary, Tr. 1423-24). A TVC simulates the

atmospheric and thermal conditions found in space. (Gill, Tr. 183; Proulx, Tr. 1722-23; Thompson, Tr. 2039-40; Higgins, Tr. 1264).

357. A TVC is composed of a large vacuum envelope (or chamber) constructed of stainless steel shaped roughly like a horizontal cylinder with a front door that may swing on a hinge or slide laterally on a rail. (Scully, Tr. 1098-99).

358. A "thermal vacuum system" is the process equipment that goes inside a TVC to simulate extreme heat and cold. (Higgins, Tr. 1263). The thermal vacuum system is comprised of one or more shrouds, vacuum insulated pipe, and cryo pumps or other pumping equipment, which are all controlled by a thermal control unit. (Higgins, Tr. 1263).

359. A TVC is outfitted with two or three different types of vacuum pumps that are used collectively to achieve the vacuum conditions found in space. (Scully, Tr. 1099).

360. The thermal shroud turns the vacuum chamber into a TVC. (Scully, Tr. 1099). This thermal shroud is a black wall found inside the vacuum envelope that cools or heats the contents of the chamber through radiation. (Scully, Tr. 1099-1101).

361. The extreme temperatures required inside a TVC are created by blowing nitrogen through tubes connected to the thermal radiator. (Scully, Tr. 1100; Thompson, Tr. 2039-40).

362. TVCs require field-erection at the facility site. Field-erection is required when the chamber or its pieces become too large to transport to the site. (See Gill, Tr. 187). This field-erection includes transporting the fabricated pieces of the stainless steel chamber to the site, using cranes and riggers to align the pieces, and using welders to weld the chamber pieces together. (Gill, Tr. 186, 268-69; Hart, Tr. 407; see also Newmeister, Tr. 2188-89).

2. Market shares and concentration in the TVC market prior to Acquisition

363. CB&I's acquisition of PDM combined the only two competitors in the market for large field-erected TVCs in the U.S. (Simpson, Tr. 3489 (citing CX 272; CX 857, in camera; CX 264; CX 1040 at PDM-HOU 010889; CX 94 at PDM-HOU 017583)). Since 1960, the only companies that have built TVCs are PDM and CB&I. (Scully, Tr. 1110, 1115 (referencing RX 178); Higgins, Tr. 1267; Newmeister, Tr. 1564).

a. Tank projects

364. Only one field-erected TVC has been built since 1990. This was built by PDM in 1996. (Glenn, Tr. 4089, 4160; Scully, Tr. 1165, 1189, 1193).

365. CB&I has not built a field-erected TVC since 1984. (Scorsone, Tr. 5055-56; Glenn, Tr. 4089, 4160; Scully, Tr. 1187-89, 1193; Higgins, Tr. 1276-77). CB&I has never built a mailbox-shaped field-erected TVC. (Scully, Tr. 1193; Neary, Tr. 1467; Scorsone, Tr. 5056).

366. Both CB&I and PDM provided final pricing offers for [redacted] large, field-erected mailbox shaped TVC in 1997 that [redacted] now calls the [redacted]. ([redacted], Tr. 1740, 1901, in camera). In addition, two other companies, [redacted] responded to [redacted] request for proposals. ([redacted], Tr. 1890-91, in camera). [redacted] eliminated these companies from the bidding process because they were not qualified. ([redacted], Tr. 1890-91, in camera).

367. PDM provided a firm fixed price proposal for a large, field-erected TVC for [redacted] Seal Beach facility in 1999. (CX 1573 at 5, in camera; [redacted], Tr. 1925-27, in camera). [redacted] sought a sole-source procurement with PDM without even considering CB&I. ([redacted], Tr. 1927, in camera; Scorsone, Tr. 5081-82, in camera).

368. Both CB&I and PDM developed specifications for a large field-erected TVC for Spectrum Astro in 1999. (CX 969 at CBI-PL014693; CX 1162 at CBI-ATL000941, in camera; Thompson, Tr. 2047-2048). In November 2000, both CB&I and PDM submitted best and final offers for the Spectrum Astro project. (Thompson, Tr. 2051; Scorsone, Tr. 5115-16). CB&I was selected. CB&I's price was lower than PDM's. (Thompson, Tr. 2051). Spectrum Astro subsequently decided not to proceed with the field-erected TVC project. (Thompson, Tr. 2097, 2103-04). CB&I and PDM were the only companies competing for this project. (Scully, Tr. 1169; Higgins, Tr. 1270).

369. Both CB&I and PDM were asked to provide rough order of magnitude ("ROM") pricing for a large field-erected TVC to TRW in 1999. (Neary, Tr. 1430-31). TRW has not asked for bids. (Gill, Tr. 253). After the Acquisition, TRW requested TVC pricing from Howard Fabrication, a small producer of shop-built TVCs. (Neary, Tr. 1442-43). TRW plans to award the contract for this TVC in late 2003 and begin building it in 2004. (Neary, Tr. 1431, 1471-73, 1501). CB&I, PDM and Howard were the only companies asked to provide ROM pricing. (Neary, 1431-32, 1444).

b. HHI calculations

370. Dr. Simpson testified that he would assign a 50-percent market share to CB&I and a 50-percent market share to PDM based on the opinions of market participants, documents, and the history of awarded projects. (Simpson, Tr. 3492-93, 3495-96). Dr. Simpson includes in his HHI analysis the value of the Spectrum Astro project which was awarded to CB&I, but was not built. (Simpson, Tr. 3495). On these bases, Dr. Simpson testified that the Acquisition increased market concentration, as measured by the HHI, by 5000 points to a level of 10,000. (Simpson, Tr. 3494).

371. If CB&I and PDM are assigned market shares based on the dollar value of awarded sales since 1990, CB&I has a 49.3 percent market share, and PDM has a 50.7 percent market share. (Simpson, Tr. 3493-94). Based on the dollar value of TVC awards

since 1990, CB&I and PDM have a combined share of 100%, and the Acquisition increases market concentration, as measured by the HHI, by 4,999 points to a level of 10,000. (Simpson, Tr. 3494; CX 1210 at 7, in camera; CX 567 at CBI 007139-HOU).

372. While CB&I was awarded a bid in 2000 for Spectrum Astro, a contract was never signed and the project was canceled. (Thompson, Tr. 2097, 2103-04; Scorsone, Tr. 5336-37). Without the proposed Spectrum Astro project included, PDM would have 100% market share and an HHI of 10,000 since 1984. The increase in the HHI would be zero.

373. Demand in the TVC market is extraordinarily thin. (Harris, Tr. 7325).

374. Already thin demand is decreasing for large, field-erected TVCs as the result of consolidation in the aerospace business, the miniaturization of electronic components in satellites, and the change in the economy since the 1990's. (Scully, Tr. 1199-1204).

375. Use of data from 1990 to Acquisition does not accurately predict harm to competition because the market for TVCs is extraordinarily thin. (Harris, Tr. 7325-27).

3. Respondents were each others' closest competitors in the TVC market

a. CB&I's views

376. CB&I's business and strategic documents refer to PDM as CB&I's "only competitor" for TVC projects in the United States. (CX 212 at CBI-PL031721; see also CX 264 at CBI-H006780 ("only real competitor"); CX 265 at CBI-H007057 ("single USA competitor").

377. CB&I considered PDM to be a "formidable" competitor in the TVC market (CX 216 at CB&I-PL033886, see also CX 212 at CBI-PL031721 (PDM's strategic alliance was "the only

competition for the thermal vacuum systems market")), and "our major competition if new work emerges" in TVCs. (CX 1040 at PDM-HOU 010889).

378. CB&I purchased XL Technology Systems ("XL") on September 30, 1999 with the hope that XL's technology would help CB&I compete in the field-erected TVC market. (Scully, Tr. 1123-30, 1178, 1189; see also Glenn, Tr. 4161).

379. The purchase of XL in 1999 improved CB&I's competitiveness in the TVC market. (Gill, Tr. 257). CB&I's partnership with XL was a significant factor in CB&I's winning the source selection for the Spectrum Astro project. (Thompson, Tr. 2103; Scully Tr. 1226).

b. Industry views

380. John Gill, owner of Howard Fabrication, testified that prior to the Acquisition, "PDM was either number one or number two," and CB&I was, "either number one or number two." (Gill, Tr. 204-205).

381. Kent Higgins, President of Process Systems International, testified that "PDM and CB&I" were the only firms that had the capability to construct TVCs. (Higgins, Tr. 1267).

382. Patrick Neary, Manager of the Environmental Test Organization, testified that Respondents were "the two large field-erected manufacturers" of TVCs. (Neary, Tr. 1430).

383. John Newmeister of Matrix testified that Respondents were the only two firms who have competed in the TVC market. (Newmeister, Tr. 1564).

384. [redacted], Product Manufacturing Factory Planning Manager for [redacted], testified that Respondents were "the lowest risk and best candidates for success." ([redacted], Tr. 1899, 1900, in camera). Other firms lack the expertise to be as cost-

effective and of equal quality as Respondents. ([redacted], Tr. 1900-01, in camera).

385. David Thompson, CEO of Spectrum Astro, who has "seen most of the TVCs in the industrial base in the [United States]," testified that Spectrum Astro "tried to do a survey of everybody in the country that we thought would be a qualified bidder, and the two bidders that we found at the time were Chicago Bridge and Iron and PDM." (Thompson, Tr. 2039-41). Spectrum Astro saw CB&I and PDM "fighting against each other pretty hard to get our business." (Thompson, Tr. 2115).

386. XL Technologies viewed the competition between Respondents as "always relatively intense." (Scully, Tr. 1175). CB&I's desire to win TVC projects caused the "pricing [of TVCs] to go down." (Scully, Tr. 1175-6). The competition was so "intense" that XL Technologies and its partner CB&I worried that the prices to customers would not return a profit: "the costs incurred to get" a project were so high that "if the price of the system isn't high enough, you've lost your profit before you ever begin the job." (Scully, Tr. 1179-81). Ronald Scully, President of XL Systems, testified that turnkey suppliers for TVCs were limited to Respondents. (Scully, Tr. 1115, 1237).

387. Scully made sales calls to Lockheed on behalf of CB&I and XL Systems ("XL Systems") in 1997 in an attempt to solicit TVC business. (Scully, Tr. 1190). Lockheed employees refused to work with CB&I, because Lockheed believed PDM to be dominant in the industry and the technological leader. (Scully, Tr. 1190-91).

c. Competition between Respondents lead to lower prices

388. In [redacted], which is now owned by [redacted], procured a large, field-erected, mailbox-shaped TVC that [redacted] now calls the [redacted]. ([redacted], Tr. 1740, 1901, in camera).

389. PDM and CB&I each attempted to preempt the competitive bidding process and win the project on a sole-source basis. Bob Swinderman, PDM sales representative, told [redacted] that sole-sourcing the chamber with PDM "would be the cheapest and fastest way" to get the chamber built. ([redacted], Tr. 1889-90, in camera). CB&I echoed the same sentiment, giving similar assurances to [redacted] if it sole-sourced the chamber with CB&I. ([redacted], Tr. 1889-90, in camera)

390. [redacted] testified that he did not want to sole-source the project, as a sole-source arrangement generally resulted in higher costs. ([redacted], Tr. 1890, in camera).

391. Rather than sole-source the project, [redacted] made the specifications for the project available to "all the interested bidders." ([redacted], Tr. 1892, in camera). [redacted]." ([redacted], Tr. 1890-91, in camera).

392. Four companies responded to [redacted] request for proposals: CB&I, PDM, [redacted]. ([redacted], Tr. 1899, in camera). These bidders presented "their conceptual design," cost estimate material, and other information required by [redacted]. ([redacted], Tr. 1892, in camera).

393. [redacted] submitted the lowest bid in response to [redacted] performance specifications. However, [redacted] did not meet [redacted] standards. [redacted] eliminated [redacted] from the bidding because "they did not show that they had a complete wherewithal as to the scope of the project in order to come in at cost," they "did not have clear solutions on some of the items delineated in . . . [redacted] preliminary proposal review," and ". . . they lacked the demonstrated experience of building something of that size." ([redacted], Tr. 1900, in camera).

394. [redacted] also eliminated [redacted] as a possible competitor because ". . . their proposal couldn't meet the spec. . . they took exception to some of our specs." ([redacted], Tr. 1901, in camera).

395. In addition to the four original bidders, [redacted] also contacted two other suppliers, "[redacted], and requested that they submit proposals for the project. ([redacted], Tr. 1902-1903, in camera). [redacted] refused to submit a bid because "they felt the size of the project was beyond their company's means." ([redacted], Tr. 1903, in camera).

396. The elimination of [redacted] and [redacted] from the competition, and the refusal of [redacted] to submit a bid, left PDM and CB&I as the two down-selected bidders for the [redacted]. ([redacted], Tr. 1892, in camera).

397. [redacted] told CB&I and PDM that they were competing against each other for the [redacted]. ([redacted], Tr. 1909, in camera). [redacted] project manager testified that he wanted CB&I and PDM to know that they were competing against each other because "when you have competitors bidding best and final, one number takes all, [that] is when we would receive the lowest price. . . ." ([redacted], Tr. 1909, in camera).

398. [redacted] asked each company for "cost-saving initiatives, what could be done to reduce costs." ([redacted], Tr. 1907, in camera). As both companies developed their final designs, incorporating their own cost-saving innovations, they used "their expertise as designers and builders to suggest anything that might lower the bottom line cost for the chamber." ([redacted], Tr. 1907-08, in camera).

399. After receiving the final pricing offers for the [redacted] added some items to the TVC specifications. ([redacted], Tr. 1911, in camera). Even though [redacted] believed these additional items "would have increased the price," [redacted] asked CB&I and PDM to "sharpen their pencils and give me their lowest price." ([redacted], Tr. 1911-12, in camera).

400. In response to this last request, CB&I increased its final pricing "a little bit." ([redacted], Tr. 1911, in camera).

401. Despite the increase in cost from the additional items, "PDM actually lowered their price by . . . over a million dollars." ([redacted], Tr. 1910-11, in camera; see Scully, Tr. 1166 (after the bid was awarded, CB&I learned that, at the last opportunity in the bidding process, PDM had further lowered its price by "something in the order of as much as $ 2 million")).

402. PDM bid the [redacted] in 1997 at below cost with the intention of keeping CB&I completely out of the market. (Scully, Tr. 1193-94, 1166).

403. [redacted] perceived, based on comments, that PDM lowered its pricing to demonstrate "technical prowess, boasting rights, so to speak, of having won or the desire to win for future business prospectives that [redacted] contract. . . ." ([redacted], Tr. 1916, in camera).

404. Sometime after [redacted] awarded the contract to PDM, [redacted] talked with Bob Swinderman, the PDM sales representative, about the competition for the [redacted] project:

> . . . PDM had felt that CB&I had been out of the market for several years and that if they allowed them to win that particular project, which was a very significant project, that they would be back in and become a significant competitor, and it was important to PDM management that they not win that, and so through telephone calls they developed a price, lowered the price and offered it to [redacted] at the last minute. . . .

(Scully, Tr. 1166).

405. The lowest price was the deciding factor in who won the project. [redacted] awarded the [redacted] contract to PDM and its subcontractor, Chart Industries, primarily because they offered a lower price than the CB&I/XL team. ([redacted], Tr. 1891-93, in camera).

406. [redacted] testified that his procurement strategy had saved [redacted] below what he had originally estimated as the likely cost of the [redacted]. ([redacted], Tr. 1910, in camera).

4. Competition in the TVC market from Acquisition to time of trial

407. [redacted] ([redacted], Tr. 1957, in camera).

408. TRW began its procurement process for its TVC in 1999 by obtaining ROM pricing from CB&I and PDM. TRW plans to award the contract for its TVC in late 2003 and begin building it in 2004. (Neary, Tr. 1431, 1501).

409. Spectrum Astro will likely procure a new TVC in the next 3-4 years. (Thompson, Tr. 2104).

5. No other companies provide competition in the TVC market

410. Howard Fabrication is a domestic company that supplies shop-fabricated TVCs and thermal vacuum systems. Howard Fabrication has never supplied, and does not have the capability necessary to supply, a TVC with a diameter greater than 20 feet. (Gill, Tr. 182, 192-93). Gill testified that his company, Howard Fabrication, with $ 2.5 million in annual revenues, could not effectively compete in the market for TVCs because it was not large enough to purchase the bonds for TVC projects. (Gill, Tr. 200-01, 234).

411. CB&I does not consider Howard capable of fabricating a TVC, let alone having the capability to design, engineer, and field-erect a TVC. (Scorsone, Tr. 5061 ("I think that would be a real stretch for Howard, very much so.").

412. Mr. Higgins, the President of the Chart division that supplies the systems and equipment attached to TVCs, testified that Chart is not "capable" of field-erecting a TVC by itself. (Higgins, Tr. 1266-67).

413. Matrix has not expended any significant resources on developing its capability to engineer and design TVCs. (JX 37 at 89-90 (Newmeister, Dep.)).

414. XL Technologies admits that it is not capable of supplying a TVC without partnering with an experienced chamber supplier such as CB&I. (Scully, Tr. 1118, 1134, 1252; see CX 262 at CBI-H004037-38). On February 28, 2002, CB&I sold its XL Technologies subsidiary to Scully. (Scully, Tr. 1130). CB&I did not transfer to XL Technologies the assets, engineering know-how, equipment or personnel necessary to the field-erection of large TVCs. (Scully, Tr. 1132-33).

6. Barriers to entry in the TVC market

415. Mr. Scully, President of XL Technology Systems, testified that TVC customers want experienced suppliers with "knowledge as to how to deal with the architects and the construction people . . . and ability to manage a project." (Scully, Tr. 1147; see also Higgins, Tr. 1272; Proulx, Tr. 1756; Neary, Tr. 1455).

416. New entrants would need to obtain "the ability to fabricate in the field a stainless steel vessel" and satisfy "the quality requirements of leak testing and cleanliness" for a TVC. (Higgins, Tr. 1272-3). A new entrant would need to hire engineers with previous experience in designing TVCs, which are "truly one-of-a-kind designs for very specific applications on very technical products." (Newmeister, Tr. 1612-13).

417. Leaks in a TVC can prevent the user from meeting the vacuum specifications required for satellite testing. ([redacted], Tr. 1904-05, in camera). In addition, defects in the welding of the chamber can lead to the leakage of contaminants into the chamber, which can interfere with the accuracy of the test results. (Scully, Tr. 1143-44). If a TVC fails during a satellite test, the satellite within the chamber can be damaged. (Neary, Tr. 1454; Scully, Tr. 1144). Operational problems with a TVC can have a "bad effect" on the satellite's program schedule, because the test

may have to be restarted from the beginning after the problem is resolved. (Scully, Tr. 1145-46).

418. A new entrant would need to expend significant resources in developing proposals and price quotations for TVCs. One CB&I document reports that CB&I expended $ 300,000 in design resources and $ 190,000 in other resources to prepare its TVC proposal for Orbital Sciences' planned chamber. (CX 235 at CBI-PL060198).

7. Alleged post-acquisition anticompetitive behavior

a. Spectrum Astro

419. In the fall of 1999, Spectrum Astro required a TVC in order to be considered for the Space Based Infrared System (SBIRS) Low Phase 2 Program, sponsored by the United States Air Force. (CX 969 at CBI-PL014693).

420. Mr. William Thompson, Spectrum Astro's president, testified that he competitively bid the project, because "we wanted obviously to get the best price we could get." (Thompson, Tr. 2051). Additionally, Spectrum Astro used a competitive bidding process because "we were looking for technical innovation. We generally find that when we have contractors in competition, they will - it will tend to drive innovation into the system." (Thompson, Tr. 2051).

421. Spectrum Astro retained both CB&I and PDM to develop specifications for a large field-erected TVC; Spectrum Astro also entered into an engineering and design contract with each company in which Spectrum Astro paid each company [redacted] (CX 969 at CBI-PL014693; CX 1162 at CBI-ATL000941, in camera; Thompson, Tr. 2047-2048).

422. The contract was to be awarded according to a "rolling down-select between CB&I and PDM/PSI team." (CX 969 at CBI-PL014693).

423. Spectrum Astro received initial cost proposals from both CB&I and PDM in May 2000. CB&I and PDM's total cost amounts were $ 9,929,990 and $ 10,825,853 respectively. (CX 1570 at 22).

424. In November 2000, both CB&I and PDM submitted best and final offers for the Spectrum Astro project. (Thompson, Tr. 2051; Scorsone, Tr. 5115-16). Of the two offers that were submitted, CB&I's price was lower than PDM's. (Thompson, Tr. 2051). CB&I bid $ 10,760,880, an increase of 8.4% above its previous cost proposal. (CX 1570 at 9). PDM bid $ 11,528,900, an increase of 6.5% above its previous cost proposal. (CX 1570 at 5, 37).

425. CB&I's November 2000 offer included a profit margin of 7.77%. (CX 1489 at CBI 060015).

426. After evaluating the proposals submitted by PDM and CB&I, Spectrum Astro elected to proceed with CB&I, in December 2000. (Thompson, Tr. 2061; CX 926 at CBI 007212-HOU).

427. After selecting CB&I for the project, Spectrum Astro proceeded "based upon the price we had in our hands," that is the firm fixed price of approximately $ 10.7 million. (Thompson, Tr. 2065; CX 1489 at CBI 060015).

428. The price provided to Spectrum Astro in December 2000 expired after 90 days, as is typical in this industry, because costs are expected to escalate or fluctuate beyond the 90 day period. (Scorsone, Tr. 5047-48; Thompson, Tr. 2609).

429. Following the selection of CB&I in December 2000, Spectrum Astro did not immediately award the project because it was working to get financing complete. (Thompson, Tr. 2066).

430. CB&I's price expired 90 days after the source selection, in February, 2001, and Spectrum Astro did not request updated pricing until 10 months later in November, 2001. (Scorsone, Tr.

5047; see also Thompson, Tr. 2069). For almost one year, the project remained dormant. (Scorsone, Tr. 5048).

431. In November 2001, CB&I provided Spectrum Astro with updated pricing for the Spectrum Astro chamber. (Thompson, Tr. 2069-2070). CB&I's updated price for the Spectrum Astro TVC was $ 12,019,000 -- almost $ 1.2 million greater than its price 12 months prior. (Thompson, Tr. 2074; CX 567 at CBI 007139-HOU; Glenn, Tr. 4356-57).

432. CB&I's updated price of $ 12,019,000 resulted in an 11.7% increase in the price of the chamber from the November 2000 price. (CX 1489 at CBI 060015; CX 1570 at 5).

433. According to a pricing analysis written by Scott O'Leary, Spectrum Astro's chief of facilities, Spectrum Astro was "expecting a decrease in cost due to the decrease in requirements." (CX 1570 at 5; Thompson, Tr. 2095). During the engineering study, "there were some items that were taken out of the design which should have caused the price to go down." (Thompson, Tr. 2071, 2073). Due to other "offsetting kinds of things" in the design, Thompson testified that on balance, he believed the price of the chamber "would have stayed about the same." (Thompson, Tr. 2073).

434. The November 2001 price included an 11.97% profit margin. (CX 1489 at CBI-060015).

435. Scorsone testified that the extra profit included in the November 2001 re-pricing was a means of recovering some of the pre-contract costs, which was consistent with CB&I's policy at the time. (Scorsone, Tr. 5049). Scorsone told CB&I staff to "to insert the precontract costs incurred previously on the bid effort for this project even though those costs had been incurred in the previous year and had been written off." (CX 1492 at CBI 060000; see Scorsone, Tr. 5118, 5120-21; Scully, Tr. 1173-74). Scorsone further testified that another reason for the extra profit was the perceived need to mitigate some of the risks of moving forward with the project. (Scorsone, Tr. 5049). Satellite programs awarded

by the Government are sometimes delayed. (Thompson, Tr. 2129). As a result, vendors of satellites must take account of the risk that these programs might be cancelled or delayed. (Thompson, Tr. 2129-30). Some of the extra profit was also the result of posturing in the negotiation with Spectrum Astro, because the final terms of the contract were never set. (Scorsone, Tr. 5049-51).

436. Scorsone also testified that the margin was increased to account for the added risk of erecting the "vessel outside of the building and then moving it in [to the building]" with the containment vessel. (Scorsone, Tr. 5122). However, this alternate method of erecting the chamber did not come up until after the November 2001 price increase. (Thompson, Tr. 2078-2079; CX 566 at 2; CX 1570 at 63 (alternate method was discussed in May 2002)). CB&I's comparison of its November 2000 and November 2001 proposals specifically states that estimates did not include "the alternate plan of erecting the chamber outside and then moving it into position." (CX 1489 at CBI 060013).

437. In CB&I's November 13, 2001, updated price quote to Spectrum Astro, Jeff Steimer listed nine reasons for its increase in price. (CX 567 at CBI 007136-HOU, CBI 007137-HOU). On December 19, 2001, CB&I provided Spectrum Astro with a follow-up justification letter to explain the bases for CB&I's price increase. (CX 1570 at 57-59).

438. Neither the November 13th nor the December 19th letter provide as reasons for the price increase the recovery of pre-contract costs previously incurred or risks of having to erect the chamber from outside the building. (CX 1570 at 46-47, 57-59).

439. The November 2001 price expired again after 90 days without Spectrum Astro acting on the new price. (Scorsone, Tr. 5051). After the second price had expired, Spectrum Astro waited six or seven months before requesting an updated price from CB&I. (Scorsone, Tr. 5051). The companies did not have a contract or financing at that point. (Scorsone, Tr. 5051-53).

440. In May 2002, Spectrum Astro responded to the November 2001 price asking CB&I to try again. (Scorsone, Tr. 5051). On June 25, 2002, CB&I provided Thompson with an updated price in the amount of $ 11,553,790, a decrease of roughly $ 500,000 from the previous price update. (Thompson, Tr. 2091-92).

441. CB&I lowered its price in June 2002, because Scorsone was aware that the customer was having difficulty obtaining financing, and he wanted to assist them by making the project more viable with a lower price. (Scorsone, Tr. 5051-53). The June 2002 price lowers the profit margin to 8%. (CX 1489 at CBI 1060015).

442. Spectrum Astro does not plan to proceed with the field-erected TVC project. (Thompson, Tr. 2097, 2103-04). The decision is the result of "government action." (Thompson, Tr. 2097). The lack of financing also influenced the decision. (Thompson, Tr. 2105). It will be a long time before the Spectrum Astro job is actually built, if at all. (Scully, Tr. 1225-26).

443. Instead, Spectrum Astro intends to build a smaller shop-fabricated chamber, a product which CB&I does not build. (Thompson, Tr. 2104-2105).

b. TRW

444. In 1999, TRW Space & Electronics ("TRW") decided to procure a TVC, and requested rough order of magnitude ("ROM") pricing from CB&I and PDM. (Neary, Tr. 1430-31).

445. TRW considers Howard Fabrication to be unqualified to compete in the TVC market. Neary testified that Howard Fabrication does not have "the technical competence nor the financial backing" necessary for TRW to award it a TVC project. (Neary, Tr. 1443). After the Acquisition, TRW nevertheless requested pricing from Howard Fabrication because it wanted to maximize competition for the TVC project. (Neary, Tr. 1444).

446. A CB&I salesman, Mike Miles, called John Gill of Howard Fabrication in mid-October 2002 to set up a meeting to discuss a new opportunity to work together. (Gill, Tr. 242-44). Miles did not indicate the nature of the opportunity during the initial phone call. (Gill, Tr. 242-44, 251-52).

447. Neither Miles nor Gill knew at the beginning of their October 2002 meeting that they had each separately provided very rough order of magnitude pricing on the TRW project. (Gill, Tr. 252-53, 274; Scorsone, Tr. 5059-60).

448. During the October 2002 meeting, Miles mentioned the possibility of Howard serving as a partner or subcontractor with CB&I for purposes of an unnamed proposed TVC project, since Howard Fabrication has worked with PDM as a subcontractor in the past. (Gill, Tr. 246-248, 251-56; Scorsone, Tr. 5059-60).

449. According to Gill, at the October 2002 meeting Miles gave him a copy of design specifications that he recognized as the same specifications that he was given by TRW for its TVC project. (Gill, Tr. 245). Gill told Miles that he knew the job was for TRW and that he had already presented a proposal to TRW for the job. (Gill, Tr. 245, 252-53, 274).

450. Gill testified that, nevertheless, during the October 2002 meeting, Miles asked him whether Howard "could coordinate on making a bid or a price quote to TRW." (Gill, Tr. 247). Gill confirmed that Miles proposed coordinating on the TRW bid after Gill had told him that Howard was bidding on the project. (Gill, Tr. 274).

451. Miles did not make this offer to coordinate on a bid to TRW with the consent or knowledge of management at CB&I. (Scorsone, Tr. 5059-62). Miles is an entry-level salesperson, and not a CB&I executive. (Scorsone, Tr. 5061-62). CB&I was unaware that Howard Fabrication had submitted budget pricing on the TRW project prior to Miles' meeting. (Scorsone, Tr. 5060).

452. TRW believes that CB&I's proposal to Howard to coordinate on the price and bid to TRW deprives TRW of any chance for relief from CB&I's monopoly price. At trial, Neary of TRW testified that "it's not right" for a bidder to ask a competing bidder to coordinate on making a bid or price quote to TRW. (Neary, Tr. 1451). Neary further testified that "we're not going to get a fair and equitable price. It goes back to why do we even have two competitors. We're at a disadvantage. We're going to get - we're basically hosed, as I would say." (Neary, Tr. 1451).

453. CB&I is still considering using Howard Fabrication as a subcontractor, but would seek the prior approval of the customer before doing so. (Scorsone, Tr. 5060).

c. [redacted]

454. On June 30, 1999, PDM provided [redacted] with a firm fixed price proposal for a large, field-erected TVC for [redacted]. (CX 1573 at 5, in camera; [redacted], Tr. 1925-27, in camera).

455. This firm fixed bid price was [redacted]. ([redacted], Tr. 1927; Scorsone, Tr. 5081-82, in camera).

456. Pre-acquisition, PDM quoted a price of [redacted] in its proposal to [redacted], but the customer chose to postpone the project. (CX 1573 at 5, in camera; [redacted], Tr. 1926, in camera).

457. [redacted] ([redacted], Tr. 1943, in camera). Prices expire because costs change over time. ([redacted], Tr. 1944, in camera). The price of steel and labor costs increased in the interim. ([redacted], Tr. 1952, in camera).

458. In May 2001, [redacted] undertook a study to determine whether it should [redacted]. ([redacted], Tr. 1927-28, in camera).

459. In order to analyze the costs of the two alternatives, [redacted] requested "cost verification from CB&I . . . of the price . . . [redacted] based on PDM's earlier proposal." ([redacted], Tr.

1929, in camera). [redacted] contacted Dave Lacey of CB&I, asked him to review PDM's prior proposal and submit a renewed price based on the specifications and schedule of the prior bid. ([redacted], Tr. 1930, in camera).

460. [redacted]'s official request was for a firm fixed price renewal of PDM's earlier bid for the TVC. ([redacted], Tr. 1933, 1935, in camera).

461. [redacted] expected the price for the [redacted] TVC project to increase marginally to cover "reasonable inflation." He anticipated the new pricing information to be [redacted] ([redacted], Tr. 1934, in camera).

462. CB&I did not have the information necessary to provide the firm fixed price to [redacted], nor did CB&I want to expend the money necessary to provide a new firm fixed bid price. (Scorsone, Tr. 5084, in camera). [redacted] did not give CB&I a date for the start of construction, the construction schedule, or information required to assess how the chamber would be inserted into the building. ([redacted], Tr. 1945, in camera). Such information would have been necessary for producing a firm fixed bid price. (See Scorsone, Tr. 5000-02).

463. On May 16, 2001, instead of providing a "firm fixed price renewal," CB&I submitted Rough Order of Magnitude "ROM price of [redacted] for a fully commissioned TVC." ([redacted], Tr. 1930-33, 1935-36, in camera; CX 1573 at 3, in camera).

464. The May 16, 2001 letter from CB&I states that "the ROM pricing accuracy can be improved with a more detailed assessment of your needs and resulting work scope. Sometime in the upcoming weeks we would like to discuss more fully your needs and emerging plans for providing services." ([redacted], Tr. 1950, in camera; CX 1573 at 3, in camera).

465. The May 16, 2001 ROM price has a stated accuracy of [redacted]. ([redacted], Tr. 1950-51, in camera).

466. CB&I's ROM pricing in 2001 represented an increase of [redacted] or over [redacted] from PDM's firm fixed price in 1997. (CX 1573 at 2, in camera; [redacted], Tr. 1935, in camera).

467. [redacted] of [redacted] accepted that the [redacted] price quoted in the May 16, 2001 letter as "the price [redacted] would now have to pay to have that chamber built." ([redacted], Tr. 1933, in camera).

468. [redacted] was "disappointed that the cost had gone up" and that CB&I had not presented the updated price quote as a firm fixed price in its letter. ([redacted], Tr. 1936, in camera).

469. The price quoted by CB&I [redacted]." ([redacted], Tr. 1936, in camera).

470. [redacted] never asked CB&I for a follow-up firm price. ([redacted], Tr. 1947, 1951, in camera).

8. Sophistication of customers in the TVC market

471. [redacted] is a large aerospace company. (Scully, Tr. 1092). [redacted] has five field-erected TVCs and 30 shop-fabricated TVCs. ([redacted], Tr. 1725-26).

472. TRW has five field-erected TVCs and approximately 15 shop-fabricated TVCs. (Neary, Tr. 1422).

473. Spectrum Astro is a satellite manufacturer that competes with large defense contractors. (Thompson, Tr. 2036).

I. Factors Across All Product Markets

1. Budget prices versus firm bid prices

474. A budget price is an initial price quote that can provide the initial basis for selecting a supplier and negotiating a final price. (Neary, Tr.1440 ("We first receive their initial price. Then we select the vendor")).

475. Budget prices are prepared with less detailed information provided by the customer. (Hall, Tr. 1866; Carling, Tr. 4472; Fan, Tr. 1078). By contrast, a firm fixed bid price is based on very detailed designs. (Carling, Tr. 4472; Scorsone, Tr. 5003). The company providing the firm price is expected to "stand up to their price and do the work for that price." (Carling, Tr. 4472).

476. Bids can be awarded solely on the budget prices. (JX 23 at 27-28 (Cutts Tr.)). For example, Atlanta Gas Light Company selected PDM over CB&I, for an LNG project in 1998, based on budget price bids submitted by CB&I and PDM. (CX 161 at CBI-PL006113-114). PDM outscored CB&I in the bidding competition "on the basis of their lower budget price." (CX 161 at CBI-PL006113). In another example, Linde BOC used budget prices to compare CB&I's and AT&V's pricing for the Hillsboro LPG project. (V. Kelley, Tr. 5292; Scorsone, Tr. 5031).

477. Budget prices can be close to firm bid prices. See Stetzler, Tr. 6352 ("Budgetary to me means plus or minus 10 percent type of a bid."). When CB&I and PDM competed for a TRW TVC project, CB&I's final price to TRW was within 5 to 10% of the original budgetary price. (Neary, Tr. 1440-41).

478. Generally, budget prices are more imprecise than firm fixed bid prices. (Carling, Tr. 4472; Scorsone, Tr. 4999). When creating budget pricing, estimators use off-the-shelf tank designs of a similar size volume to develop a budget price. (Scorsone, Tr. 4999). Subcontractors are not consulted when developing a budget price. (Scorsone, Tr. 4999-00). Amount of engineering labor required to design a tank are estimated when developing a budget price. (Scorsone, Tr. 5000). Those hours are not calibrated as part of the budget price. (Scorsone, Tr. 5000). These practices reduce the accuracy of the final number in a budget price. (See Scorsone, Tr. 4999-5000).

479. Budget prices include assessments of risk and contingency. (Price, Tr. 608-09; Scorsone, Tr. 5252; Simpson, Tr. 5366). Projects that involve an excessive amount of risk or

unknown contingencies will receive higher budget prices. (Scorsone, Tr. 5003).

480. Years sometimes elapse between the time when a budget price is submitted and the time when a firm fixed bid price is actually requested. (Scorsone, Tr. 5004).

481. When creating a firm fixed price, estimators use an actual tank design. (Scorsone, Tr. 4999).

482. Firm fixed bid prices require that a customer give the supplier information about the site conditions, as well as allowing someone from the bidding company to tour the job site to examine the access to the site and soil conditions. (Stetzler, Tr. 6353; Glenn, Tr. 4126).

2. CB&I and PDM recognized each other as each's greatest competitor

483. PDM was the "single largest" reason CB&I lost business in the United States; competition from PDM accounted for 33% of CB&I's lost business. (Glenn, Tr. 4331; CX 227 at CBI-PL045101; see also CX 23 at PDM-C1002566 (PDM has made "significant market share increases against CB&I in both domestic and international markets")). In March 2000, CB&I reported that "in the last three months our business lost report is showing PDM taking some 13 jobs from [CB&I] at a value of $ 25 million." (CX 243 at CBI-PL 4004707; see CX 660 at PDM-HOU005014 ("Since the fall of 1996, CB&I has been the most aggressive competitor in increasing market share")).

484. In March 2000, Steve Knott, CB&I's sales manager for the United States, e-mailed CB&I's sales team to lament that PDM is "'eating our lunch' and we know much of it is because of a CB&I cost problem." (CX 243 at CBI-PL 4004707).

485. Knott asked, "What is PDM doing that gives them the ability to be this low, this often? I am not 'coming down' on our group for losing to PDM. We all recognize that we can only sell

to the market what the market will pay. Given our current system, we are bumping against pricing levels that are dangerously close to our direct cost." (CX 243 at CBI-PL 4004707).

486. Knott concluded that "We need to come up with a strategy to combat the effort PDM is making to erode our market share." (CX 243 at CBI-PL 4004707).

487. In October 2000, CB&I's Bob Lewis wrote to Steve Crain, President of CB&I's Western Hemisphere Operations that PDM was bidding "much lower than the market, leaving a lot of money on the table." (CX 278 at CBI-H 4004204).

488. Handwritten notes from the files of PDM's President note the following: (1) 1996-1997 "focused on more profitable assignments;" (2) 1997-1998 accept "lower gross profit in pursuit of higher revenues;" and (3) 1998-1999 PDM "forced to bid at lower margins" due to "competition w/CB&I" and "seeking more revenues." (CX 76 at PDM-C1006141-3; see also CX 390 at PDM-C 1006145 ("97-98 -> aggressive growth market share - sacrifice margins")).

489. In May 2000, PDM warned its Board of Directors that "CB&I has been extremely aggressive on pricing work in North and South America. They have taken certain projects at levels which would be slightly over PDM EC's flat cost." (CX 64 at PDM-C 1002562).

490. Scorsone confirmed that he told PDM's investment firm, Tanner & Company, about the competition between PDM and CB&I and how the companies were "forced to bid at lower margins" because of this competition. (Scorsone, Tr. 5152).

3. CB&I and PDM recognized that the Acquisition would reduce competition and lead to higher margins

491. [redacted] (CX 213 at CB&I-PL033037, in camera). [redacted] (CX 213 at CBI-PL033084, in camera).

492. In 1999, PDM had assessed the benefits of acquiring CB&I and determined that acquiring CB&I would give PDM "Market dominance in Western Hemisphere." (CX 74 at PDM-C 1005941). Scorsone admitted that when he wrote the document he believed PDM could achieve "market dominance" by acquiring CB&I. (Scorsone, Tr. 5169).

493. An August 2000 document, created by a PDM sales person, titled "Benefits of Combining PDM with CB&I," listed the following: (1) "Dominance of the cryogenic (LNG/LOX/LIN) markets;" and (2) "Allows CB&I to have a low cost USA tank producer." (CX 621 at PDM-HOU006702).

494. At the time of the Acquisition, Scorsone thought CB&I/PDM will be a "powerhouse." (CX 72 at PDM-C 1004409). Scorsone later added that CB&I/PDM "will truly be the world leader in storage tanks." (CX 1686 at CBI/PDM-H 4005550; Scorsone, Tr. 5203).

495. An October 2000 PDM document entitled, "PDM Merger Objectives Brainstorm Results." outlined the following objectives: (1) "Create barriers to entry as they can be built;" (2) "Defend an expanding market share;" (3) "Ensure that we do not allow smaller competitors to take share and pursue business in our attractive markets;" (4) "Put plans in place to command premiums for the services we provide;" and (5) "Improve pricing to achieve margin growth from 12.5% to 17%." (CX 101 at PDM-HOU002359-60).

496. On October 26, 2000, Scorsone and other members of the integration team held an "Integration Kick-off Meeting." The "kick-off meeting" agenda prioritized the objectives of the merger: (1) "Ensure that we do not allow smaller competitors to take share and pursue business in our attractive markets;" (2) "Defend an expanding market share;" (3) "Create barriers to entry;" and (4) "Use pricing advantage as necessary to not lose market share to competitors during the merger." (CX 1544 at CBI 057941).

4. Entry at prices above pre-merger prices does not restore competition

497. Both economic experts agree that entry by new firms would not restore the competition lost through an anticompetitive merger if this entry is at a price above the pre-merger price. (Simpson, Tr. 3151-52; Harris, Tr. 7438).

498. A merger of the two strongest suppliers would enable the merged firm to increase price up until the point where other less-strong suppliers begin to constrain it. (Simpson, Tr. 3451). A merger that reduces the number of sellers of LIN/LOX tanks from four to three or from three to two would be likely to result in an increase in price. (Simpson, Tr. 3451).

499. Entry will not keep prices from rising above the pre-acquisition level if entry is only profitable at higher prices. (Harris, Tr. 7451). The mere fact that entry has occurred following an acquisition does not mean that the entry is sufficient to restore the premerger competitive environment. (Harris, Tr. 7436). Entry by firms who can only profitably enter at prices above the competitive level would not restore competition. (Harris, Tr. 7438).

500. The observation that new firms submit bids in a market does not always imply that entry is sufficient. (Simpson, Tr. 3282-84; Harris Tr. 7790-91). The observation that new firms make some investments to sell into a market does not always imply that entry is sufficient. (Simpson, Tr. 3284-88; Harris, Tr. 7791).

J. Exiting Assets Defense

1. PDM background

501. PDM was founded in 1892 by the Jackson Family. PDM went public in 1965 on the American Stock Exchange. In 1999-2000, the Jackson Family was the primary stockholder of PDM, owning approximately 30 percent of the stock. (Byers, Tr. 6731-

32; Scorsone, Tr. 4791). PDM's Board consisted of a majority of the Jackson Family and its friends and acquaintances. (Byers, Tr. 6734).

502. PDM operated four lines of business with five divisions -- PDM Strocal, Water, Engineered Construction (EC), Bridge, and Steel Distribution. (Byers, Tr. 6731; Scorsone, Tr. 4778-79; G. Glenn, Tr. 4075-76).

503. PDM's EC and Water Divisions were "intertwined" and "meshed together." (Scheman, Tr. 2929-30). PDM's management believed separating EC and Water would be costly and difficult. (Scheman, Tr. 2929). The EC and Water Divisions shared human resource departments, fabrication plants, equipment and construction crews and it was considered impossible to split the two. (Scorsone, Tr. 4779; Byers, Tr. 6780-81, 6800-01). The EC and Water Presidents reported directly to the CEO Bill McKee, rather than exercising complete control over their organizations. (Byers, Tr. 6734).

2. PDM decision to sell the company

504. PDM's Board asked PDM management to consider potential options for the strategic direction of the company's future in Summer 1999. Scorsone, then President of PDM EC, prepared a presentation to the PDM Board in August 1999 about strategies for going forward with the PDM EC Division. (Scorsone, Tr. 4781-82).

505. At a strategic planning meeting, a list of options was devised to provide to the Board. This laundry list included making a major acquisition, buying something unrelated, taking the company private, and selling the company. (Byers, Tr. 6738-40; Scorsone, Tr. 4791).

506. This laundry list of options was presented to the PDM Board in Summer 1999, but no hard decisions were made at that time. (Byers, Tr. 6740). The various options presented to the PDM Board were to maintain the status quo, pursue acquisitions,

declare a special dividend, conduct a stock repurchase, split into two separate companies, and the sale of the company. (Scheman, Tr. 2917-19).

507. In November or December 1999, the PDM Board indicated to management that it wanted to pursue taking the company private. The Jackson Family would make a tender offer and buy back all shares of PDM except for management's ownership. This plan was never implemented. (Byers, Tr. 6740-41).

508. At the February 2000 Board meeting, the Jackson Family indicated that it wished to take the company private. It was decided that the Family should hire its own investment banker. Polly Townsend, Bill Jackson, Sr.'s daughter, contacted a partner at Tanner & Co. ("Tanner") for an interview. (Byers, Tr. 6741-42; Scheman, Tr. 2911, 6907).

509. In May 2000, PDM decided to sell the company. (Byers, Tr. 6742).

510. In June 2000, PDM interviewed investment firms Goldman Sachs and Tanner to advise on the sale. (Byers, Tr. 6742-6743).

511. Goldman Sachs recommended that PDM pursue "five to ten strategic buyers and 10 to 20 LBO [leveraged buy out] buyers." (Byers, Tr. 6838-39; see also CX 380 at PDM-C 1004026).

512. Tanner recommended that PDM sell off the divisions in pieces rather than in a single transaction to a single purchaser. (Byers, Tr. 6755). Tanner believed that breaking up the company and selling it in parts would result in a higher total value. (Byers, Tr. 6755).

513. Both Goldman Sachs and Tanner made presentations at the same Board meeting on June 1, 2000. Shortly after this

meeting, Tanner was retained by PDM. (Scheman, Tr. 2914-15, 6907-08; RX 25 at 2).

514. Tanner is no longer retained by PDM. Tanner's assignment concluded in the middle of March 2002 when PDM was acquired by Iron Bridge Holdings. (Scheman, Tr. 6909).

3. Steps resulting in acquisition

515. In 2000, Bill McKee, former CEO of PDM, offered to sell PDM EC and Water Divisions to CB&I in a telephone call to Glenn of CB&I. (Glenn, Tr. 4077-78).

516. Peter Scheman, Tanner's representative to PDM, had the responsibility to "coordinate and lead everything." (Scheman, Tr. 6908). Scheman first became involved with PDM at the end of February 2000 or beginning of March 2000 when Tanner was retained as an advisor to the Jackson Family in March 2000. (Scheman, Tr. 2911-12, 6907-08).

517. Tanner & Company prepared an offering memorandum for the sale of the PDM EC Division (Scheman, Tr. 2930-31). Scheman recalled sending the PDM EC offering memorandum to only one company -- CB&I. (Scheman, Tr. 2931).

518. PDM conducted discussions directly with CB&I. (Glenn, Tr. 4077-78). By the time the offering memorandum was completed, negotiations between CBI and PDM were at a point "that it didn't make sense to send it out to other people." (Scheman, Tr. 2931).

519. An e-mail from Scheman to Rich Goodrich, CB&I chief financial officer, dated August 4, 2000, states "We need to determine if there is a deal to be made between PDM and CBI or if we should be contacting other parties who have expressed similar interest." (CX 70 at PDM-C 1002706).

520. Scheman considered CB&I to be a "preemptive buyer" and this meant "that we never went out to other people. Their

status as a preemptive buyer made it so we didn't go down the route of calling other people." (Scheman, Tr. 2938-40 (Tanner did not believe it was "prudent" to "go out and contact people"); (Tanner and PDM had "reached a point with CB&I where we thought we had a good deal, and we ultimately, I believe, entered into a letter of intent and, therefore, did not show [the offering memorandum] to other people")).

521. On August 29, 2000, Respondents announced that they had signed a letter of intent for the acquisition of PDM's EC and Water Divisions by CB&I. (CX 285; CX 1565).

522. CB&I initially agreed to pay $ 93.5 million for PDM EC and Water, which was at the "high end" of Tanner's estimates of PDM's sales value. (CX 521 at TAN 1000328). Tanner believed "it is doubtful that PDM could achieve a value exceeding $ 93.5 million in an alternative transaction." (CX 521 at TAN 1000329). Rich Byers testified that the final price paid by CB&I for the PDM EC and Water Divisions was $ 76-77 million (Byers, Tr. 6794).

523. CB&I purchased PDM EC and Water Divisions for more than investment banker Goldman Sachs' valuation for the company and for an amount within the valuation range determined by Tanner. (Byers, Tr. 6843).

524. Alternative buyers would unlikely pay a premium price for PDM EC and Water Divisions because they would face continued tough competition from CB&I. (Scheman, Tr. 2966-67). Handwritten notes of PDM's investment banker state "Need informed buyer willing to fund war wCB&I - unlikely to pay premium." (CX 534 at TAN 1001619). PDM EC and Water Divisions were worth more to CB&I than they were to other firms because of CB&I's ability to utilize PDM's resources and compete on a global basis. (Glenn, Tr. 4261-62).

4. Alternatives to acquisition

525. In July of 2000, PDM announced that it would sell the company. (Scheman, Tr. 2918-20).

526. Financial buyers, who would have maintained PDM as an independent on-going entity, were available and had been recommended by Goldman Sachs and Tanner as alternative buyers. (Byers, Tr. 6744; see also CX 520 at TAN 1003258; CX 380 at PDM-C 1004025).

527. Tanner & Company was given the responsibility to contact potential purchasers. (Byers, Tr. 6758). PDM management was instructed to direct all inquiries to Tanner & Company. (Byers, Tr. 6758).

528. Tanner & Company assembled a preliminary list of potential buyers, in June 2000, including 18 steel companies, 15 engineering and construction companies, and 4 financial buyers. (CX 520 at TAN 1003258). This list was presented to the PDM Board on June 1, 2000. (CX 520 at TAN 1003256).

529. Among the companies identified by Tanner as potential acquirers of PDM EC and Water Divisions were Fluor, Jacobs Engineering, Foster Wheeler, Morrison Knudsen, but to Byers's knowledge, none of these companies were contacted about acquiring PDM EC and Water Divisions. (Byers, Tr. 6806-08). "I don't know of anybody that PDM contacted, anybody other than CB&I and Enron." (Byers, Tr. 6764, 6812).

530. Tanner never contacted any foreign firms in connection with purchasing PDM EC. (Scheman, Tr. 2938-39). Tanner did not contact Skanska/Whessoe, Technigaz, TKK, Tractebel, Mitsubishi, Entrepose, Nooter, or Wiley. (Scheman, Tr. 2938-39; Byers, Tr. 6811-12).

531. Matrix, then the third-largest United States tank constructor, made efforts to buy PDM EC. (Vetal, Tr. 418-19). Matrix's President, Brad Vetal, called PDM's President, William

McKee, and informed him of Matrix's interest in purchasing PDM EC. (Vetal, Tr. 422). McKee told Vetal that PDM could not talk with Vetal about a sale of the business because PDM already had a buyer, but McKee would call him if that deal fell through. (Vetal, Tr. 422-23; see also RX 168 at TAN 1000654 (handwritten notes of Peter Scheman indicating Vetal had contacted McKee)).

532. A fairness opinion prepared by Tanner, dated February 7, 2001, noted that if CB&I's acquisition of PDM EC and Water Divisions fell through, there were other potential buyers with the interest and adequate resources to purchase PDM EC and Water. (RX 29 at PDM-C 1006327). Other parties had in fact expressed an interest in purchasing PDM EC and Water. (CX 70 at PDM-C 1002706).

533. PDM actively sought buyers for its other divisions. As of August 18, 2000, "over ten parties had received the Confidential Memorandum for Steel Distribution and six groups had received Bridge Division books." (CX 521 at TAN 1000339).

534. On August 20, 2000, Tanner presented to PDM's president additional lists of prospective acquirers for the various PDM divisions, including fourteen parties who initiated contact expressing interest in possible acquisition of the various divisions and 32 prospective financial buyers. (CX 527 at TAN 1002453-2455)

5. PDM's financial condition

535. PDM was a "profitable" company. (Scheman, Tr. 2923; CX 520 at TAN 1003317). The company's Earnings Before Interest, Taxes, Depreciation, and Amortization ("EBITDA") increased from $ 20.5 million in 1994 to $ 49.3 million in 1999. (CX 520 at TAN 1003317).

536. The EC and Water Divisions are intertwined, and together were profitable according to the Tanner fairness opinion of February 7, 2001. (RX 29 at PDM-C 1006326). Since the two

divisions were sold together, it is fair to look at the profitability of the two divisions on a combined basis.

537. PDM's EC Division was profitable, increasing its margin each year from 1996 through 1999 and increasing its EBITDA earnings at a 5-year Combined Annual Growth Rate ("CAGR") of 18.7% on 5-year sales CAGR of 9.5%. (CX 520 at TAN 1003317). The Division's Earnings Before Interest and Taxes ("EBIT") increased from $ 5.4 million in 1995 to $ 9.5 million in 1999, a CAGR of 15.3%. (CX 522 at TAN 1003373). Revenues increased from $ 121.7 million in 1995 to $ 185.7 million in 1999. (CX 522 at TAN 1003373).

538. PDM EC had its best year ever in 1999. (Scorsone, Tr. 4823-24). As of July 2000, the month before CB&I and PDM signed the acquisition letter of intent, PDM EC projected EBIT of $ 2 million in 2000. (CX 522 at TAN 1003373).

539. In 2000, the EC Division lost $ 9 million after making $ 9.5 million in 1999. (Scheman, Tr. 6920-21; RX 163 at TAN 1000385).

540. As of June 30, 2000, PDM EC had cash of $ 2.6 million, total assets of $ 79.2 million, no outstanding long-term debt, and shareholder' equity of $ 56.8 million. (CX 385 at 30).

541. In September of 2000, Scorsone made a presentation to CB&I and its advisors about PDM EC's future prospects, "assuming that the company was not acquired [by CB&I]." (Scorsone, Tr. 5201; CX 1695 at CB&I/PDM-H 4005659). Scorsone projected PDM EC's earned revenues to be $ 151 million for 2000, and $ 168 million for 2001. (CX 1695 at CB&I/PDM-H 4005701; CX 529 at TAN 1000596; see also CX 1713 at CB&I/PDM-H 4015086-89 (projected income from operations increase each year from $ 6.4 million to $ 9.1 million, between the years 2001 and 2004)).

542. After Respondents announced the acquisition, PDM EC's earnings for 2000 declined, resulting in a loss for the year of

about $ 8 million. (Scorsone, Tr. 4825). After the date of closing, PDM and CB&I ultimately determined that PDM EC's losses approximated $ 30 million in fiscal year 2000. (Scheman, Tr. 6917, 6921, 6926; Byers, Tr. 6789).

543. A short-term reduction in capital expenditures in the petroleum and petrochemical industries in 1999 negatively impacted all tank suppliers in 2000, including CB&I. (CX 522 at TAN 1003372; CX 529 at TAN 1000596 ("1999 - Down - Mergers in Oil + Gas * Market Driver (Oil + Gas)")).

544. Scorsone, PDM EC's President, Byers, PDM's Vice President of Finance, and PDM's investment banker all believed that PDM EC's poor performance in 2000 would be short-lived, and if PDM EC had remained independent, PDM EC would have returned to profitability the very next year and continued to grow. (Scorsone, Tr. 4838; Byers, Tr. 6899; CX 529 at TAN 1000596 ("2001 - will be good year [for PDM] - the bookings are higher"); (CX 1713 at CBI/PDM-H 4015089) (EC Division predicted to earn gross profits of $ 20.0 million in 2002, $ 22.4 million in 2003, and $ 25.1 million in 2004); see also CX 522 at TAN 1003372 ("This decline is expected to be short lived" PDM EC projects 2001 revenue and EBIT of $ 168.0 million and $ 6.1 million, respectively)).

545. As late as February 7, 2001, the date CB&I consummated the acquisition, PDM's management projected that PDM EC would make a profit of $ 4.8 million in 2001. (Scheman, Tr. 2961-2962; RX 163 at TAN 1000385).

6. PDM was not facing liquidation

546. At the time PDM called CB&I to offer to sell, PDM's reputation in the two lines of business was very good -- they did good work and were recognized in the marketplace by being on everyone's bid lists. (G. Glenn, Tr. 4078).

547. The PDM EC Division was a successful and profitable business and was projected to sustain earnings growth. (CX 1695

at CB&I/PDM-H 4005701; CX 529 at TAN 1000596; see also CX 1713 at CB&I/PDM-H 4015086-89).

548. Scorsone testified that if the EC Division had not been sold, that it would not have gone out of business, and that it would be profitable in the future. (Scorsone, Tr. 4838).

549. Byers, former VP of Finance for PDM, testified that before making any recommendation to liquidate the PDM EC Division, his fiduciary duties would have required him to investigate to assure himself that there was no alternative purchaser for either PDM or for PDM EC willing to pay more than liquidation value of the business. (Byers, Tr. 6799-800, 6893, 6895). Byers never got to that point. (Byers, Tr. 6800). Byers never investigated whether there was a possibility of another purchaser. (Byers, Tr. 6895).

550. Tanner would have attempted to find alternative purchasers prior to recommending liquidation. (JX 34 at 83 (Scheman, IHT)).

551. PDM's Board of Directors meeting minutes illustrate that PDM had viable alternatives to liquidation. On November 28, 2000, PDM's President, William McKee stated that if the CB&I transaction fell through, PDM would continue its efforts to sell PDM EC and PDM Water Divisions by seeking other purchasers. (CX 1590 at PDM-C 1006065).

552. PDM's Board of Directors never took up the issue of liquidating the PDM EC Division. (Byers, Tr. 6891).

K. Remedy

1. Divestiture can restore competition

553. Divestiture to an appropriate acquirer of the reconstituted assets of PDM EC and PDM Water, as a viable business, would effectively restore competition and remedy any lessening of

competition that resulted from the acquisition of PDM EC and PDM Water Divisions. (Simpson, Tr. 3608-09).

2. Assets acquired in the acquisition

554. CB&I purchased "Tangible Personal Property" from PDM, which included "all design, manufacturing, construction, erection, maintenance, research and development, testing and other machinery and equipment, vehicles, tools, dies, molds, furniture, fixture, office equipment, field equipment, . . . supplies and other tangible personal property (together with all spare and maintenance parts, operating manuals, equipment specifications and diagrams)" used by PDM's EC and Water Divisions. (CX 328 at CBI 001264-CHI).

555. CB&I purchased real property or the leases to real property from PDM EC in the Acquisition in the following locations: Woodland, TX (leased headquarters), except for the subleased Third and Fourth floors; Provo, UT (owned); Fresno, CA (owned); Franklin, TN (owned); and Santa Fe, TX (leased). (CX 385 at 21-23; CX 328 at CBI 001320-CHI). All of the equipment located at these properties was also sold to CB&I in the Acquisition. (CX 328 at CBI 001264-CHI). Several other leases to offices used by the EC Division were transferred as well. (CX 328 at CBI 001265-CHI; CX 333).

556. As of July 2000, the Woodland, TX headquarters' significant equipment consisted of 157 desktop computers, 1 trailer, and 1 X-ray unit. (CX 385 at 21).

557. As of July 2000, the Provo, UT plant's significant equipment consisted of 2 bending machines, 4 blast machines, 2 bulldozers, 4 compressors, 20 cutting machines, 13 dist. box/PWR panels, 6 drill presses, 12 heaters/furnaces, 25 hoists, 3 lathes, 4 milling machines, 29 painting/planers/punchers, 16 positioners, 1 pump, 39 turning rolls, 14 saws, 2 trailers, 79 welders/wire feeders, and 16 X-ray units. (CX 385 at 21).

558. As of July 2000, the Fresno toolhouse's significant

equipment consisted of 1 bulldozer, 1 burning machine, 8 compressors, 29 dist. box / PWR panels, 4 forklifts, 5 generators, 5 hoists, 1 lathe, 2 milling machines, 1 piece of office equipment, 5 pumps, 1 tractor, 2 trailers, 2 vehicles, 141 welders / wire feeders, 1 welding accessory, and 8 X-ray units. (CX 385 at 22).

559. As of July 2000, the Franklin toolhouse's significant equipment consisted of 1 bulldozer, 31 compressors, 56 dist. box / PWR panels, 2 forklifts, 40 generators, 23 hoists, 5 pieces of office equipment, 1 pump, 10 support towers, 1 tractor, 11 trailers, 1 vehicle, 385 welders / wire feeders, 3 welding accessories, and 7 X-ray units. (CX 385 at 23).

560. As of July 2000, the Santa Fe toolhouse's significant equipment consisted of 18 compressors, 26 dist. box / PWR panels, 16 generators, 5 trailers, 2 vehicles, 273 welders / wire feeders, 5 welding accessories, and 1 X-ray unit. (CX 385 at 23).

561. CB&I purchased real property or the leases to real property from PDM Water in the Acquisition in the following locations: Clive, IA plate fabrication plant and office (owned); Pittsburgh, PA toolhouse (owned); HyCon Birmingham, AL office and toolhouse (owned); HyCon Conroe, TX office and toolhouse (leased); and three other leased office properties. (CX 328 at CBI 001264-CHI, CBI 001265-CHI; CX 332; CX 333). The equipment located at these facilities was also sold to CB&I in the Acquisition. (CX 328 at CBI 001264-CHI).

562. CB&I purchased "Inventories and Stores and Supplies from PDM, which included "all raw materials, components, work-in-progress, finished products, packaging and shipping materials and supplies and other inventories (on-site, off-site and consigned)" used by PDM's EC and Water Divisions. (CX 328 at CBI 001264-CH I- CBI 001265-CHI).

563. CB&I purchased all of PDM EC and Water Divisions' contract rights in the Acquisition, subject to non-assignability issues and exemptions, under Section 2.2.3 and Schedule 2.27 of the Asset Purchase Agreement. (CX 328 at CBI 001265-CHI, CBI

001319-CHI) The contractual rights transferred include: customer contracts, consulting agreements, alliance and partnering agreements, agency, representative and distribution agreements, licenses; purchase and sales orders, and backlog. Id.

564. CB&I purchased all of PDM's intellectual property rights listed in Schedule 5.1.10 of the PDM Disclosure Schedule and any intellectual property used by the acquired Divisions. (CX 328 at CBI 001265-CHI) The transferred intellectual property rights included all applications and registrations. Id. The "Pitt-DeMoines" and "PDM" names and all variations thereof were licensed to CB&I in the Acquisition. (CX 328 at CBI 001267-CHI).

565. CB&I purchased PDM's customer and contact lists; sales, product, and promotional data, brochures, forms, mailing lists, and advertising materials; vendor lists; project designs and specifications; and computer software. (CX 328 CBI 001266-CHI).

3. The EC and Water Divisions are inextricably intertwined

566. PDM EC and PDM Water were inextricably intertwined. (Byers, Tr. 6780 (it is "impossible to split [PDM EC and PDM Water]" in two because "they shared many services. They shared human resources, they shared physical plant."); JX 34 at 33-34 (Scheman, Dep.) ("there was not a bright line that separated the two businesses but in certain places they kind of meshed together.")).

567. PDM EC and PDM Water routinely shared field erection personnel, fabrication facilities, construction resources, and field erection equipment. (Scorsone, Tr. 2852, 4779-80; CX 552 at 43-48 (Braden, Dep.); see Rano, Tr. 5894, 5898 (same engineering processes are used for a flat-bottom tank as is used for an LNG tank)).

568. PDM's EC and Water Divisions shared skilled personnel.

(CX 552 at 45-47 (Braden, Dep.) (construction crews and project managers would seamlessly transfer from a PDM Water job to a PDM EC job with their tools and equipment); CX 442 at 210 (Knight, Dep.) (tank field-erection crews are switched from cryogenic tanks to flat-bottom tanks)).

569. Sharing resources benefitted both PDM EC and PDM Water because it "facilitated a more steady flow of work, a more consistent flow of work through . . . [the] warehouses [and] fabricating plants." (CX 552 at 52-53 (Braden, Dep.); Scorsone, Tr. 4779-80).

570. Separating the EC and Water Divisions might have cost between $ 5 and $ 10 million. (CX 525, TAN-1000406; Scheman, Tr. 6922-23).

571. PDM Water would have difficulty operating independently of PDM EC. (CX 552 at 44 (Braden, Dep.) (splitting PDM Water from PDM EC "would have lessened our ability to stand alone, and certainly would have diminished the profitability of the operation.")).

572. Due to the intermingling of resources, PDM decided to sell the two divisions together, because it was not practical to sell one without the other. (Byers, Tr. 6780-82).

4. Multiple fabrication facilities

573. Possessing multiple fabrication facilities is advantageous, because it allows a competitor to rationalize its freight costs. (Vetal, Tr. 432-33; see CX 615 at 45 (Knight, IHT) (in competitive situations, a tank supplier benefits from having a fabrication facility located close to a job so that its freight costs are minimal)).

574. Having multiple facilities not only promotes a geographic competitive advantage, but also allows flexibility in fabrication. (CX 442 at 152, 156 (Knight, Dep.) (Tank suppliers with multiple fabrication shops and many field crews can "be

more flexible in order to meet [changes in customers' schedules]," including needing "the project faster or at a different time period . . . .")).

575. Each of the former PDM facilities have different fabrication capabilities. (See CX 535 at 181-83 (Scorsone, Dep.); CX 615 at 46 (Knight, IHT) (some fabrication plants cannot fully fabricate storage tanks in the manner required by PDM, because they do not support "certain types of rolling and pressing operations" for thick steel plate)).

5. Intellectual property

576. A viable competitor in the relevant product markets would need intangible as well as tangible assets. (Simpson, Tr. 3608).

577. Intellectual Property rights can give competitors in the relevant markets cost advantages over their rivals. As of March 2000, CB&I possessed over 100 U.S. patents. (CX 230 at CBI-PL 055446). However, such intellectual property is not always necessary to be an effective competitor. (Cutts, Tr. 2563-64 (additional intellectual property was not necessary for AT&V to compete with CB&I for the LIN/LOX projects for BOC)).

6. Reputation

578. There is a great deal of goodwill in the PDM name. (Cutts, Tr. 2389 ("the PDM name, like the CB&I name, could obviously break down a lot of walls and barriers")). A large amount of capital would have to be spent in marketing for a smaller competitor in the relevant industry to build a reputation equivalent to that of PDM. (Cutts, Tr. 2382 (such marketing would cost AT&V a million dollars over the next three years)).

579. Currently, customers are more willing to purchase from CB&I than anyone else, because CB&I has successfully built most of the relevant products. (Cutts, Tr. 2385; CX 258 at CBI-H001816-H001832; CX 1731 at 44 (LNG tank owners do not

want to purchase from a second-rate company without a track record, because the work is "very specialized, very sophisticated."). It takes time to build a track record from scratch. (Cutts, Tr. 2372, 2385).

7. Assignability of contracts

580. Many of the contracts presently held by CB&I contain non-assignability clauses and key employee provisions that require the customer to approve the assignment of the contract or the replacement of key employees on a project. (Glenn, Tr. 4168-69; Izzo, Tr. 6508).

581. Prior to the Acquisition, PDM received approvals from its customers to transfer its contracts to CB&I. (Byers, Tr. 6804).

8. Employees

582. Experienced employees are specially trained and therefore valuable in the relevant industry. Hiring people off the street for skilled PDM field crews is "not economical." (CX 615 at 25, 47 (Knight, IHT)). Skilled field crews and managers must be trained in equipment and procedures. Id. at 47, 50; CX 552 at 62 (Braden, Dep.) ("There's a fairly steep learning curve in our business, and to go out and try to fill experienced positions would require some effort . . . . People have to become familiar with our products and our processes. Processes more than anything.")).

583. CB&I hires less skilled field crew personnel on a job to job basis. Field crew workers are free to work for a number of companies (Rano, Tr. 5953), and tend to move from job to job depending on where work is available. (Rano, Tr. 5957). Because field crews are very migratory, CB&I hires its general field labor on a job to job basis. (Glenn, Tr. 4119-20; Rano, Tr. 5917-18, 5953). Using local labor is cheaper than employing traveling workers, because it reduces the need to pay increased expenses associated with room and board for out-of-town workers. (Rano, Tr. 5909-10). CB&I recruits local labor by advertising in the local

media, and making contacts with local labor leaders and local government officials. (Rano, Tr. 5908-10).

584. At CB&I, the engineering personnel are moved around to various projects depending upon the workload. (CX 497 at 365 (Leventry, Dep.)).

585. Sales representatives in the industry can service both the low temperature and cryogenic tank market and the industrial tank market. (CX 615 at 12, 14 (Knight, IHT)).

9. A large revenue base is necessary to be a viable competitor

a. Bonding

586. Howard Fabrication's annual revenues, of $ 2.5 to $ 3 million, are too small to enable it to compete against CB&I for larger thermal vacuum chamber projects. (Gill, Tr. 181, 199-201).

587. AT&V, which had annual revenues of [redacted], needs "a little more financial strength and bonding capacity" to compete for larger low temperature and cryogenic tank projects. (JX 23 at Ex. 1, in camera).

588. Matrix, which has annual revenues of approximately $ 190 million, but lacks a larger company to financially back its operations, has difficulty convincing LNG customers that they are a qualified supplier. (CX 460 at CBI-E 007235).

589. LNG customers testified that they would not purchase from a divested entity unless it was able to financially guarantee its work. (Izzo, Tr. 6508 ("The first thing I'd be concerned about with a NewCo is whether I'd put them on my bid list because of ability to bond."); Bryngelson, Tr. 6157 ("Q. . . . So is it beneficial to El Paso to have a company that has size, even if a lot of that size doesn't necessarily come from the revenue generated by building tanks? / A. Yes."); Carling, Tr. 4467-68 ("We expected the lead contractor to stand behind his work, so the

bonds and the guarantees would have to come from [a divested entity's] parent company.")).

590. As of June 30, 2000, PDM's 6-month revenues were approximately $ 355 million. (CX 1567 at 3). This base of revenues was sufficient to provide the financial guarantees necessary to compete for LNG and TVC projects. (Carling, Tr. 4529 (PDM was able to provide sufficient financial guarantees to Enron to be employed for an LNG tank built in Penuelas, Venezuela); [redacted], Tr. 1895-96, in camera (PDM had the financial ability to be considered for a TVC project)). However, there were some LNG projects, such as the one in Dabhol, India, that PDM was unwilling to guarantee to the level that the customer required. (Izzo, Tr. 6488-89; Carling Tr. 4529-30).

b. Equipment used to construct the relevant products

591. Soon after the Acquisition, CB&I auctioned off a substantial amount of the equipment that it purchased from PDM in an effort to reduce costs. (Scorsone, Tr. 2888).

592. A fully equipped crew requires a great deal of equipment, which costs approximately half a million dollars. (Cutts, Tr. 2388). It typically has a crane, air compressors, welding machines, general rigging equipment and other incidentals. (Cutts, Tr. 2388).

593. Costly automated welding equipment is necessary to be cost competitive in the construction of LNG tanks. (CX 706 at 98 (Newmeister, IHT); see CX 706 at 98-99 (Newmeister, IHT) (CB&I has patented welding equipment that is useful for welding large tanks); see also Cutts, Tr. 2379 (automated equipment is necessary to weld large tanks, but it is expensive to develop)).

594. Specific equipment is necessary for blasting, painting, and pressing capabilities. A large press and a large number of dyes for pressing the dome roofs used for LIN/LOX tanks costs roughly $ 2 million. See CX 706 at 64-66 (Newmeister, IHT). Additionally the automated blast and paint system used to paint

the outer tank on a LIN/LOX tank costs roughly $ 2-3 million. See CX 706 at 64-66 (Newmeister, IHT).

595. In constructing some projects, subcontracting may lower costs, because subcontractors with an expertise in a particular area are able to use a standardized approach and may be better at certain job functions than a general contractor. (Bryngelson, Tr. 6143-44; Cutts, Tr. 2472; Hilgar, Tr. 1537-38).

III. ANALYSIS AND CONCLUSIONS OF LAW

A. Jurisdiction

The Complaint charges Respondents with violations of Section 5 of the Federal Trade Commission Act ("FTC Act"), 15 U.S.C. § 45 and of Section 7 of the Clayton Act, 15 U.S.C. § 18.

Section 5(a)(2) of the FTC Act gives the Commission jurisdiction "to prevent persons, partnerships, or corporations . . . from using unfair methods of competition in or affecting commerce . . . ." 15 U.S.C. § 45(a)(2); Kaiser Aluminum & Chem. Corp. v. FTC, 652 F.2d 1324, 1327 n.1 (7th Cir. 1981). Respondents are corporations engaged in the interstate sale of large, field-erected cryogenic tanks and thermal vacuum chambers. F. 1-3, 6, 9. Respondents' challenged activities relating to the sale of large, field-erected cryogenic tanks and thermal vacuum chambers have an obvious nexus to interstate commerce. F. 3-5, 7-9. Thus, the Commission has jurisdiction over Respondents and the subject matter of this proceeding, pursuant to Section 5 of the FTC Act.

Section 7 of the Clayton Act prohibits acquisitions, the effect of which "may be substantially to lessen competition, or tend to create a monopoly." 15 U.S.C. § 18. "Section 11(b) of the Clayton Act, 15 U.S.C. § 21(b), expressly vests the Commission with jurisdiction to determine the legality of a corporate acquisition under Section 7 and, if warranted, to order divestiture." In re R.R. Donnelley & Sons Co., 120 F.T.C. 36, 140 (1995); see also Hospital Corp. of Am. v. FTC, 807 F.2d 1381,

1386 (7th Cir. 1986). The February 7, 2001 purchase by CB&I of PDM's Water Division and Engineered Construction Division was a corporate acquisition ("the Acquisition"). F. 10-12. The Commission's jurisdiction includes adjudicating the lawfulness of acquisitions that have already been completed. In re Coca-Cola Co., 117 F.T.C. 795, 911 (1994); see generally FTC v. Consolidated Foods Corp., 380 U.S. 592, 598 (1965). Thus, the Commission has jurisdiction over Respondents and the subject matter of this proceeding, pursuant to Sections 7 and 11 of the Clayton Act.

B. Burden of Proof and Statutory Framework

Under Commission Rule of Practice 3.51(c)(1), "an initial decision shall be based on a consideration of the whole record relevant to the issues decided, and shall be supported by reliable and probative evidence." 16 C.F.R. § 3.51(c)(1). n1 The Commission made amendments to its Rules of Practice, effective May 18, 2001. FTC Rules of Practice, Interim rules with request for comments, 66 Fed. Reg. 17,622 (April 3, 2001). Through these amendments, the Commission removed the requirement of Rule 3.51(c)(3) that the initial decision of an ALJ be supported by "substantial" evidence. 66 Fed. Reg. at 17,626. According to Black's Law Dictionary, "probative evidence" means having the effect of proof; tending to prove, or actually proving an issue. "Substantial evidence" is defined in Black's Law Dictionary as such evidence that a reasonable mind might accept as adequate to support a conclusion. At this level of the proceedings, the difference between probative evidence and substantial evidence is not dispositive. Therefore, all findings of fact in this Initial Decision are supported by reliable and probative evidence.

n1 Unlike In re Schering-Plough Corp., Docket 9297 (Initial Decision June 27, 2002, available at http://www.ftc.gov/os/adjpro/d9297/020627id.pdf), where the complaint was issued on March 30, 2001, prior to the effective date of these amendments, the Complaint in this matter was issued on October 25, 2001, after the effective

date of the amendments.

The parties' burdens of proof are governed by Commission Rule 3.43(a), Section 556(d) of the Administrative Procedure Act ("APA"), and case law. Pursuant to Commission Rule 3.43(a), "counsel representing the Commission . . . shall have the burden of proof, but the proponent of any factual proposition shall be required to sustain the burden of proof with respect thereto." 16 C.F.R. § 3.43(a). Under the APA, "except as otherwise provided by statute, the proponent of a rule or order has the burden of proof." 5 U.S.C. § 556(d). Further, under the APA, an Administrative Law Judge may not issue an order "except on consideration of the whole record or those parts thereof cited by a party and supported by and in accordance with the reliable, probative, and substantial evidence." 5 U.S.C. § 556(d). See also Steadman v. SEC, 450 U.S. 91, 102 (1981) (APA establishes preponderance of the evidence standard of proof for formal administrative adjudicatory proceedings).

The Complaint challenges the Acquisition under both Section 7 of the Clayton Act and Section 5 of the FTC Act. The analytical standards for assessing legality in this context are read coextensively. R.R. Donnelley & Sons, 120 F.T.C. at 150 n.32; FTC v. PPG Indus. Inc., 798 F.2d 1500, 1501 n.2 (D.C. Cir. 1986) (Section 5 of the FTC Act "may be assumed to be merely repetitive of [Section] 7 of the Clayton Act.").

Section 7 of the Clayton Act prohibits acquisitions, "where in any line of commerce or in any activity affecting commerce in any section of the country, the effect of such acquisition may be substantially to lessen competition, or tend to create a monopoly." 15 U.S.C. § 18. See United States v. Phila. Nat'l Bank, 374 U.S. 321, 355 (1963) ("The statutory test is whether the effect of the merger 'may be substantially to lessen competition' 'in any section of the country.'"). "Congress used the words 'may be substantially to lessen competition' to indicate that its concern was with probabilities, not certainties." Brown Shoe Co. v. United States, 370 U.S. 294, 323 (1962). Complaint Counsel need not prove that

an anticompetitive effect is a certainty. R.R. Donnelley & Sons, 120 F.T.C. at 150 (citing California v. American Stores Co., 495 U.S. 271, 284 (1990)).

The first step in analyzing a Section 7 case is to determine the "line of commerce" and the "section of the country." 15 U.S.C. § 18. In other words, the first step is to determine the relevant product and geographic markets. R.R. Donnelley & Sons, 120 F.T.C. at 151; United States v. General Dynamics Corp., 415 U.S. 486, 510 (1974) ("delineation of proper geographic and product markets is a necessary precondition to assessment of the probabilities of a substantial effect on competition within them"). "Complaint Counsel bears the burden of proving a relevant market within which anticompetitive effects are likely as a result of the acquisition." R.R. Donnelley & Sons, 120 F.T.C. at 152.

The second step in analyzing a Section 7 case is to determine whether the effect of the acquisition "may be substantially to lessen competition, or to tend to create a monopoly." 15 U.S.C. § 18. The analytical framework by which the government can establish probable effect has three parts, as summarized below.

First, the government has the burden of showing that the Acquisition would produce "a firm controlling an undue percentage share of the relevant market, and would result in a significant increase in the concentration of the firms in that market." FTC v. H.J. Heinz Co., 246 F.3d 708, 715 (D.C. Cir. 2001) (citing Phila. Nat'l Bank, 374 U.S. at 363); United States v. Baker Hughes, Inc., 908 F.2d 981, 982 (D.C. Cir. 1990). The government may establish a prima facie case of anticompetitive effect by presenting statistics showing that combining the market shares of CB&I and PDM would significantly increase concentration in the already highly concentrated United States large, field-erected LNG tank, LPG tank, LIN/LOX tank and TVC markets. See Baker Hughes, 908 F.2d at 983. Once this showing is made, the government establishes a presumption that the transaction will substantially lessen competition. Phila. Nat'l Bank, 374 U.S. at 363; Baker Hughes, 908 F.2d at 982 (citing United States v. Citizens & Southern Nat'l Bank, 422 U.S. 86,

120-22 (1975); Heinz, 246 F.3d at 715; In re B.F. Goodrich Co., 110 F.T.C. 207, 303-05 (1988).

Second, "finding a prima facie violation of Section 7 creates a rebuttable presumption of anticompetitive effects and shifts the burden of going forward with evidence to the respondent." B.F. Goodrich Co., 110 F.T.C. at 305; Citizens & Southern Nat'l Bank, 422 U.S. at 120; United States v. Marine Bancorporation, Inc., 418 U.S. 602, 631 (1974). A finding of prima facie illegality on the basis of concentration statistics can be rebutted by a showing that "'the merger is not likely to have such anticompetitive effects.'" In re Weyerhauser Co., 106 F.T.C. 172, 278 (1985) (quoting Phila. Nat'l Bank, 374 U.S. at 363).

This second step of the analysis requires that the merger be "functionally viewed, in the context of its particular industry." Brown Shoe, 370 U.S. at 321-22; Weyerhauser Co., 106 F.T.C. at 278 ("only a further examination of the particular market -- its structure, history and probable future -- can provide the appropriate setting for judging the probable anticompetitive effect of the merger"). Respondents may "demonstrate unique economic circumstances that undermine the predictive value of the government's statistics." FTC v. Univ. Health, Inc., 938 F.2d 1206, 1218 (11th Cir. 1991). "Nonstatistical evidence which casts doubt on the persuasive quality of the statistics to predict future anticompetitive consequences may be offered to rebut the prima facie case made out by the statistics." Kaiser Aluminum, 652 F.2d at 1341. Factors which may be considered include "ease of entry into the market, the trend of the market either toward or away from concentration, and the continuation of active price competition." Id.

Thus, while market share evidence is "an important starting point in merger analysis, it alone is not conclusive in determining the legality of a merger under Section 7." Weyerhauser Co., 106 F.T.C. at 278. See also General Dynamics Corp., 415 U.S. at 498; Baker Hughes, 908 F.2d at 992 ("The Herfindahl-Hirschman Index cannot guarantee litigation victories."); Hosp. Corp. of Am., 807 F.2d at 1386 (deciding that market share figures are not

always decisive in a Section 7 case and that the Commission was prudent in inquiring into the probability of harm to consumers).

Third, if Respondents successfully rebut the presumption of anticompetitive effects, "the burden of producing additional evidence of anticompetitive effect shifts to the government, and merges with the ultimate burden of persuasion, which remains with the government at all times." Heinz, 246 F.3d at 715; Baker Hughes, 908 F.2d at 983. Cf Citizens & Southern Nat'l Bank, 422 U.S. at 120; Marine Bancorporation, 418 U.S. at 631 (upon the government's establishment of a prima facie case under General Dynamics, the burden then shifts to the acquiring firm to show that the statistics do not accurately depict competitive conditions). These comparative cases do not indicate that the burden of persuasion shifts from the government, but only that a burden of going forward with the evidence shifts. Kaiser, 652 F.2d at 1340 and n.12.

C. Product Markets

The proper definition of the product market is a "necessary predicate" to an examination of the competition that may be affected by a merger or acquisition. Brown Shoe, 370 U.S. at 335; R.R. Donnelley & Sons, 120 F.T.C. at 151. The relevant market is the "area of effective competition" within which the defendant operates. Tampa Elec. Co. v. Nashville Coal Co., 365 U.S. 320, 327-28 (1961). Product markets may be defined either by "the reasonable interchangeability of use or the cross-elasticity of demand." Brown Shoe, 370 U.S. at 325; Coca Cola Co., 117 F.T.C. at 925. See also Kaiser Aluminum, 652 F.2d at 1330 ("the clearest indication that products should be included in the same market is if they are actually used by consumers in a readily interchangeable manner."). Complaint Counsel bears the burden of proving a relevant market, within which anticompetitive effects are likely, as a result of the acquisition. R.R. Donnelley & Sons, 120 F.T.C. at 152; see also 16 C.F.R. § 3.43(a); 5 U.S.C. § 556(d).

The parties agree that the relevant product markets are large, field-erected: (1) liquefied natural gas ("LNG") storage tanks (individually, or as a component of an import terminal or an LNG peak shaving plant); (2) refrigerated liquid petroleum gas ("LPG") storage tanks; (3) liquid nitrogen, oxygen and argon ("LIN/LOX") storage tanks; and (4) large (over 20 feet in diameter) thermal vacuum chambers ("TVCs"). F. 19. Therefore, the relevant product markets for assessing the probable effects of competition are large field-erected LNG storage tanks, LPG storage tanks, LIN/LOX storage tanks, and TVCs. F. 18-45.

D. Geographic Market

The statutory language of Section 7, "any section of the country," equates to the relevant geographic market. Marine Bancorporation, 418 U.S. at 620-21; In re Adventist Health Sys., 117 F.T.C. 224, 288 (1994). The relevant geographic market is the "area of effective competition . . . in which the seller operates, and to which the purchaser can practicably turn for supplies." Tampa Elec. Co., 365 U.S. at 327. The Government has the burden of proving the relevant geographic market. United States v. Connecticut Nat'l Bank, 418 U.S. 656, 669 (1974); Adventist, 117 F.T.C. at 289.

The parties agree that the relevant geographic market in which to analyze the merger is the United States. F. 15. By definition, field-erected LNG, LPG, and LIN/LOX storage tanks, as well as TVCs, must be built "in the field" at customers' sites in the United States. F. 16. It is economically infeasible to import a field-erected storage tank from anywhere outside the United States. F. 17. Therefore, the relevant geographic market for assessing the probable effects of competition is the United States. F. 14-17.

E. Effects on Competition

The Complaint alleges violations pertaining to four product markets. Before analyzing the effects on competition in each of these markets, the standards by which probable effects are evaluated are set forth with an analysis applicable to all four

product markets.

Section 7 is "designed to arrest in its incipiency . . . the substantial lessening of competition from the acquisition by one corporation of the whole or any part of the stock" or assets of a competing corporation. United States v. E.I. du Pont de Nemours & Co., 353 U.S. 589 (1957); Univ. Health, 938 F.2d at 1218. "Congress used the words 'may be substantially to lessen competition' to indicate that its concern was with probabilities, not certainties." Brown Shoe, 370 U.S. at 323. "But it is to be remembered that § 7 deals in 'probabilities,' not 'ephemeral possibilities.'" Marine Bancorporation, 418 U.S. at 623. "Thus, to satisfy section 7, the government must show a reasonable probability that the proposed transaction would substantially lessen competition in the future." Univ. Health, 938 F.2d at 1218; FTC v. Warner Communications Inc., 742 F.2d 1156, 1160 (9th Cir. 1984).

The essential question is whether "the probability of such future impact exists at the time of trial." General Dynamics, 415 U.S. at 505; E. I. du Pont, 353 U.S. at 607 (economic effects of an acquisition are to be measured at the time of suit rather than at the time of acquisition). Thus, although the Clayton Act is an "incipiency" statute, post-acquisition evidence, so long as it "is such that it could not reflect deliberate manipulation by the merged companies temporarily to avoid anticompetitive activity," will be given some consideration. Lektro-Vend Corp. v. Vendo Co., 660 F.2d 255, 276 (7th Cir. 1981); Consolidated Foods, 380 U.S. at 598. Complaint Counsel has not demonstrated that Respondents deliberately manipulated the post-acquisition evidence. Further, Complaint Counsel has relied extensively on post-acquisition evidence to argue that, since the Acquisition, CB&I has implemented price increases. Complaint Counsel's Proposed Findings of Fact ("CCPFF") at pp. 103-177. Accordingly, post-acquisition evidence is considered and evaluated.

1. Prima facie case

Assessing the likely competitive effects of the proposed transactions begins by determining the market shares of the merging firms and the level of concentration in the relevant market. FTC v. Cardinal Health Inc., 12 F. Supp. 2d 34, 52 (D.D.C. 1998). The most common method for Complaint Counsel to establish a prima facie case is to show that the acquisition "would produce 'a firm controlling an undue percentage share of the relevant market, and [would] result in a significant increase in the concentration of firms in that market.'" Univ. Health, 938 F.2d at 1218 (quoting Phila. Nat'l Bank, 374 U.S. at 363). "[A] merger which significantly increases the share and concentration of firms in the relevant market is 'so inherently likely to lessen competition' that it must be considered presumptively invalid and enjoined in the absence of clear evidence to the contrary." Cardinal Health, 12 F. Supp. 2d at 52 (quoting Phila. Nat'l Bank, 374 U.S. at 363).

Complaint Counsel has established its prima facie case by showing that CB&I's acquisition of PDM's EC and Water Divisions produces a firm controlling an undue percentage share in each of the four relevant markets. Although, as described below, Complaint Counsel's HHI statistics are not sufficiently reliable, Complaint Counsel has presented reliable and probative evidence demonstrating that CB&I and PDM were the number one and two competitors in all four product markets and that no other company provided or is likely to provide effective competition. This showing establishes Complaint Counsel's prima facie case.

a. The Herfindahl-Hirschman Index ("HHI")

Market concentration is often measured by the Herfindahl-Hirschman Index ("HHI"). Heinz, 246 F.3d at 716; PPG, 798 F.2d at 1503; Univ. Health, 938 F.2d at 1211 n.12. The Department of Justice and the FTC rely on the HHI in evaluating whether to challenge proposed horizontal mergers. United States Dep't of Justice & Federal Trade Comm'n, Horizontal Merger Guidelines §

§ 1.5, 1.51 (1992), as revised (1997) ("Merger Guidelines"). "The FTC and the Department of Justice, as well as most economists, consider the measure superior to such cruder measures as the four- or eight- firm concentration ratios which merely sum up the market shares of the largest four or eight firms. PPG, 798 F.2d at 1503. See also R.R. Donnelley & Sons, 120 F.T.C. at 182 n.147 (Commission uses HHI as the most economically relevant measure of concentration). The Merger Guidelines are not binding on courts or the Commission. PPG, 798 F.2d at 1503 n.4; R.R. Donnelley & Sons, 120 F.T.C. at 151 n.36. Instead, the Merger Guidelines serve to "describe the analytical process that the Agency will employ in determining whether to challenge a horizontal merger." Merger Guidelines § 0.2.

Although market concentration is often measured by the HHI, there is no requirement that it must be. United States v. Franklin Elec. Co., Inc., 130 F. Supp. 2d 1025, 1033-35 (W.D. Wisc. 2000), provides one example of a merger enjoined without a single reference to HHI. In PPG, the district court was unable to calculate an HHI for the high technology market since the market was growing rapidly, major portions of it lay in the immediate future, and market shares depended upon the success of future bids and the ultimate size of the projects for which they bid. 798 F.2d at 1505. Nevertheless, the court of appeals, without relying on the HHI for the "closest available approximation" market, concluded "the fact that there appear to be only three fully capable firms in that market indicates that the HHI will be very high." Id. "Even if one or two other firms were thought capable of expanding or entering, the HHI would still put the market in the highly concentrated range, and the acquisition would cause a great increase in the HHI." Id. Where, as in the instant case, the two largest competitors in thin product markets merge, the increase in market concentration and substantial lessening of competition are common sense conclusions.

When the HHI is utilized, the index is calculated by squaring the individual market shares of all the firms in the market and summing up the squares. Heinz, 246 F.3d at 716 n.9. Under the Merger Guidelines, a market with a post-merger HHI above 1800

is considered "highly concentrated" and mergers that increase the HHI in such a market by over 50 points "potentially raise significant competitive concerns." Merger Guidelines § 1.51. Acquisitions producing an increase in the HHI of more than 100 points in highly concentrated markets raise significant competitive concerns. Merger Guidelines § 1.51. The Merger Guidelines define as "unconcentrated" a market with an HHI below 1000, as "moderately concentrated" a market with an HHI between 1000 and 1800, and as "highly concentrated" a market with an HHI over 1800. Merger Guidelines § 1.51. See also PPG, 798 F.2d at 1503. Sufficiently large HHI figures establish a prima facie case that a merger is anticompetitive. Heinz, 246 F.3d at 716; Baker Hughes, 908 F.2d at 982-83.

Complaint Counsel's economic expert, Dr. John Simpson, examined market shares from 1990 to the time of the Acquisition in early 2001 and used this eleven year time period to calculate the HHI in each of the four relevant markets. F. 69, 216-18, 273-74, 370-71. Dr. Simpson provided no valid reason for using 1990 as a starting point, other than that was the starting point of the data that had been provided to him by Complaint Counsel. F. 69, 274.

Complaint Counsel cites to Merger Guidelines § 1.4 as authority for use of the eleven year time period for calculating the HHI. "Typically, annual data are used, but where individual sales are large and infrequent so that annual data may be unrepresentative, the Agency may measure market shares over a longer period of time." Merger Guidelines § 1.4. Nowhere do the Merger Guidelines suggest that using data spanning beyond a decade is an appropriate period of time. Despite this guideline, not a single case was cited to by Complaint Counsel where the government calculated the HHI in any manner other than based on annual sales. The only case found to have calculated HHI based on more than one year of sales is Baker Hughes, discussed infra. Instead, Complaint Counsel argues, "evidence that high market shares are sustained over several years is regularly used in antitrust cases to assess market power." Complaint Counsel's Post Trial Brief ("CCPTB") at 14-15 (citing Heinz, 246 F.3d at 712,

717 (in analyzing barriers to entry, the court noted that there had been no significant entries in decades, yet determined market shares based on annual sales of baby food); Borden, Inc. v. FTC, 674 F.2d 498, 511 (6th Cir. 1982) (determining market share over five year period to infer monopoly power; suit not brought under the Clayton Act); Greyhound Computer Corp. v. IBM Corp., 559 F.2d 488, 496-97 (9th Cir. 1977) (in a Sherman Section 2 case, defendant's share of the market in 3 years over a 7 year period was evidence from which the jury could reasonably infer market power)). None of these cases support the proposition that it is appropriate to calculate the HHI based on market data spanning more than a decade.

Sales in the field-erected LNG tank, LPG tank, LIN/LOX tank and TVC markets are sporadic, and a single sale can represent a large percent of market share in any given year. See F. 65, 68, 210, 213, 269, 364. Dr. Barry Harris, Respondents' economic expert, also presented numerous challenges to Dr. Simpson's use of 1990 as the starting point. F. 70, 71, 221, 276, 373, 375. In these unusual markets, mechanical application of the HHI provides misleading results. See Merger Guidelines § 0 ("Because the specific standards set forth in the Guidelines must be applied to a broad range of possible factual circumstances, mechanical application of those standards may provide misleading answers to the economic questions raised under the antitrust laws.").

The arbitrary nature of the HHI is underscored by the fact that choosing a different date achieves a completely different result. CB&I did not build an LNG tank, LPG tank, or TVC between 1996 and the date of the Acquisition, resulting in a change of zero in the HHI in three of the four markets. F. 70, 219, 372. An acquisition resulting in zero change in the HHI would not establish a prima facie case if only HHI were relied upon. See Merger Guidelines, § 1.5 ("Mergers producing an increase in the HHI of less than 50 points, even in highly concentrated markets post-merger, are unlikely to have adverse competitive consequences."); New York v. Kraft Gen. Foods, 926 F. Supp. 321, 362 (S.D.N.Y. 1995). This case illustrates the fact that the

HHI is subject to manipulation which weakens its reliability as an economic indicator.

Although Complaint Counsel places great emphasis on the HHI and the increases to the HHI, Complaint Counsel failed to demonstrate that a valid and credible HHI had been calculated in any of the relevant markets. For the reasons detailed in the following sections on each of the relevant markets, the HHI statistics alone do not conclusively establish Complaint Counsel's prima facie case.

(i) LNG market

Dr. Simpson testified that the post-acquisition HHI for LNG tanks is 10,000, with a change of 4,956. F. 68. Dr. Simpson's HHI calculations are of questionable value, because they are based on a period of time of over 10 years and there have been so few sales from 1990 to the Acquisition. F. 65, 69, 71. If data dating back to 1996 is used instead, CB&I had no sales over that time period and the change in the HHI based on sales in the LNG market would be zero. F. 70. Accordingly, the HHI statistics lack reliability and are insufficient to establish Complaint Counsel's prima facie case in the LNG market.

(ii) LPG market

Dr. Simpson testified that the post-acquisition HHI for LPG tanks is 8,380, with a change of 3,910. F. 218. Dr. Simpson's HHI calculations are suspect for two reasons. First, he included in his calculation the value of a project that was awarded to CB&I after the Acquisition. F. 216, 217. Second, because CB&I's last pre-acquisition LPG project was awarded in 1993, if data dating back to 1994 or 1996, instead of back to 1990, were used, the change in the HHI based on sales in the LPG market would be zero. F. 219. HHI calculations are not accurate in determining the concentration in the LPG market due to the extraordinarily thin market and almost nonexistent demand. F. 220. Accordingly, the HHI statistics lack reliability and are insufficient to establish Complaint Counsel's prima facie case in the LPG market.

(iii) LIN/LOX market

Dr. Simpson testified that the post-acquisition HHI for LIN/LOX tanks is 5,845, with a change of 2,635. F. 273. Dr. Simpson's HHI calculations in the LIN/LOX market were based on sales from 1990 to the date of the Acquisition. F. 274. There is no principled basis for reaching back to 1990 for calculating the HHI. Unlike the other three markets, where there were only a handful of sales over the eleven year period, in the LIN/LOX market 83 projects, comprising 109 tanks, were awarded during the period from 1990 to the Acquisition. F. 269. Further, Dr. Simpson admitted that CB&I's spin off from Praxair in 1997 was a significant competitive change, a fact which could justify beginning the HHI calculation for the LIN/LOX market in 1997, after the date of that sale. F. 275. Accordingly, the HHI statistics lack reliability and are insufficient to establish Complaint Counsel's prima facie case in the LIN/LOX market.

(iv) TVC market

Dr. Simpson testified that the post-acquisition HHI for TVCs is 10,000, with a change of 5,000. F. 370. He arrived at this conclusion by two approaches. First, he assigned a 50-percent market share to CB&I and a 50-percent market share to PDM, based on the opinions of market participants and documents. F. 370. Second, he assigned a 49.3 percent market share to CB&I for a project that was awarded to CB&I by Spectrum Astro, but was not built. F. 371. In actuality, only one TVC was built in the 1990s and this TVC was by PDM. F. 364. The last TVC built by CB&I was in 1984. F. 365. Without the proposed Spectrum Astro project included, PDM would have 100% market share and an HHI of 10,000. The increase in the HHI would be zero. F. 372. Applying different standards results in starkly different results in this extraordinarily thin market. Accordingly, the HHI statistics lack reliability and are insufficient to establish Complaint Counsel's prima facie case in the TVC market.

b. Market power in bid markets

The Supreme Court, in General Dynamics, held that evidence of annual sales is relevant as a prediction of future competitive strength in most markets, such as groceries or beer, since distribution systems and brand recognition are such significant factors that one may reasonably suppose that a company which has attracted a given number of sales will retain that competitive strength. 415 U.S. at 501 (referencing United States v. Von's Grocery, 384 U.S. 270 (1966); United States v. Pabst Brewing Co., 384 U.S. 546 (1966)). However, in some markets, statistical evidence of past production may not always be the best measure of a company's ability to compete. Id. (upholding district court's focus on reserves of coal rather than past production, because the bulk of the coal produced was delivered under long term requirement contracts, which could not be obtained without sufficient coal reserves).

The product markets here are not like groceries or beer. Rather, the four product markets are similar to the market for hardrock hydraulic underground drilling rigs examined in Baker Hughes. In Baker Hughes, the products were assembled and made to suit each purchaser's needs and specifications. United States v. Baker Hughes, Inc., 731 F. Supp. 3, 8 (D.D.C. 1990). In this case, the large field-erected tanks and TVCs are custom made to suit each purchaser's needs. See generally supra Part II.D. In Baker Hughes, customers sought bids from several suppliers and placed great emphasis upon a supplier's reputation for quality and service. 731 F. Supp. at 8. In this case, customers generally seek competitive bids from several suppliers for each of the products at issue and place great emphasis upon a supplier's reputation for quality and service. E.g., F. 166-172, 222-26, 250-52, 283, 286. Baker Hughes addressed a very thin product market; the overall size of the market ranged from 51 to 61 sales over a three year period. 731 F. Supp. at 9. In this case, in the two years from the Acquisition to trial, one LNG tank, one LPG tank, five LIN/LOX tanks, and zero TVCs have been sold. F. 233, 292, 407-409. Indeed, Complaint Counsel has had to reach back eleven years to

find more than a handful of sales in three of the four markets. F. 66, 211, 364.

The district court in Baker Hughes held, "because of the nature of the products sold and the fact that the volume of business done is relatively small and customers' needs for new equipment are irregular, market shares in the line of commerce alone are not an accurate measure of market dominance." 731 F. Supp. at 9. As in Baker Hughes, here because of the nature of the products sold, the fact that the volume of business done is relatively small, and the customer's needs for new equipment are irregular, market shares in the line of commerce alone are not a conclusive measure of market dominance. Thus, other factors besides market shares are analyzed.

"In evaluating monopoly power, it is not market share that counts, but the ability to maintain market share." United States v. Syufy Enterprises, 903 F.2d 659, 665-66 (9th Cir. 1990) (emphasis in original). Thus, a more accurate picture of competition arises through an examination not just of the number and the value of the tank projects awarded, but of the competitive pressure each manufacturer is able to exert by bidding. See Baker Hughes, 731 F. Supp. at 9 (evaluating numbers of bids over last two years). This approach was used by the Court of Appeals for the Second Circuit in evaluating "the unusual market" of carrier-based aircraft. Grumman Corp. v. LTV Corp, 665 F.2d 10, 12-13 (2d Cir. 1981).

In Grumman Corp., the defendants did not dispute that during the past two decades the acquired and the acquiring companies had been substantial competitors. Defendants argued that there was an "insufficient basis to believe that [the acquired company would] be a competitive factor in the future." Id. at 12. Even though the last order for the product in one of the relevant markets had been placed two years earlier and the single domestic purchaser had no current plans to purchase the product from the acquired company, the district court concluded that the acquired company could reasonably be expected to provide competition in the relevant market. Id. at 12.

The court of appeals upheld the district court's finding in Grumman, stating it reflected "an inevitable aspect of an unusual market."

> [The relevant product does] not roll off assembly lines like television sets or automobiles. In a market with a single domestic purchaser, which buys intermittently, a court assessing the anti-competitive effect of a horizontal combination must consider future possibilities in assessing whether there exists a significant probability of decreased competition. Whether or not [the acquired company] will sell more [of the relevant product to the single domestic purchaser], the fact remains that it was properly found to be competing to do so. . . . The [purchaser's] rejection of the proposal [to sell a modified version of the product] does not lessen the significance of [the acquired company's] capacity and desire to make it.

Id. at 12-13.

United States v. United Tote, Inc. provides another example of a court, in analyzing an unusual market, basing its opinion not just on a review of past sales, but on an analysis of the companies' ability to constrain competition by bidding. 768 F. Supp. 1071 (D. Del. 1991). In Tote, the relevant product market lines were on-track, off-track, and inter-track totalisator systems and services. Id. at 1069. In those markets, where companies submitted bids to tracks to have their systems used, the court found it to be significant that the two merging companies submitted bids against each other on 49 of the 116 totalisator contracts for which bids were sought. Id. at 1071 (holding that even though the acquired company had never replaced the acquiring company, where the acquiring company was the incumbent, the government's statistical case accurately reflected the state of competition).

Although CB&I has not won projects in three of the four markets from 1996 to the Acquisition, to conclude that CB&I

does not have market power "ignores the competitive effect they exert simply by being available to compete." Grumman, 665 F.2d at 14. The fact that CB&I and PDM competed against each other consistently through the bid process is more dispositive to the determination of market power than how many projects were won. Thus, in the sections that follow, CB&I's market power is demonstrated through an evaluation of which companies provided competition through bids on recent projects.

(i) LNG market

From 1990 to the Acquisition, nine LNG tank projects were awarded in the United States. CB&I won five of these projects and PDM won four. F. 65. For all but two of these projects, no company other than CB&I and PDM submitted bids. F. 72.

(ii) LPG market

From 1990 to the Acquisition, eleven LPG tank projects were awarded in the United States. CB&I won five and PDM won four. F. 210. From 1994 to the Acquisition, of the five LPG tank projects built in the United States, CB&I won zero and PDM won three. F. 210. Morse Tank and AT&V each won one. F. 210. For the last four pre-acquisition LPG tank projects for which the parties presented evidence on the companies that submitted bids, CB&I bid on all four projects and PDM bid on three of the four. F. 222-26. On two of these, CB&I and PDM were the only bidders. F. 224. Although CB&I did not win any of the last five LPG projects, both CB&I and PDM were effective competitors through bidding. See Grumman, 665 F.2d at 14.

(iii) LIN/LOX market

From 1990 to the Acquisition, 109 LIN/LOX tanks were awarded in the United States. F. 269. CB&I won 25 of the tanks and PDM won 44. F. 269. Graver, which went out of business in 2001 won 34 of the projects. F. 269, 270. CB&I, PDM, and Graver were competing with each other by bidding on LIN/LOX projects. F. 286-88. Because Graver is no longer in the business, it

is no longer bidding against CB&I and no longer provides competition.

(iv) TVC market

From 1990 to the Acquisition, only one field-erected TVC has been built, and this TVC was built by PDM in 1996. F. 364. Both CB&I and PDM provided final pricing offers for [redacted] in 1997. F. 366 (in camera). Both CB&I and PDM submitted best and final offers for the Spectrum Astro project in 1999. F. 368. Both CB&I and PDM were asked to provide rough order of magnitude ("ROM") pricing to TRW in 1999. F. 369. [redacted] sought a sole-source procurement with PDM for its [redacted] facility. F. 367 (in camera). In all but one of these instances, CB&I and PDM were competing against each other. F. 366, 368, 369. In all but one of these instances, no other company was even asked to participate in the bidding process. F. 366-69.

c. Acquisition of closest competitor

Regardless of how competition is measured, the decisive issue is that CB&I bought its closest competitor which is not likely to be replaced by an equally cost-effective and qualified competitor in any of the four markets. Infra Part III.E.2.c. Without PDM to bid against, CB&I is no longer required to submit the lowest possible bid to win projects. F. 498. Numerous recent D.C. court cases have used this economic principle when evaluating whether to enjoin a proposed merger or acquisition. E.g., Heinz, 246 F.3d at 725 (finding that by buying its closest competitor, Heinz would create a "durable duopoly" that "affords both the opportunity and incentive for both firms to coordinate to increase prices"); FTC v. Libbey, Inc., 211 F. Supp. 2d 34, 47 (D.D.C. 2002) (enjoining merger where there was substantial evidence that the proposed merger might effectively eliminate a competitor in the relevant market that was already highly concentrated); FTC v. Swedish Match, 131 F. Supp. 2d 151, 169 (D.D.C. 2000) ("A unilateral price increase by Swedish Match is likely after the acquisition because it will eliminate one of Swedish Match's primary direct competitors."); Cardinal Health, 12 F. Supp. 2d at 53, 64 (By

combining with their closest competitors to capture an 80% market share, defendants could "curb downward pricing pressure and adversely affect competition."); FTC v. Staples Inc., 970 F. Supp. 1066, 1082 (D.D.C. 1997) (By eliminating its closest competitor, "this merger would allow Staples to increase prices or otherwise maintain prices at an anti-competitive level."); FTC v. Coca-Cola Co., 641 F. Supp. 1128, 1139 (D.D.C. 1986) ("The stark, unvarnished truth is that the [sought to be acquired] brand has been a staunch effective competitor . . . that [the potential purchaser] has tried to stifle" and is "now seeking to buy."). See also Merger Guidelines n.21 ("A merger involving the first and second lowest-cost sellers could cause prices to rise to the constraining level of the next lowest-cost seller.").

According to the D.C. Circuit Court of Appeals in Heinz, "no court has ever approved a merger to duopoly." 246 F.3d at 717 (enjoining merger between the second and third largest sellers of jarred baby food where the higher priced company, Gerber, who was not a participant in the merger, had a 65% market share). In PPG, where there "appeared to be only three fully capable firms in [the] market," and "the proposed acquisition would leave two," the Commission's showing of market concentration was "overwhelming," and the proposed merger was enjoined. 798 F.2d at 1505-06. The circumstances in the instant case are similar to those in Franklin Elec., where there were only two manufacturers of the relevant product. 130 F. Supp. 2d at 1033-35. In that case, the defendants argued that market share or percentage of sales was almost irrelevant, because the market was quite different from most consumer markets. Id. The court held that the combination "should be viewed" as nothing "other than a merger to monopoly that by definition will have an anticompetitive effect[.]" Id.

"One factor that is 'an important consideration when analyzing possible anti-competitive effects' is whether the acquisition 'would result in the elimination of a particularly aggressive competitor in a highly concentrated market . . . .'" Libbey, 211 F. Supp. 2d at 39, 47 (enjoining a merger where, though the firm to be acquired had only seven percent of the market, it was the

"most formidable competitor" in the relevant market) (quoting Staples, 970 F. Supp. at 1083). In Grumman, where the acquiring company and the acquired company competed against each other for every opportunity, even though neither company had a significant share of the market, the district court "was entitled to conclude that removing one competitor from this market would tend to substantially lessen competition." 665 F.2d at 15. In this case, Respondents do have a significant share of the market, so, for even stronger reasons, removing a competitor would substantially lessen competition.

As discussed in each of the product market sections below, CB&I bought its closest competitor. Prior to the Acquisition, no other still existing company challenged CB&I's market power. Without resorting to the mechanical HHI analysis, the pre-acquisition market shares controlled by CB&I and PDM and the power each exerted by bidding against the other cannot be ignored. As the evidence in this case demonstrates, lower prices for customers resulted from that pre-acquisition competition. See F. 83-87, 231, 286-91, 388-406. Even Respondents recognized at the time that they were contemplating the Acquisition that combined CB&I and PDM could achieve market dominance. F. 491-96. Accordingly, Complaint Counsel has established a presumption of illegality in all four product markets.

(i) LNG market

CB&I and PDM account for all of the sales of LNG tanks in the United States from 1990 to the Acquisition. F. 65. From 1990 to 2001, based on the dollar values of tank projects built, excluding cancelled projects, CB&I accounted for 45.3% and PDM accounted for 54.7% of the market. The combined market share is 100%. F. 68.

Prior to the Acquisition, Respondents were the only two competitors in the LNG market. F. 74. Respondents and industry members viewed CB&I and PDM as the only competitors for LNG tanks. F. 75-82. Customers sought to use competition between CB&I and PDM to obtain lower prices. F. 83-97.

(ii) LPG market

CB&I and its two acquisitions, PDM EC and Morse, account for all but one of the sales of LPG tanks in the United States from 1990 to the time of the Acquisition. F. 210, 214, 215. Dr. Simpson calculated market shares based on sales values from 1990 to 2001 and included the post-acquisition LPG project for BASF in Port Arthur, Texas that was awarded to CB&I. F. 212. Based on Dr. Simpson's data set, PDM had a 34.5% market share, CB&I had a 56.7% market share, Morse Tank had an 8.2% market share, and AT&V had a 0.6% market share. F. 213. By Dr. Simpson's calculations, the combined CB&I and PDM market share from 1990 to the Acquisition is 91.2%. F. 213. n2 On November 30, 2001, CB&I acquired Morse Tank, eliminating the firm that had accounted for the next most substantial share of LPG sales prior to the Acquisition. F. 214.

n2 If the post-acquisition win by CB&I is excluded from the calculations, the market share totals do not vary significantly. The combined CB&I and PDM total would be 90.9%. F. 213.

Respondents viewed each other as their only competition for LPG tanks. F. 228-30. Respondents' expert, Dr. Harris, testified that prior to the Acquisition, neither CB&I nor PDM could increase prices of LPG tanks in the United States without risking losing sales to the other. F. 231.

(iii) LIN/LOX market

CB&I and PDM had a combined market share of 72.8% of the value of LIN/LOX awards for the time period of 1990 to the Acquisition. F. 269. Graver had a 23.3% market share, Matrix had a 2.6% market share, and AT&V had a 1.4% market share. F. 269. Graver went out of business, in 2001, and is no longer a competitor in the LIN/LOX market. F. 270.

Prior to the Acquisition, competition between CB&I and PDM

was very aggressive. Respondents viewed each other as close competitors and in some instances dropped their prices to beat out the other or set prices that would generate "negative margins." F. 277-82. CB&I lost some projects to PDM because of PDM's "very low" pricing levels. F. 280. Prior to the Acquisition and prior to Graver's exit from the business, customers would use the vigorous competition between CB&I, PDM and Graver to obtain lower prices. F. 286-91.

(iv) TVC market

CB&I's acquisition of PDM EC combined the only two competitors in the market for large field-erected TVCs in the United States. F. 363. Since 1960, the only companies that have built TVCs are CB&I and PDM. F. 363.

CB&I viewed PDM as its "only competitor" for TVC projects in the United States. F. 376-78. Purchasers of TVCs viewed CB&I and PDM as the only firms with the capability to construct TVCs. F. 380-85. One customer used competition between CB&I and PDM to obtain lower pricing. F. 388-406.

2. Respondents' rebuttal

a. Standards & factors

Complaint Counsel established its prima facie case. The burden next shifts to Respondents to produce evidence that "show[s] that the market-share statistics [give] an inaccurate account of the acquisition['s] probable effect[] on competition" in the relevant markets. Citizens & Southern Nat'l Bank, 422 U.S. at 120; Phila. Nat'l Bank, 374 U.S. at 363; United States v. Waste Mgmt., Inc., 743 F.2d 976, 981 (2d Cir. 1984). "The more compelling the prima facie case, the more evidence the defendant must present to rebut it successfully." Baker Hughes, 908 F.2d at 991. "Although the ultimate burden of persuasion always rests with the FTC, once a presumption has been established that the proposed transactions will substantially affect competition, the burden of production shifts to the Defendants to rebut the

presumption." Cardinal Health, 12 F. Supp. 2d at 54 (citing Marine Bancorporation, 418 U.S. at 613). Respondents are not required to "clearly" disprove future anticompetitive effects, because such a requirement would impermissibly shift the ultimate burden of persuasion. Baker Hughes, 908 F.2d at 991.

Respondents may demonstrate unique economic circumstances that undermine the predictive value of the government's statistics. Univ. Health, 938 F.2d at 1218 (citing General Dynamics, 415 U.S. at 486). In addition to attacking the government's statistics, a respondent may present evidence on a number of factors that "are relevant in determining whether a transaction is likely to lessen competition substantially." Baker Hughes, 908 F.2d at 985. These factors include: ease of entry into the market, the trend of the market either toward or away from concentration, the continuation of active price competition, and evidence of customer sophistication. Univ. Health, 938 F.2d at 1218; Kaiser Aluminum, 652 F.2d at 1341; Baker Hughes, 908 F.2d at 986. The acquired firm's weakness is also a factor that a defendant may introduce to rebut the government's prima facie case. Univ. Health, 938 F.2d at 1221.

In this case, Respondents contend that the following factors sufficiently rebut the FTC's prima facie case: (1) evidence that Complaint Counsel's concentration statistics are misleading; (2) evidence of actual or potential entry or the existence of low entry barriers; (3) evidence of customer sophistication; and (4) evidence of the weakness of the merging companies. Respondents' Post Trial Brief ("RPTB") at 8-11.

b. Statistics

Statistics reflecting market share and concentration, while of great significance, are not conclusive indicators of anticompetitive effects. Heinz, 246 F.3d at 717 n.12 (citing General Dynamics, 415 U.S. at 498); Brown Shoe, 370 U.S. at 322 n.38 ("Statistics reflecting the shares of the market controlled by the industry leaders and the parties to the merger are, of course, the primary index of market power; but only a further

examination of the particular market - its structure, history and probable future - can provide the appropriate setting for judging the probable anticompetitive effect of the merger."). "The level of market concentration . . . is only the starting point to determine the likelihood of anticompetitive effects, and many other factors affect the likelihood of collusive or unilateral anticompetitive conduct." Adventist, 117 F.T.C. at 307 (citing Merger Guidelines, § 2.0; Baker Hughes, 908 F.2d at 984, 992 ("the Herfindahl-Hirschman Index cannot guarantee litigation victories.").

A respondent "may rebut the government's prima facie case by showing that the government's market share statistics overstate the acquired firm's ability to compete in the future and that, discounting the acquired firm's market share to take this into account, the merger would not substantially lessen competition." Univ. Health, 938 F.2d at 12121 "Under General Dynamics, a substantial existing market share is insufficient to void a merger where that share is misleading as to actual future competitive effect." Waste Mgmt., 743 F.2d at 982. The Supreme Court held that, while the statistical showing proffered by the government in General Dynamics was sufficient to support finding an "'undue concentration' in the absence of other considerations, the question . . . is whether . . . other pertinent factors affecting the coal industry and the business of the appellees mandated a conclusion that no substantial lessening of competition occurred or was threatened by the acquisition . . . ." 415 U.S. at 498. Because of fundamental changes in the structure of the relevant market, the statistics relied on by the government in General Dynamics were insufficient to sustain its case. 415 U.S. at 501.

This case does not present the situation before the court in General Dynamics where the Supreme Court held that the market share statistics that the government used to seek divestiture of the merged firm were insufficient, because in failing to take into account the acquired firm's long-term contractual commitments (coal contracts), the statistics overestimated the acquired firm's ability to compete in the relevant market in the future. General Dynamics, 415 U.S. at 500-04. By contrast to General Dynamics, where sales made by defendants represented "the obligation to

fulfill previously negotiated contracts at a previously fixed price" and thus did not represent the exercise of market power, sales made by CB&I and PDM represent CB&I's and PDM's continuing ability to bid for, win, and build tank projects in all four relevant markets.

Nor does this case present the situation before the court in Baker Hughes where the market shares were "volatile and shifting," where there were four domestic firms that each manufactured the relevant products, and where a contract to provide multiple rigs could catapult any one of those firms from fourth to first place. 908 F.2d at 986. As discussed above, in three of the four markets, Respondents were consistently the number one and number two competitors. In the fourth market, LIN/LOX, CB&I and PDM shared the field with Graver. Graver, however, is no longer in the business and is, thus, not able to take shares away from CB&I. Supra Part III.E.b. Therefore, this case does not present the situation addressed by the court in Baker Hughes where there were other competitors who were taking away sales and able to continue to take away sales from the merging companies.

As discussed in the previous section, the government's HHI statistics are not reliable and probative evidence. Nevertheless, the deficiencies in the government's HHI statistics do not undermine the evidence presented that CB&I bought its closest competitor or the evidence on CB&I's ability to compete in the future. Accordingly, Respondents have not successfully demonstrated that the government's market share statistics overstate CB&I's ability to compete the relevant markets.

c. Actual or potential entry

Standards

"Ease of entry is the ability of other firms to respond to collusive pricing practices by entering to compete in the market." Cardinal Health, 12 F. Supp. 2d at 54-55. "Even in highly concentrated markets, if there is sufficient ease of entry, enough

firms can enter to compete with the merging firms, undercutting any of the likely anti-competitive effects of the proposed mergers." Id. If Respondents' evidence regarding entry shows that the Commission's market share statistics give an incorrect prediction of the Acquisition's probable effect on competition because entry into the markets would likely avert any anticompetitive effect by acting as a constraint on CB&I's prices, then Respondents have rebutted the prima facie case. See Staples, 970 F. Supp. at 1086.

In Consolidated Foods, the Supreme Court held that post-acquisition evidence tending to diminish the probability or impact of anticompetitive effects might be considered in a § 7 case, but that the probative value of such evidence was limited. 380 U.S. at 598. In General Dynamics, the Supreme Court held that post-acquisition evidence goes "directly to the question of whether future lessening of competition was probable and the District Court was fully justified in using it." 415 U.S. at 506. "Post-acquisition evidence favorable to a defendant can be an important indicator of the probability of anticompetitive effects where the evidence is such that it could not reflect deliberate manipulation by the merged companies temporarily to avoid anticompetitive activity, and could not reasonably be construed as representing less active market competition than would otherwise have occurred without the questioned acquisition." Lektro-Vend Corp., 660 F.2d at 276. Accordingly, in assessing whether entry will likely avert any anticompetitive effects, post-acquisition evidence is considered.

Complaint Counsel asserts that entry must be timely (within two years); likely to be profitable at pre-merger prices; and sufficient to deter or counteract the possible anticompetitive effects of the Acquisition. CCPTB at 18 (citing Merger Guidelines § § 3.1-3.4; Coca Cola, 117 F.T.C. at 953). Respondents assert that evidence regarding actual or potential entry rebuts a prima facie case and that even the mere threat of entry can rebut a prima facie case. RPTB at 9-10 (citing Baker Hughes, 908 F.2d at 981). See also Waste Mgmt., 743 F.2d at 983

("entry by potential competitors may be considered in appraising whether a merger will 'substantially lessen competition'").

Likelihood and timing of entry

In Baker Hughes, the district court reviewed the prospects for future entry and concluded that entry was likely, particularly if the acquisition were to lead to supracompetitive pricing. 908 F.2d at 988. The government appealed this conclusion, asserting that the district court should have required defendants to show clearly that entry would be quick and effective. Id. at 988. The court of appeals held that the district court's factual findings amply supported its determination that future entry was likely. Id. at 989. Discussing Baker Hughes, the court in Tote stated, the "crucial aspect" of Baker Hughes was "that the leading firm's 'growth suggests that competitors not only can, but probably will, enter or expand if this acquisition leads to higher prices.'" 768 F. Supp. at 1081 (quoting Baker Hughes, 908 F.2d at 989). No such inference can be made in this case where the strength of Respondents, the leading firms, is not recent or attributable to any significant changes in the industry, but is grounded on long experience and a proven track record.

Despite characterizing the government's position in Baker Hughes that entry must be "quick and effective" as "novel and unduly onerous," the court of appeals found that "if the totality of a defendant's evidence suggests that entry will be slow and ineffective, then the district court is unlikely to find the prima facie case rebutted." Id. at 988 (emphasis added). Further, case law developed after Baker Hughes illustrates that a "quick and effective" standard for analyzing entry is no longer "novel." In Tote, where evidence presented at trial established that it would take 18 to 24 months to study, develop and then adequately debug a truly competitive product and where there was other evidence of factors that complicate a potential entrant's ability to design or modify the relevant product in a timely manner, defendants did not rebut the government's case. 768 F. Supp. at 1073-75. See also Franklin Elec., 130 F. Supp. 2d at 1035-36 (enjoining merger where defendants had "not shown that entry is so easy that [the

merged entity] could not sustain monopolist profits for some period of time") (emphasis added); United States v. Calmar, Inc., 612 F. Supp. 1298, 1301 (D.N.J. 1985) ("If ease of entry in the market is such that the producers in the market could not long sustain an unjustified price increase, then in spite of a high degree of concentration there has not been a substantial lessening of competition.") (emphases added).

As discussed below, in all four of the relevant markets, the totality of the evidence establishes that potential and actual entry is slow and ineffective and cannot keep these markets competitive. Further, the evidence of entry in this case is not as compelling as the evidence was in Baker Hughes where at least two companies had entered the United States market immediately prior to the challenged acquisition and were poised for future expansion. 908 F.2d at 988-89. In Baker Hughes, a number of firms competing in Canada and other countries had not penetrated the United States market, but could be expected to do so if the acquisition led to higher prices. Id. Although, in this case, there is evidence that there are a number of firms competing worldwide, the evidence does not establish that they can be expected to enter the U.S. market and compete in a timely and effective manner.

Constrain pricing

Entry "must be able to restore competitive pricing -- i.e., it must be effective in offsetting any loss of competition due to the business combination in question." Coca Cola, 117 F.T.C. at 953, 960 ("If new entrants cannot sufficiently expand output to prevent existing producers from raising prices, their entry will not be sufficient to prevent a cartel from raising prices."). Where the likely and timely entry is not "sufficient to offset any post-merger pricing practices," defendants' claim of entry and expansion is "insufficient to rebut the Government's prima facie case." Cardinal Health, 12 F. Supp. 2d at 58. Even in Baker Hughes, the court found potential entry would be sufficient only if it "can keep that market competitive." Id. at 988 (emphasis added).

Respondents have presented evidence that other manufacturers are interested in entering the market and that customers might consider turning to these other sources. An interest of other firms in making sales is not sufficient to restore competition and prevent CB&I from exercising market power. See Rebel Oil Co. v. Atlantic Richfield Co., 51 F.3d 1421, 1440 (9th Cir. 1995) (If the output or capacity of the new entrant is insufficient to take significant business away from the predator, [the new entrants] are unlikely to represent a challenge to the predator's market power.") (emphasis added). Rather, the inquiry is focused on whether those firms will actually prevent an exercise of market power. See Staples, 970 F. Supp. at 1087-88; Swedish Match, 131 F. Supp. 2d at 170; Coca-Cola, 117 F.T.C. at 960 (Entrant must "be 'successful' in the sense of being profitable" and "sufficiently expand output to prevent existing producers from raising prices . . . ."). The greater weight of evidence in this case establishes that other firms have not prevented and will not prevent CB&I from raising prices after acquiring PDM EC.

Respondents have also presented evidence of companies that have bid on recent projects. However, in most of the examples presented, the other companies' bidding has not exerted sufficient competitive pressure. In Tote, the defendants pointed to the example of a company that had submitted a number of bids to tracks and that could have entered the market in seven months. The court held:

> despite the fact that ITS is actively bidding in the marketplace, United Tote was unable to offer even a single example of a competitor adjusting its prices in response to an ITS bid. Quite to the contrary, on one recent bid, ITS's price was almost twice that of AmTote's and 50% higher than Autotote's once the cost of buying was converted to the cost of leasing.

Tote, 768 F. Supp. at 1083. Thus, the court held that actual entry by ITS was not sufficient, because it would not constrain anticompetitive price increases by incumbents. Id. at 1082. In examples set forth below, the evidence in this case establishes

that, as in Tote, the bids offered by smaller competitors are at higher prices than those of CB&I and thus do not constrain pricing.

(i) LNG market

Since the Acquisition, domestic companies partnered with foreign companies are taking steps to enter the United States LNG market. In three of the eleven new or potential LNG projects, foreign manufacturers have even submitted bids or budget pricing. However, in many of the examples presented at trial, the steps that recent or potential entrants have taken are too preliminary to challenge CB&I's market power.

The bidding stages of seven of the recently announced projects are sufficiently advanced to provide a basis for determining that other manufacturers do not constrain CB&I's exercise of market power:

> In CMS Energy's planned LNG tank expansion, CB&I was awarded the contract over Skanska/Whessoe which had provided a budget price that was [redacted] than the firm negotiated price submitted by CB&I. F. 102-05 (in camera).
>
> [redacted] F. 106-07 (in camera).
>
> With Poten & Partners, CB&I is negotiating a sole-source contract. F. 108.
>
> For British Petroleum's three separate projects, CB&I is negotiating sole-source contracts. F. 109-13. Testimony from BP's representative that [redacted] (Sawchuck, Tr. 6062-63, 6092 in camera) is not persuasive evidence that these other companies have entered the market.
>
> For Dynegy's Hackberry Facility, the one post-acquisition LNG tank award that CB&I did not win,

> CB&I declined to submit a tank bid only because it did not like the conditions under which it was asked to bid. F. 89-101.

The bidding stages of the other four recently announced projects are not sufficiently advanced to provide a basis for determining that other manufacturers constrain CB&I's exercise of market power. For some of these projects, the recent or potential entrants' level of participation rises only to the level of expressing an interest or participating in preliminary meetings. Thus, the evidence presented on recent or potential entrants' attempts to enter the LNG market does not support a conclusion that recent or potential entry restrains CB&I's market power:

> For Yankee Gas' Waterbury project, CB&I has submitted budgetary pricing; Skanska/Whessoe has provided preliminary design solutions, preliminary design data sheets and pricing information; and [redacted] F. 117-32 (in camera). However, Yankee Gas has not yet determined whether Skanska/Whessoe or Technigaz are qualified to bid. F. 129.

> For Freeport LNG's project, which is in the early design stages and may never be built, CB&I has sent Freeport LNG a proposal to do the front end engineering and design; Black & Veatch has sent Freeport LNG a letter which indicates that it has formed an alliance with Whessoe to build LNG tanks in the Western Hemisphere; Skanska/Whessoe met with Freeport LNG to discuss contracting strategies and general tank designs and to provide Freeport LNG with marketing materials; TKK/AT&V has made presentations to Freeport LNG on the companies' capabilities and discussed contracting capabilities; and Technigaz/Zachry has approached Freeport LNG to present its alliance. F. 133-40.

> For Williams' Cove Point II project, CB&I has submitted budgetary pricing; TKK, in partnership with DYWIDAG and AT&V, has submitted budgetary pricing. F. 114-16. Testimony from [redacted] is not persuasive evidence that [redacted] has entered the market. ([redacted], Tr. 4693, (in camera)).
>
> Calpine's Humboldt, California facility is "in the early stages of possible development;" there is only a 50% chance that the facility will be built. F. 141. Testimony from Calpine's representative that he believes that Skanska/Whessoe, Technigaz/Zachry, and TKK/AT&V are all competent builders and can build LNG tanks (Izzo, Tr. 6494-500) is not persuasive. CB&I is the only constructor with whom Calpine has had discussions about potentially building this facility. F. 142-43.

Although Respondents presented evidence that TKK/AT&V, Skanska/Whessoe, and Technigaz/Zachry have begun bidding in the U.S. LNG market and that several other manufacturers have taken steps to try to enter the U.S. LNG market, the evidence does not demonstrate that they compete with sufficient force to constrain CB&I.

Further, although Respondents assert that there is a trend toward building double or full containment tanks, and that CB&I is disadvantaged in competing for double or full containment tanks, the evidence does not demonstrate that there is a trend toward double or full containment tanks. F. 57. Respondents have not demonstrated that actual or potential entry is sufficient to challenge CB&I's market power in the LNG market.

(ii) LPG market

Respondents presented little evidence of recent entry in the LPG market. Respondents assert that two entrants, AT&V and Matrix, have recently begun to compete for LPG jobs, and that

Chattanooga Boiler & Tank ("Chattanooga") is poised to enter this market. No evidence or testimony was offered to show that any foreign tank manufacturer has bid on U.S. LPG projects. F. 246. The evidence presented at trial does not demonstrate that these domestic or that foreign manufacturers can constrain CB&I's market power.

From the Acquisition to the time of trial, there has been one LPG project awarded, Port Arthur in 2001. This project was awarded to CB&I. F. 233.

The only still existing company that has built an LPG tank from 1990 to present, AT&V, lacks the capacity to constrain CB&I. Although AT&V was awarded the last pre-acquisition LPG tank project award, Deer Park, in 2000, the value of this project was a fraction of the value of the next largest tank built from 1990-2001. F. 226. AT&V also bid on the only LPG tank awarded since the Acquisition, which was won by CB&I. F. 237. Although AT&V provides some competition by bidding, the greater weight of the evidence demonstrates that AT&V cannot compete with sufficient force to constrain CB&I's market power. F. 238-40.

There is also insufficient evidence to demonstrate that Matrix, Wyatt, or Chattanooga can effectively compete. F. 241-44. Respondents did not present evidence that foreign manufacturers are poised to enter the U.S. LPG market. F. 245-49.

Therefore, Respondents have not demonstrated that actual or potential entry is sufficient to challenge CB&I's market power in the LPG market.

(iii) LIN/LOX market

Respondents presented evidence of recent entry by AT&V in the LIN/LOX market. Respondents assert that two other domestic manufacturers, Matrix and Chattanooga, compete in the LIN/LOX market. Respondents do not assert that foreign manufacturers are poised to enter the U.S. LIN/LOX market.

From the Acquisition to the time of trial, there have been five LIN/LOX projects awarded. AT&V won three; CB&I won two. F. 292-93. In all three of the LIN/LOX projects that AT&V bid on and won, CB&I was also a bidder. F. 294. Respondents presented evidence that AT&V effectively competes against CB&I by bidding at lower prices than CB&I. F. 294.

However, Complaint Counsel presented evidence that AT&V cannot compete on an equal footing with CB&I in the LIN/LOX market as it lacks revenue and field capacity. F. 315. Further, some customers that have done business with AT&V have found that any initial savings are offset or exceeded by oversight costs and costs related to change orders. F. 297-98, 304-05, 314. Other customers have expressed concern with AT&V's performance and reputation. F. 318-19.

The greater weight of the evidence demonstrates that although AT&V has entered the LIN/LOX market and has won three of the five post-acquisition projects, AT&V does not provide the competitive force that PDM once did.

Matrix recently entered the LIN/LOX market, winning 4 recent pre-acquisition LIN/LOX projects. F. 320. However, Matrix has been a high bidder, and consequently non-competitive, on other recent LIN/LOX tank projects for several customers, including Air Liquide and Linde, and is viewed by some customers as not sufficiently qualified. F. 321-23. Moreover, after the sale of its subsidiary which owned the fabrication facility where Matrix fabricated LIN/LOX tanks, Matrix's capacity decreased. F. 324.

Chattanooga has never built a LIN/LOX tank and does not effectively compete in the LIN/LOX market. F. 325. LIN/LOX industry participants question Chattanooga's ability to build a LIN/LOX tank. F. 327. On one occasion when it recently bid on a LIN/LOX project, Chattanooga's price was [redacted] higher than CB&I's. F. 326 (in camera).

Therefore, Respondents have not demonstrated that actual or potential entry is sufficient to challenge CB&I's market power in the LIN/LOX market.

(iv) TVC market

There is no evidence of actual or potential entry in the TVC market. In all but one of the TVC projects for which pricing was requested prior to the Acquisition, no company other than CB&I or PDM was even asked to provide pricing. F. 367-69. In the one instance where two other companies responded to the customer's request for proposals, these manufacturers were eliminated from the bidding process because the customer found them unqualified. F.366. The only company that, post-acquisition, has been asked to provide pricing on a TVC project, Howard Fabrication, was not considered by that customer to have "the technical competence nor the financial backing" necessary to award it a TVC project. F. 445. See also F. 410-11. Industry members testified that the field for manufacturing TVCs is limited to CB&I. F. 380-85. See also F. 412-14.

Therefore, Respondents have not demonstrated that actual or potential entry is sufficient to challenge CB&I's market power in the TVC market.

d. Barriers to entry

Determining whether there is ease of entry also entails an analysis of barriers to new firms entering the market or to existing firms expanding into new regions of the market. Cardinal Health, 12 F. Supp. 2d at 54 (citing Baker Hughes, 908 F.2d at 987). If barriers to entry are low, the threat of outside entry can significantly alter the anticompetitive effects of the merger by deterring the remaining entities from colluding or exercising market power. Heinz, 246 F.3d at 717 (citing United States v. Falstaff Brewing Corp., 410 U.S. 526, 532-33 (1973); Baker Hughes, 908 F.2d at 987 ("In the absence of significant barriers, a company probably cannot maintain supracompetitive pricing for any length of time."). Low barriers to entry enable a potential

competitor to deter anticompetitive behavior by firms within the market simply by its ability to enter the market. Heinz, 246 F.3d at 717 n.13 (citing FTC v. Procter & Gamble Co., 386 U.S. 568, 581 (1967)).

Expertise in the industry, a fair amount of capital, a positive reputation, and the need to have specialized equipment are all barriers to entry. Fruehauf Corp. v. FTC, 603 F.2d 345, 357 (2d Cir. 1979); Cardinal Health, F. Supp. 2d at 58; United States v. Blue Bell, Inc., 395 F. Supp. 538, 549 (M.D. Tenn. 1975). In Kennecott Copper Corp. v. FTC, 467 F.2d 67, 79 (10th Cir. 1972), the court found that due to the specialized nature of the industry, which required particular knowledge and highly developed equipment, the entry barriers were formidable. See also FTC v. PPG Indus., 628 F. Supp. 881, 885 (D.D.C. 1986) (high entry barriers where witnesses estimated it would take from two to six years to acquire the technological expertise, assemble the trained personnel, and devise the tooling to enter the market as a credible competitor). As set forth for each of the product markets below, these barriers exist in this case.

Another barrier is that most customers already have established relationships with an existing manufacturer. Thus, to persuade those customers to conduct business with it, a new entrant would probably have to undercut the current competitors in the market by selling at lower prices in order to secure new business. Libbey, 211 F. Supp. 2d at 48. As set forth for each of the product markets below, this barrier exists in this case.

In some markets, "the need for reliability is so great and the consequences of new product failure so dire that, even if the competitive nature of the market deteriorated, consumers would still be reluctant to switch to new entrants." Tote, 768 F. Supp. at 1076 (finding proven ability to provide reliable systems and service an important factor in a racetrack's selection of a totalisator supplier to preserve the track's revenue and goodwill).

The unwillingness of customers to use a company with an unproven track record is a barrier to entry. See Tote, 768 F. Supp. at 1078. As set forth for each of the product markets below, this barrier exists in this case.

Even in Baker Hughes, the district court noted that the following facts suggested difficulty of entry and "may handicap new entrants": products that are custom-made are not readily interchangeable or replaceable; buyers tend to return to sellers from whom they have purchased in the past; and customers typically place great importance on assurances of product quality and reliable future service. 908 F.2d at 989 n.10. As set forth for each of the product markets below, these factors exist in this case.

Many witnesses in this case, including those of Respondents, testified that to be successful in these markets, a company has to be large, have experience and know-how, have specialized equipment, and have a fair amount of capital. As set forth below, Complaint Counsel introduced evidence of high barriers to entry in all four markets. These barriers to entry make it unlikely that any potential competitor, or even a small existing competitor in the U.S., such as AT&V, will be able to replace PDM as a competitive force, by filling the capacity that PDM had or by being profitable at pre-acquisition prices at a pricing level that constrains CB&I's ability to raise prices.

(i) LNG market

Barriers to entry in the LNG tank market are high. LNG tank suppliers must have sufficient personnel to design, engineer and construct LNG tanks and to handle adjustments to possible schedule changes. F. 166, 169, 172. LNG suppliers must also have sufficient capacity to bond large projects. F. 175-76. Experience and reputation are extremely important in a product market, like the one for LNG tanks, where the values of the projects are so high and where there are tremendous safety considerations. F. 167-173. The evidence establishes that barriers are not low and that entry is not so easy that an existing or potential company could replace PDM in the LNG market.

(ii) LPG market

Barriers to entry in the LPG market, while not as high as in the LNG or TVC markets, still exist. LPG tank suppliers must have sufficient personnel to design, engineer and construct LPG tanks and to handle adjustments to possible schedule changes. F. 250-51. Experience and reputation are important in this market. F. 252. See also F. 253. The evidence establishes that barriers are not low and that entry is not so easy that an existing or potential company could replace PDM in the LPG market.

(iii) LIN/LOX market

Barriers to entry in the LIN/LOX market, while also not as high as in the LNG or TVC markets, do exist. LIN/LOX manufacturers must establish the capability to perform specialized metal fabrication and must have sufficient financial capacity to conduct physical tests of materials and tank prototypes or components. F. 329-33. Experience and reputation are also important in this market. F. 328, 331, 334. The evidence establishes that barriers are not low and that entry is not so easy that an existing or potential company could replace PDM in the LIN/LOX market.

(iv) TVC market

Barriers to entry in the TVC market are high. No evidence or testimony was offered to show that barriers to entry are low in the large field-erected TVC market. TVC customers want experienced suppliers with knowledge, ability to fabricate in the field a stainless steel vessel, and ability to satisfy the quality requirements of leak testing and cleanliness for a TVC. F. 415-17. A new entrant would need to hire engineers with previous experience in designing TVCs, which are "truly one-of-a-kind designs for very specific applications on very technical products." F. 416. A new entrant would need to expend significant resources in developing proposals and price quotations for TVCs. F. 418. The evidence establishes that barriers are not low and that entry is

not so easy that an existing or potential company could replace PDM in the TVC market.

e. Customer sophistication

"Well-established precedent and the . . . Merger Guidelines recognize that the sophistication and bargaining power of buyers play a significant role in assessing the effects of a proposed transaction." FTC v. R.R. Donnelley & Sons Co., 1990 U.S. Dist. LEXIS 11361, *10 (D.D.C. 1990). "Although the courts have not yet found that power buyers alone enable a defendant to overcome the government's presumption of anti-competitiveness, courts have found that the existence of power buyers can be considered in their evaluation of an anti-trust case, along with such other factors as the ease of entry and likely efficiencies." Cardinal Health, 12 F. Supp. 2d at 58. Some courts have stressed that the existence of power buyers does not necessarily mean that a merger will not result in anticompetitive effects. The court in Tote held that the existence of power buyers did not outweigh the potentially damaging effects of a merger on numerous smaller customers. 768 F. Supp. at 1085. Although the larger buyers were not likely to suffer the effects of a lack of competition, the court concluded that the defendants' smaller to mid-size customers without any significant bargaining power would be impermissibly harmed by the proposed merger. Id.

In all four of the relevant product markets, the customers purchasing the products are large companies, with sophisticated procurement processes, who generally seek to have two or more bidders for their projects. F. 254, 353-55, 471-73. However, due to the fact that, in three of the four markets, there are very few products purchased and there are confidentiality provisions, past pricing is not well known. E.g., F. 204-07. Thus, most customers do not have significant bargaining power. In the end, although evidence of the sophistication of customers in these markets was presented and has been considered, this does not rebut Complaint Counsel's prima facie case.

f. Weakness of the merging companies

The acquired firm's weakness is another factor that a defendant may introduce to rebut the government's prima facie case. Kaiser Aluminum, 652 F.2d at 1339; United States v. Int'l Harvester Co., 564 F.2d 769, 774 (7th Cir. 1977) ("The prima facie case presented by the Government was rebutted by persuasive evidence, including [the acquired firm's] weakened financial condition."). However, such a defense is credited "only in rare cases, when the defendant makes a substantial showing that the acquired firm's weakness, which cannot be resolved by any competitive means, would cause that firm's market share to reduce to a level that would undermine the government's prima facie case." Univ. Health, 938 F.2d at 1221.

Facts presented at trial establish that PDM was not a weak firm. PDM was winning recent tank projects. Supra Part III.E.1. Moreover, PDM was a profitable company and PDM's EC Division was profitable. F. 535-45. As of July 2000, the month before CB&I and PDM signed the acquisition letter of intent, PDM EC projected earnings before interest and taxes of $ 2 million in 2000. F. 538. Accordingly, this factor does not rebut the government's prima facie case.

3. Burden of persuasion

"If the defendant successfully rebuts the presumption [of illegality], the burden of producing additional evidence of anticompetitive effect shifts to the government, and merges with the ultimate burden of persuasion, which remains with the government at all times." Baker Hughes, 908 F.2d at 983; see also Kaiser Aluminum, 652 F.2d at 1340 and n.12. Respondents did not successfully rebut Complaint Counsel's presumption of anticompetitiveness and thus the inquiry into whether CB&I's acquisition of PDM EC and Water Divisions violated the Clayton Act may conclude. Nevertheless, although it was not required to do so, Complaint Counsel attempted to show that anticompetitive effects have already occurred in three of the four markets. As set

forth below, Complaint Counsel's evidence did not prove that CB&I has implemented price increases.

a. LNG market

(i) Sole-source contracts

Complaint Counsel argues that CB&I used its position as the only domestic supplier of LNG tanks to force LNG tank purchasers into sole-source arrangements. CCPTB at 37-38. The evidence establishes that three companies have entered sole-source arrangements with CB&I. F. 106-13. Complaint Counsel presented evidence that sole-source arrangements can result in higher profit margins and that one of these customers believed that CB&I was essentially its only choice. F. 111-13. Although the evidence presented at trial did not establish conclusively that the sole-source arrangements have resulted in higher prices, without competitive constraints, higher prices are probable.

(ii) Memphis Light Gas and Water

Complaint Counsel argues that recent prices provided for Memphis Light Gas and Water ("MLGW") represent a post-acquisition price increase. Complaint Counsel attempts to compare the competitively bid and negotiated 8% margin projected by CB&I on the 1994 MLGW project to a [redacted] margin included as part of a budget price given to MLGW in 2002. CCPTB at 6, 35 (in camera). This argument is misleading, because it is based entirely on a comparison of apples and oranges. The 1994 price was a fixed, firm price bid that was competitively bid and negotiated, while the 2002 number was a budget price. F. 83, 84, 180-82. Budget prices are preliminary in nature and are often based on broad assumptions of many unknown variables. F. 474-75, 478-79. Complaint Counsel's assertion that CB&I implemented a price increase to MLGW is not supported by sufficient evidence.

(iii) Cove Point I

Complaint Counsel argues that PDM increased its price on the Cove Point expansion in September 2000 in anticipation of the Acquisition. CCPTB at 33-34. Complaint Counsel bases its argument first upon RX 127, a chart prepared by CB&I for a bid review meeting in March 2000, entitled "To Be Completed Prior to Final Proposal Submittal." CCPFF 781 (citing RX 127 at CBI-H008204). While RX 127 contains proposed pricing of [redacted] for the Cove Point project, there is no evidence in the record suggesting that this figure was actually submitted by CB&I or used as a bid for the project. RX 127 (in camera). Complaint Counsel asked no witnesses at trial about this document. Complaint Counsel asserts that PDM initially quoted a price of approximately [redacted]. CCPFF 781 (citing CX 226 at CBI-PL044978, in camera). CX 226 is a CB&I memorandum wherein an employee of CB&I speculates that PDM had provided a "budget of something like [redacted]." (CX 226 at CBI-PL044978, in camera). Based on this speculation, the CB&I employee recommended that CB&I reduce its price to [redacted]. F. 187 (in camera). Speculations made by a CB&I employee about what PDM may have provided as a budget price do not support Complaint Counsel's assertion that PDM bid [redacted]. (In camera). Complaint Counsel then asserts that PDM subsequently bid [redacted]. CCPFF 781 (citing CX 1058 at PDM-HOU 017465, in camera). CX 1058, a summary of pending LNG projects, does not establish conclusively that PDM bid [redacted] million. (CX 1058 at PDM-HOU 017465, in camera). No witnesses at trial were asked about this document.

The evidence does establish that on September 8, 2000, PDM quoted Williams a budget price of [redacted] for a 750,000 barrel tank. F. 192 (in camera). Complaint Counsel compares the September 8, 2000 budget price to the earlier figures to argue that PDM implemented a price increase in September 2000, in anticipation of the Acquisition. CCPFF 793. But because Complaint Counsel has not established that the earlier figures were budget prices or were ever submitted, Complaint Counsel's

assertion that PDM implemented a price increase in September 8, 2000 is not supported by reliable evidence.

Next, Complaint Counsel argues that PDM increased its price on the Cove Point expansion in November 2000 in anticipation of the Acquisition. CCPTB at 33-34. Complaint Counsel bases this theory on CX 1160, [redacted]. See CCPTB at 33-34. The evidence shows that this document was created for purposes of evaluating an estimate from the estimating department in a formal bid review meeting. Decisions made at the meeting resulted in the November 2, 2000 "as submitted" price. F. 194, 195. The fact that CX 1160 shows a different price on November 2 as compared to the estimated price on November 1 is not probative, since the very nature of the meeting was to review the bid.

Complaint Counsel points to CB&I's actual post-acquisition profit margin for performing the Cove Point project and argues that the actual profit margin has increased in comparison to the March 2000 chart prepared for a bid review meeting. CCPTB at 34. However, the evidence establishes that CB&I will earn a greater than expected margin because [redacted] F. 201-03 (in camera). [redacted] F. 203 (in camera). In addition, Complaint Counsel's arguments pertaining to RX 323, a document not used at trial and CX 906, a document demonstrated by Respondents to be unreliable, are speculative and not supported by reliable evidence.

(iv) Fairbanks

Complaint Counsel asserts that the LNG project for Fairbanks Natural Gas, LLC in Alaska ("Fairbanks") in 2002 illustrates that, since the merger, CB&I has raised prices and increased profit margins. CCPFF 955. To support this assertion, Complaint Counsel relies on CX 307, a document that was not introduced in evidence, and on RX 407, a document for which only very limited testimony was introduced. (See Scorsone, Tr. 5331, in camera). The trial transcript is devoid of any specific information about the document including who wrote the document and when, who viewed the document and when, and what the document means.

The conclusions Complaint Counsel draws from RX 407 are speculative. The conclusions Complaint Counsel draws from CX 307, a document not in evidence, are disregarded.

In addition, Complaint Counsel compares CB&I's budget price for Fairbanks in 2002 to PDM's budget price for BC Gas in 1996 for an LNG tank to be built in Vancouver, British Columbia and argues that the difference between these figures illustrates that CB&I implemented a price increase on the Fairbanks project. CCPFF 977. This argument fails for two reasons. First, CX 791, the document Complaint Counsel asserts represents PDM's budget estimate for the BC project, was not used at trial with any fact witness and Complaint Counsel's expert testified that he did not know how the figures listed on CX 791 were formulated. (Simpson, Tr. 5387-92). Thus, the conclusions Complaint Counsel draws from it are not reliable. Second, the differences between a 1996 budget estimate prepared by PDM for a 1.2 million gallon LNG tank located in Canada and a 2002 budget estimate prepared by CB&I for a 1.0 million gallon LNG tank located in Alaska render a comparison between the two figures meaningless. The 1996 PDM budget estimate appears to have been extrapolated from a 1993 estimate to a different client in a vastly different location. (See CX 791; Simpson Tr. 5390-93). By contrast, CB&I derived the Fairbanks estimate in 2002 using a formal budgetary exercise. (Compare RX 626 to CX 791). Further, Complaint Counsel has not shown that the costs for the BC Gas job (such as material or shipping costs) would be the same as those on the Fairbanks job located deep in interior Alaska. The Fairbanks budget price contained a very high margin figure to account for lack of information and contingencies associated with an Alaska project, such as a cold climate, short construction seasons, and burdensome labor regulations. (RX 626 at CBI 063013; Scorsone, Tr. 5004-06). Indeed, Dr. Simpson acknowledged that these factors would be relevant in any comparison of the two projects. (Simpson, Tr. 5385). Accordingly, Complaint Counsel did not present reliable evidence to support its allegation that the Fairbanks LNG project illustrates that CB&I is raising prices and increasing margins.

b. LPG market

Complaint Counsel does not assert that there have been anticompetitive effects in the LPG market.

c. LIN/LOX market

Complaint Counsel asserts that there are three examples of CB&I implementing an 8.7% price increase to Linde and to Praxair. None of Complaint Counsel's allegations are supported by sufficient, reliable evidence.

Complaint Counsel's argument that CB&I implemented its first price increase to Linde in April 2002 is based on testimony from a fact witness' comparison of CB&I's budget price to a three year old PDM firm fixed price and his comparison to an outdated pricing model. F. 341-44. The witness admitted several deficiencies in his pricing model. F. 344. Although the witness may have believed the price was high, the opinion that the price actually increased is not reliable and is disregarded.

Complaint Counsel's argument that CB&I implemented a second price increase to Praxair in June 2002 is based on Complaint Counsel's assertion, with no cites to record evidence, that the difference in CB&I's price to Praxair and CB&I's price to Linde is only [redacted], or less than [redacted]. CCPFF 1075 (in camera). Next, Complaint Counsel hypothesizes that because CB&I's price to Linde increased by 8.7%, and because the Linde tank is similar in size to the Praxair tank, and because CB&I's price to Praxair was close to CB&I's price to Linde, then CB&I's price to Praxair must have increased 8.7%. CCPFF 1072-76. This conclusion is not supported by sufficient probative evidence. First, it is based on Complaint Counsel's theory - that is rejected in the preceding paragraph - that CB&I implemented an 8.7% price increase to Linde in April 2002. Second, because of differences in the details, such as construction schedule, location, conditions of the project site, provided by Praxair and Linde to CB&I and because of differences between the tank specifications, Complaint Counsel's comparison is speculative. F. 336-37, 345,

347-48. Therefore, Complaint Counsel did not present reliable evidence to support its allegation that CB&I implemented an 8.7% price increase to Praxair in June 2002.

Complaint Counsel's theory of a third instance of an 8.7% price increase to Praxair in April 2002 is based on a comparison between PDM's budget price for a 500,000 gallon LOX tank in Colorado in November 2000 to CB&I's budget price for a LR-60 LIN tank in New Mexico in April 2002. CCPFF 1077-1085. CB&I's estimating staff was instructed to use PDM's price on the Colorado Springs LOX tank as a basis for determining the price for Praxair's New Mexico LIN tank. F. 350. Complaint Counsel compared these two budget prices and concluded that the difference in price amounts to an 8.7% price increase. The documents Complaint Counsel relies upon, CX 448 and CX 449, while admitted into evidence, were never used at trial with any witness. CX 448 does not provide technical specifications, including the proposed tank size. Complaint Counsel has not presented evidence that the design of the Colorado LOX tank and the New Mexico LIN tank are identical. Thus, Complaint Counsel's argument that differences in the prices is the result of an exercise of market power is not supported by reliable and probative evidence. Accordingly, the evidence does not support Complaint Counsel's allegation that CB&I implemented an 8.7% price increase to Praxair in April 2002.

d. TVC market

Complaint Counsel alleges that, after the letter of intent for the Acquisition was signed, CB&I and PDM colluded regarding pricing for Spectrum Astro's proposed TVC project. CCPTB at 31-32. Complaint Counsel first points to a handwritten internal note reflecting a conversation between CB&I's Chief Operating Officer and PDM's President of PDM EC calling this project "D.O.A." (CX 1705 at PDM-HOU009169). Complaint Counsel also points to an internal CB&I memorandum from a low-level salesman (Dave Lacey) to support its argument. CCPTB at 31 (citing CX 242, in camera). The evidence does not establish that issues of pricing, profit margins, costs or anything else related to

this project were discussed between PDM and CB&I. (Scorsone, Tr. 4796-97, 5045-46; Scully, Tr. 1217).

Complaint Counsel alleges that, after the Acquisition, CB&I increased its price for the Spectrum Astro project. CCPTB at 32. The evidence presented does not establish this allegation. F. 423-41.

Complaint Counsel alleges that, after the Acquisition, CB&I attempted to coordinate a pricing proposal with Howard Fabrication for TRW's proposed TVC project. CCPTB at 31-32. The evidence presented does not demonstrate that anyone in CB&I's management was aware of or approved such a proposal. F. 446-51.

Complaint Counsel alleges that, after the Acquisition, CB&I increased its price on a [redacted] project. F. 454-70 (in camera). The evidence presented does not conclusively establish this allegation.

e. Conclusion

Complaint Counsel's evidence in support of many of its allegations of price increases implemented by CB&I after the Acquisition does not prove that CB&I has in fact increased prices. However, Complaint Counsel is not required to prove that anticompetitive effects have in fact occurred. "The Government is not required to establish with certitude that competition in fact will be substantially lessened." Crown Zellerbach Corp. v. FTC, 296 F.2d 800, 823 n.21 (9th Cir. 1961) (citation omitted). Because § 7 deals in "'probabilities, not certainties,'" "the mere nonoccurrence of a substantial lessening of competition in the interval between acquisition and trial does not mean that no substantial lessening will develop thereafter . . . ." General Dynamics, 415 U.S. at 505 (quoting Brown Shoe, 370 U.S. at 323).

Complaint Counsel did prove that, prior to the Acquisition, in all four product markets, there were two primary competitors, and

that, as a result of the Acquisition, there is now one dominant firm. A merger of the two strongest suppliers enables CB&I to increase prices up until the point where other less-strong suppliers begin to constrain it. There can be no doubt that CB&I has the ability to exercise market power as a result of its acquisition of the only other competitor that had constrained CB&I. Complaint Counsel presented reliable and probative evidence to carry its burden of persuasion that the probability of a substantial lessening of competition did exist at the time of trial.

F. Exiting Assets Defense

Respondents assert an affirmative defense of "exiting assets." Respondents definitively state that "CB&I does not assert the failing firm defense, . . . which requires a showing that the acquired company is 'so depleted and the prospect of rehabilitation so remote' that it is at risk of 'the grave possibility of business failure' and that 'the company that acquires the failing company . . . is the only available purchaser.'" RPTB at 153-54 (quoting Citizen Publ'g v. United States, 394 U.S. 131, 138 (1969)). n3 Rather, Respondents argue that the "exiting assets" defense is a viable defense to Complaint Counsel's allegations. RPTB at 152-55. Respondents acknowledge that "there has been no case since Olin asserting the defense until this case was tried." RPTB at 154-55 n.29.

n3 The criteria for establishing a failing company are not met by PDM. F. 535-45.

Respondents claim that, absent the Acquisition, PDM would have liquidated its EC Division and that there was no potential purchaser other than CB&I. RPTB at 138-52. Under these circumstances, Respondents argue that there has been no substantial lessening of competition, because competition if CB&I had not bought PDM EC is exactly the same as competition after CB&I's acquisition of PDM EC. RPTB at 152-55.

Complaint Counsel asserts that the "exiting assets" defense is not based on any accepted law, but rather upon a 1986 law review

article, and that the Commission has rejected this defense. Complaint Counsel's Post Trial Reply Brief ("CCPTRB") at 62. Complaint Counsel further asserts that Respondents failed to establish that CB&I was "the only available purchaser" for PDM's EC and Water Divisions, that PDM conducted an "exhaustive" search for alternative buyers, and that PDM's EC Division was actually exiting the market. CCPTRB at 63-70.

The defense presented by Respondents is similar to the one rejected in United States v. Phillips Petroleum Co., 367 F. Supp. 1226, 1258 (C.D. Cal. 1973), where the court rejected the defense that since the acquired company "would have gone out of business on the West Coast anyway, the acquisition of its assets by [defendant] did not result in any anticompetitive effect in the market." Id. "Unless the seller objectively comes within the 'failing company' doctrine, it is irrelevant why one corporation sells its assets to another." Id.

The exiting assets defense, as described by a law review article, has as its "key element . . . proof that, without the merger, the assets owned by the acquired firm would shortly be leaving the market." John E. Kwoka, Jr. & Frederick R. Warren-Boulton, Efficiencies, Failing Firms, and Alternatives to Merger: A Policy Synthesis, 31 Antitrust Bull. 431, 446 (1986) (cited in Olin Corp. v. FTC, 986 F.2d 1295, 1307 (9th Cir. 1993)). The exiting assets defense was first presented to the Commission in In re Olin Corp., 113 F.T.C. 400 (1990). In Olin, the ALJ characterized the exiting assets defense as a "novel policy proposal" and held that, even if the "novel 'exiting assets' doctrine" was accepted, it would not save the challenged acquisition. 113 F.T.C. at 582-84. The ALJ found that there were alternatives short of merger and that the evidence failed to show that the acquired company made an unsuccessful effort to sell its business to a competitively preferable buyer and failed to show that there were no competitively preferable acquirers. Id. at 583.

On appeal from the initial decision, the Commission held that the evidence in Olin did not establish that the selling company had made the decision to close the relevant business at issue in the

near future (instead, the evidence showed that the selling company continued to operate the facility in the expectation that the facility could at some point be sold) and that there was no evidence that the selling company had conducted an exhaustive effort to sell the assets at issue. Olin, 113 F.T.C. at 618. Based on these factual findings, the Commission concluded "the facts would not support the description of the proposed defense, even if we adopted the defense, and we decline to do so in this case." Id.

On appeal from the Commission's decision, the Court of Appeals for the Ninth Circuit did not adopt the exiting assets defense either. Rather, it characterized the defense as "novel," stated that the Commission had indicated that it was not inclined to recognize this defense, and held that the "burden of proof is undoubtedly on Olin to establish any such defense." 986 F.2d at 1307 (emphasis added).

A finding that the assets would not be exiting the relevant market "shortly" is sufficient to sustain a ruling that CB&I did not establish an "exiting assets" defense. See Olin, 986 F.2d at 1307 (The Ninth Circuit did not need to determine whether or not less anticompetitive alternatives to the merger existed.). In Olin, the respondent had not demonstrated that assets would be exiting the market shortly where: (1) the evidence did not establish that the selling company had made the decision to close the business in the near future; and (2) there was no evidence that the selling company had conducted an exhaustive effort to sell the relevant assets to any companies other than respondent. Olin, 113 F.T.C. at 618 (emphasis added).

To the extent that an exiting assets defense is legally recognizable, the facts presented in the instant case do not support the proposed defense. First, Respondents did not establish that PDM would have closed the business in the near future. Second, Respondents did not establish that PDM had conducted an exhaustive effort to sell the EC Division to any company other than CB&I.

Because Olin is the only case law found specifically addressing an exiting assets defense, cases analyzing failing company or failing division defenses are utilized. Cases analyzing a failing company defense hold that intent to leave the market is not sufficient to establish the defense. E.g., Phillips Petroleum, 367 F. Supp. at 1260 (subjective statements of management intention or desire by management to exit the business does not satisfy the defense); Warner Communications, 742 F.2d at 1165 ("a company's stated intention to leave the market or its financial weakness does not in itself justify a merger"); Blue Bell, 395 F. Supp. at 550 (company's intention to divest itself of a certain division is immaterial).

Respondents' argument that PDM intended to leave the market is not supported by the evidence presented at trial. Mr. Scorsone, the former President of PDM EC, testified that if the EC Division had not been sold, it would not have gone out of business, and that it would be profitable in the future. F. 548. Mr. Byers, former V.P. of Finance for PDM, testified that before making any recommendation to liquidate the PDM EC Division, his fiduciary duties would have required him to investigate to assure himself that there was no alternative purchaser for either PDM or PDM EC willing to pay more than the liquidation value of the business. F. 549. PDM's investment banker, Tanner & Company ("Tanner"), would also have attempted to find alternative purchasers prior to recommending liquidation. F. 550. PDM's President, William McKee, stated that if the CB&I transaction fell through, PDM would have continued its efforts to sell the PDM EC and PDM Water Divisions by seeking other purchasers. F. 551. Finally, PDM's Board of Directors never took up the issue of liquidating the PDM EC Division. F. 552.

Thus, the evidence does not establish that PDM had made the decision to close the business in the near future. Respondents' defense may be rejected on this basis. Citizen Publ'g, 394 U.S. at 136 (rejecting defense where there was "no indication that the owners of the Citizen were contemplating a liquidation").

In addition, Respondents did not present sufficient evidence to demonstrate that PDM conducted an exhaustive effort to sell the package of assets sold to CB&I. Respondents have not made a "clear showing" that PDM "undertook a well conceived and thorough canvas of the industry such as to ferret out viable alternative partners." United States v. Pabst Brewing Co., 296 F. Supp. 994, 1002 (E.D. Wis. 1969) (defendant had burden of proving that it had made every reasonable effort to explore alternative possibilities).

Tanner assembled a preliminary list of potential buyers, including 18 steel companies, 15 engineering and construction companies, and 4 financial buyers. F. 528. This list was presented to the PDM Board on June 1, 2000. F. 528. Among the companies identified by Tanner as potential acquirers of PDM EC were Fluor, Jacobs Engineering, Foster Wheeler, and Morrison Knudsen. F. 529. However, to Mr. Byers' knowledge, none of these companies were contacted about acquiring PDM. F. 529. Tanner never contacted any foreign firms regarding the purchase of PDM EC. F. 530.

In July of 2000, PDM announced that it would sell the company. F. 525. Tanner prepared an offering memorandum for the sale of the PDM EC Division. F. 517. This offering memorandum was sent to only one company -- CB&I. F. 517. By the time the offering memorandum was completed, negotiations between CB&I and PDM were at a point "that it didn't make sense to send it out to other people." F. 518.

These efforts in no way rise to the level sufficient to sustain the proposed defense. For example, in California v. Sutter Health Sys., the defendant's efforts to seek offers from other potential purchasers satisfied an element of a failing company defense where defendant proved that it had conducted a three-year "extensive good faith search for purchasers" in which it "formulated a detailed and thorough proposal process and sought out numerous potential partners." 130 F. Supp. 2d 1109, 1136 (N.D. Cal. 2001). One "expression of interest" came only after the defendant "repeatedly contacted" the potential buyer who

"failed to make any offer in response to these inquiries." Id. Further, the efforts taken by PDM were even less exhaustive than those found to be insufficient in FTC v. Harbour Group Invs., 1990 U.S. Dist. LEXIS 15542, *12-13 (D.D.C. Nov. 19, 1990), where the efforts made by the investment banker did not comport with its normal exhaustive search; where the offering materials were minimal, containing a brief two page executive summary with financial information and product brochures attached; and the search consisted of minimal exploratory phone calls, with little follow-up or attention by the brokers who were responsible for the search.

Financial buyers, who would have maintained PDM as an independent on-going entity, were available and had been recommended by Goldman Sachs and by Tanner as alternative buyers. F. 526. Matrix, then the third-largest United States tank constructor, made efforts to buy PDM EC. F. 531. Tanner's fairness opinion, dated February 7, 2001, noted that if CB&I's acquisition of PDM EC and Water Divisions fell through, there were other potential buyers with the interest and adequate resources to purchase PDM EC. F. 532.

Because Respondents have not presented sufficient evidence to demonstrate that PDM had made the decision to close the business in the near future and that PDM had conducted an exhaustive effort to sell the assets sold to CB&I, Respondents have not demonstrated that the assets would be exiting the market shortly. Thus, to the extent that exiting assets is a viable defense, Respondents have not met their burden of establishing it.

G. Summary of Liability

Count I of the Complaint charges that "the effect of the Acquisition may be substantially to lessen competition or tend to create a monopoly in violation of Section 7 of the Clayton Act, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45." Count II of the Complaint charges that "CB&I and PDM, through the Acquisition and the Acquisition agreement described in Paragraph 8 [of the Complaint], have engaged in

unfair methods of competition in or affecting commerce in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45." Complaint Counsel has presented reliable and probative evidence to support Counts I and II of the Complaint.

H. Remedy

1. Standard

Complaint Counsel has established that the acquisition of PDM's Water and EC Divisions by CB&I may substantially lessen competition in the relevant markets and, thus, has established that Respondents violated Section 7 of the Clayton Act. Pursuant to Section 11(b) of the Clayton Act:

> If upon such hearing the Commission . . . shall be of the opinion that any of the provisions of [Section 7] have been or are being violated, it shall . . . issue and cause to be served on such person an order requiring such person to cease and desist from such violations, and divest itself of the . . . assets, held . . . in the manner and within the time fixed by said order." 15 U.S.C. § 21(b) (emphasis added).

Through Section 11 of the Clayton Act, Congress expressly directed the FTC to issue orders requiring that a violator of § 7 divest itself of the assets held in violation of the Clayton Act. Am. Stores, 495 U.S. at 284-85 and n.11; FTC v. Western Meat Co., 272 U.S. 554, 559 (1926) (Commission has a duty to issue an order directing that a violator of § 7 "cease and desist therefrom and divest itself of what it had no right to hold.").

Under both the text of the Clayton Act and Supreme Court precedent, divestiture is the usual and proper remedy where a violation of § 7 has been found. E.I. du Pont, 366 U.S. at 329 ("The very words of § 7 suggest that an undoing of the acquisition is a natural remedy."); Ford Motor Co. v. United States, 405 U.S. 562, 573 (1972) ("Complete divestiture is particularly appropriate where asset or stock acquisitions violate

the antitrust laws."); Am. Stores, 495 U.S. at 285 n.11 (A person who is allowed to continue holding ownership over stock or assets that created a Section 7 violation would be engaging in a perpetual violation, thus divestiture is the only effective remedy.). See also United States v. El Paso Natural Gas Co., 376 U.S. 651, 662 (1964) (directing the district court to order divestiture without delay). "Of the very few litigated § 7 cases which have been reported, most decreed divestiture as a matter of course." E.I. du Pont, 366 U.S. at 330.

Respondents argue that Complaint Counsel's proposed remedy is not appropriate because Complaint Counsel has not met a burden of presenting evidence relating to the effectiveness of the proposed remedy. RPTB at 158-59 (relying principally on United States v. Microsoft, 253 F.3d 34, 46 (D.C. Cir. 2001)). In Microsoft, a case brought under the Sherman Act, the Court of Appeals for the D.C. Circuit reversed the district court order of remedy based in large part on the district court's failure to take evidence concerning remedy. See id. at 103. However, as the Microsoft Court recognized, merger cases are different from monopolization cases:

> By and large, cases upon which plaintiffs rely in arguing for the split of Microsoft have involved the dissolution of entities formed by mergers and acquisitions. On the contrary, the Supreme Court has clarified that divestiture "has traditionally been the remedy for Sherman Act violations whose heart is intercorporate combination and control," and that "complete divestiture is particularly appropriate where asset or stock acquisitions violate the antitrust laws."

Microsoft, 253 F.3d at 105 (citations omitted) (emphasis added). Thus, Microsoft is distinguishable and does not impose on Complaint Counsel the burden of presenting evidence related to the effectiveness of Complaint Counsel's proposed remedy for this violation of the Clayton Act.

To the contrary, "it is well settled that once the Government has successfully borne the considerable burden of establishing a violation of law, all doubts as to the remedy are to be resolved in its favor." E.I. du Pont, 366 U.S. at 334. In a merger case, "absent clear proof, which is generally likely to come only at the compliance stage when a good faith effort to divest has been made, the presumption should be that an acquired competitive entity can be viably restored to its preacquisition status." In re RSR Corp., 88 F.T.C. 800, 894 (1976), aff'd 602 F.2d 1317 (9th Cir. 1979).

Consistent with the Commission's "duty" to order divestiture, Am. Stores, 495 U.S. at 285 n.11, the Commission has held that "the burden rests with the respondent to demonstrate that a remedy other than full divestiture would adequately redress any violation which is found." In re Fruehauf Corp., 90 F.T.C. 891, 892 n.1 (1977). In In re Diamond Alkali Co., after stating that the most appropriate remedy to redress a Section 7 violation is "generally divestiture," the Commission held, "exceptions to the general rule can be reasonably invoked . . . only when the proof of their probable efficacy is clear and convincing." 72 F.T.C. 700, 742 (1967).

> In the absence of proof to the contrary the assumption of this Commission must be that "only divestiture can reasonably be expected to restore competition and make the affected markets whole again." Moreover, if an order of divestiture appears to the Commission to be in all likelihood the most effective available remedy, the Commission need not justify its order beforehand by showing that it will unquestionably restore competition.

Id. (citation omitted).

The Commission has ordered divestiture of integrated assets in consummated merger cases numerous times where violations of the Clayton Act have been found. E.g., Olin, 113 F.T.C. at 619; In re Crown Zellerbach Corp., 54 F.T.C. 769, 808 (1957), aff'd,

296 F.2d 800 (9th Cir. 1961); In re Ekco Prods. Co., 65 F.T.C. 1163, 1228-29 (1964), aff'd 347 F.2d 745 (7th Cir. 1965). In this case, Respondents have not presented compelling arguments or sufficient evidence to depart from the usual remedy of divestiture.

2. Divestiture is the appropriate remedy

"In section 7 cases, the principal purpose of relief is to restore competition to the state in which it existed prior to, and would have continued to exist but for, the illegal merger." In re B.F. Goodrich, 110 F.T.C. at 345. The foremost function of divestiture is "the liquidation of the illegally acquired market power." United States v. Greater Buffalo Press, Inc., 402 U.S. 549, 556 (1971) (citing Schine Chain Theatres v. United States, 334 U.S. 110, 127-29 (1948)). Divestiture is limited to assets that were purchased in the illegal acquisition. Reynolds Metals Co. v. FTC, 309 F.2d 223, 230-31 (D.C. Cir. 1962); Luria Bros. & Co. v. FTC, 389 F.2d 847, 865 (3rd Cir. 1968) (An order can only be directed at assets obtained by the buyer "as a result of the illegal acquisition.").

Complaint Counsel, relying on Ford, 405 U.S. at 573 and n.8, urges additional equitable relief to create a viable entity that operates independently of CB&I. Nowhere does Ford refer to the use of such relief to increase the competitiveness of the marketplace beyond the level existing prior to the merger. Further, Ford concerned the equitable powers of a district court. Id. Specific provisions of Complaint Counsel's proposed order that are designed to force CB&I to give up any after acquired assets or to do more than "restore competition to the state in which it existed prior to . . . the illegal merger[,]" B.F. Goodrich, 110 F.T.C. at 345, are rejected.

The record in this case includes evidence on the structure, composition, and competitive viability of PDM and CB&I premerger, the PDM assets and personnel acquired by CB&I, and the disposition of those assets and personnel. F. 545-65. Upon consideration of the entire record in this case, divestiture is hereby ordered.

a. Complete divestiture

To "ensure that the package of assets divested is sufficient to give its acquirer a real chance at competitive success," the Commission may order broad divestiture. Olin, 113 F.T.C. at 619-20. In Olin, the Commission ordered the respondent to divest a facility that manufactured the relevant product, isocyanurate (ISOS) and a product outside the relevant market, cyanuric acid (CA). The ISOS and CA facilities were located at the same plant. The respondent in Olin failed to introduce evidence that the facilities were separate, stand-alone operations, rather than integrated facilities that share common facilities of power, emission control, receiving and shipping, and other functions. Id. Because both facilities were intertwined, both were ordered to be divested. Id.

In the instant case, the evidence clearly establishes that PDM's EC and Water Divisions are closely interrelated. F. 566-72. The same personnel, equipment, and fabrication facilities are generally used in the construction of the products of both groups. F. 566-69. The dispositive point is that the assets of both divisions were acquired together by CB&I. F. 554-65. PDM did not find it practical or value optimizing to split the EC and Water Divisions when it evaluated the best course of action for the assets prior to the Acquisition. F. 570-72. Although only the products made by the EC Division are within the affected lines of commerce, the Water Division must be divested along with the EC Division.

3. Relief

The record in this case includes evidence on the assets CB&I acquired from PDM. F. 554-65. The evidence establishes that CB&I acquired intellectual property, technology and know-how and other intangible assets related to the relevant products from PDM. F. 564-65. Evidence also establishes that CB&I acquired a number of outstanding contracts from PDM. F. 563.

Upon consideration of the entire record, relief designed to restore competition as it existed prior to the Acquisition is hereby

ordered. The attached Order, discussed below, is designed to remedy the anticompetitive effects arising from the Acquisition.

Paragraph II.A.1 orders CB&I to divest all assets, title, properties, interest, rights and privileges purchased from PDM in the Acquisition. CB&I is also ordered to divest all assets that have been purchased by CB&I to replace or maintain assets purchased in the Acquisition. See B.F. Goodrich, 110 F.T.C. at 344 (ordering divestiture of all additions and improvements); Ekco, 65 F.T.C. at 1228-29 (ordering assets acquired, together with all additions thereto and replacements therefore to be divested).

Paragraphs II.A.2-4 order CB&I to divest all intellectual property or rights to such intellectual property as were purchased by CB&I from PDM in the Acquisition. See Ekco, 347 F.2d at 754 (intellectual property subject to divestiture when acquired in contravention of Section 7). Any rights that CB&I acquired to the PDM name shall also be divested. See Ford, 405 U.S. at 574.

Paragraphs II.A.5-6 order CB&I to divest all contracts formerly held by PDM and obtained by CB&I in the Acquisition that have not been fully performed. A lag-time provision of 180 days, after the Order becomes final, is included for construction contracts. Complaint Counsel's proposed order sought the divestiture of "45% of the total combined dollar value of CB&I's Tank Business Customer Contracts." Complaint Counsel's Proposed Order ("CCPO") at II.C.3. Such requested relief would require the divestiture of assets not obtained in the Acquisition. This is not appropriate. Luria Bros., 389 F.2d at 865; Reynolds Metals, 309 F.2d at 231 ("no basis for ordering divestiture of after acquired properties"). Accordingly, the Order does not require CB&I to divest a portion of its backlog of work or customer contracts entered into by CB&I post-acquisition.

Paragraph II.B. of the Order requires that "if at all possible, irrespective of loss suffered by CB&I, the divested assets shall be sold as a viable going concern that will enhance competition in the relevant markets." For bonding purposes, to be a viable competitor in the LNG market, a company must have a substantial

revenue base. F. 586-90. Therefore, to comply with the Order, the Acquirer, if at all possible, must possess the necessary revenue base to actively compete in the LNG market.

The divestiture sale shall be conducted in "good faith," Paragraph II.D., and CB&I is ordered to maintain the assets to be divested, Paragraph V. In conjunction, these provisions prohibit CB&I from disclosing or making available any proprietary information regarding the divested assets to any person, except as is necessary to effect the sale.

Complaint Counsel also sought to require CB&I to transfer 45% of its total full time employees to the Acquirer. CCPO at II.F. Although educated, experienced, and knowledgeable employees are required to build the relevant products, F. 582-85, unlike other necessary assets, such as tools, building supplies, and mechanical equipment, employees are not owned by the company for which they work. Furthermore, Complaint Counsel has cited no authority supporting the proposition that at-will employees are assets that may be divested. Accordingly, this proposed measure is not included in the Order. The Order does, at Paragraph IV, preclude CB&I from granting incentives to its employees or enforcing any non-compete clauses in its employees' contracts in order to prevent its employees from transferring to the Acquiring company.

Paragraph VII orders a divestiture trustee. Complaint Counsel sought both a "monitor trustee," CCPO at V, whose responsibility would be to ensure that Respondents comply with the terms of the Order; and a "divestiture trustee," CCPO at VI, who would be appointed to accomplish the divestiture, in the event that CB&I fails to divest in the manner and time required by the Order. Complaint Counsel has failed to cite any litigated case where a monitor trustee has been ordered. Although monitor trustees have been used recently to monitor compliance with divestiture agreements where respondents have entered into consent decrees with the FTC, e.g., Solvay, 2002 FTC LEXIS 34, *47 (2002), America Online, Inc., 2001 FTC LEXIS 44, *37 (2001), this is not persuasive. E.I. du Pont, 366 U.S. at 330 n.12 ("the

circumstances surrounding . . . negotiated [consent decrees] are so different that they cannot be persuasively cited in a litigation context"). A contingent divestiture trustee is ordered; a monitor trustee is not.

Complaint Counsel sought to require CB&I to provide technical assistance and administrative services to the Acquirer. CCPO at II.I-J. Requiring technical assistance and administrative services may provide an opportunity for anticompetitive behavior. In addition, Complaint Counsel did not demonstrate that technical assistance or administrative services are not available from a source other than CB&I. These assets were not expressly acquired by CB&I in the Acquisition. (See CX 328). Therefore, the Order does not require this relief.

Complaint Counsel did not seek to prohibit Respondents from future acquisitions of all or any part of the stock or assets of, or any interest in, any producer of the relevant products. Therefore, such a prohibition is not included in the Order.

IV. SUMMARY OF CONCLUSIONS OF LAW

1. The Federal Trade Commission ("FTC") has jurisdiction over the subject matter of this proceeding and over Respondents Chicago Bridge & Iron Company, N.V., Chicago Bridge and Iron Company, and Pitt-Des Moines, Inc. ("PDM"), pursuant to Section 5 of the Federal Trade Commission Act ("FTC Act"), 15 U.S.C. § 45, and Sections 7 and 11 of the Clayton Act, 15 U.S.C. § § 18, 21(b).

2. Chicago Bridge & Iron Company N.V., and Chicago Bridge & Iron Company, a corporation (collectively, "CB&I") is a corporation, as "corporation" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44.

3. Respondents were engaged in commerce, as "commerce" is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. § 12, and affected commerce, as "commerce" is defined in Section 4 of the FTC Act, as amended, 15 U.S.C. § 44.

4. On or about February 7, 2001, CB&I acquired PDM's Water and Engineered Construction ("EC") Divisions, ("the Acquisition"). The Acquisition is a transaction subject to Section 7 of the Clayton Act, 15 U.S.C. § 18, and Section 5 of the FTC Act, 15 U.S.C. § 45.

5. Section 7 of the Clayton Act prohibits any acquisition of stock or assets "where in any line of commerce . . . in any section of the country, the effect of such acquisition may be substantially to lessen competition or to tend to create a monopoly." 15 U.S.C. § 18.

6. Section 7 of the Clayton Act is designed to arrest in its incipiency the substantial lessening of competition from the acquisition by one corporation of the assets of a competing corporation. Section 7 does not require proof from Complaint Counsel that a merger has caused higher prices in the affected market. To satisfy Section 7, Complaint Counsel need only show a reasonable probability that the proposed transaction would substantially lessen competition in the future.

7. The appropriate lines of commerce within which to evaluate the probable competitive effects of the Acquisition are: large, field-erected: (1) liquefied natural gas ("LNG") storage tanks (individually, or as a component of an import terminal or a LNG peak shaving plant); (2) refrigerated liquid petroleum gas ("LPG") storage tanks; (3) liquid nitrogen, oxygen and argon ("LIN/LOX") storage tanks; and (4) large (over 20 feet in diameter) thermal vacuum chambers ("TVCs").

8. The appropriate section of the country within which to evaluate the probable competitive effects of the Acquisition is the United States.

9. The government has the burden of showing that the Acquisition would produce a firm controlling an undue percentage share of the relevant markets and would result in a significant increase in the concentration of the firms in those markets. A merger which significantly increases the share and

concentration of firms in the relevant markets is so inherently likely to lessen competition that it is considered presumptively invalid.

10. Complaint Counsel established its prima facie case by showing that the Acquisition produces a firm controlling an undue percentage share in each of the four relevant markets. Complaint Counsel established that CB&I and PDM were the number one and two competitors in all four product markets and that no other company provides effective competition.

11. Finding a prima facie violation of Section 7 creates a rebuttable presumption of anticompetitive effects and shifts the burden of going forward with evidence to Respondents. Respondents have the burden of producing evidence that shows that the market share statistics supporting the prima facie case give an inaccurate account of the Acquisition's probable effects on competition.

12. Respondents have not demonstrated that the market share statistics give an inaccurate prediction of the Acquisition's probable effects on competition.

13. Respondents may rebut the prima facie case by demonstrating that entry by other firms would likely avert the Acquisition's probable effects on competition by acting as a constraint on CB&I's exercise of market power. Respondents may rebut the prima facie case by demonstrating that barriers to entry are so low that the threat of entry can significantly alter the anticompetitive effects of the merger by deterring the remaining entities from exercising market power.

14. Respondents have not demonstrated that actual or potential entrants constrain CB&I's exercise of market power. Due to high barriers, entry by new manufacturers or the expansion of existing manufacturers is not likely to avert the anticompetitive effects of the Acquisition in the relevant markets.

15. Respondents have not produced any significant evidence rebutting the presumption of a violation of Section 7 of the Clayton Act.

16. Because Respondents did not produce evidence sufficient to rebut the presumption of a violation of Section 7 of the Clayton Act, the burden of producing further evidence of anticompetitive effects did not shift to Complaint Counsel.

17. Respondents have presented an exiting assets defense. To the extent that an exiting assets defense is a valid defense, Respondents have not demonstrated that PDM EC's assets would have left the market in the near future or that PDM had conducted an exhaustive effort to sell the EC Division to a company other than CB&I.

18. The Acquisition is likely to increase CB&I's ability to raise prices unilaterally in the relevant markets because the Acquisition eliminates competition from PDM, CB&I's closest competitor. The Acquisition is a merger involving the first and second lowest-cost sellers which could cause prices to rise to the constraining level of the next lowest-cost seller.

19. The Acquisition violates Section 7 of the Clayton Act because "the effect of such acquisition may be substantially to lessen competition or to tend to create a monopoly." 15 U.S.C. § 18. The Acquisition also constitutes an unfair method of competition in or affecting commerce in violation of Section 5 of the FTC Act. 15 U.S.C. § 45.

20. Complaint Counsel met its burden of proof in support of Count I and Count II of the Complaint.

21. Divestiture is the proper remedy.

22. Complete divestiture of all assets acquired in the Acquisition is required to restore competition as it existed prior to the Acquisition.

23. Relief designed to restore competition as it existed prior to the Acquisition is appropriate.

24. The Order entered hereinafter is necessary and appropriate to remedy the violations of law found to exist.

ORDER

I.

IT IS HEREBY ORDERED that for the purposes of this Order, the following definitions shall apply:

A. "Acquirer" means an entity approved by the Commission who purchases the assets divested, pursuant to this Order.

B. "Acquisition" means the transaction consummated on February 7, 2001, whereby CB&I purchased PDM's Water and Engineered Construction ("EC") Divisions.

C. "CB&I" means Chicago Bridge & Iron Company N.V. and Chicago Bridge & Iron Company, individually and collectively.

D. "Chicago Bridge & Iron Company N.V." means Chicago Bridge & Iron Company, N.V.; its directors, officers, employees, agents and representatives, predecessors, successors, and assigns; its subsidiaries, divisions, groups, and affiliates controlled by Chicago Bridge & Iron Company N.V.; and the respective directors, officers, employees, agents and representatives, successors, and assigns of each.

E. "Chicago Bridge & Iron Company" means Chicago Bridge & Iron Company; its directors, officers, employees, agents and representatives, predecessors, successors, and assigns; its subsidiaries, divisions, groups, and affiliates controlled by Chicago Bridge & Iron Company; and the respective directors, officers, employees, agents and representatives, successors, and assigns of each.

F. "Commission" means Federal Trade Commission.

G. "Divestiture Trustee" means a person, with experience and expertise in acquisitions and divestitures, appointed by the Commission to effect the divestiture requirements of this Order.

H. "PDM" means Pitt-Des Moines, Inc.; its directors, officers, employees, agents and representatives, predecessors, successors, and assigns; its subsidiaries, divisions, groups, and affiliates controlled by Pitt-Des Moines, Inc.; and the respective directors, officers, employees, agents and representatives, successors, and assigns of each.

II.

IT IS FURTHER ORDERED that:

A. No later than one hundred and eighty (180) days from the date that this Order becomes final, CB&I shall completely divest all assets, title, properties, interest, rights and privileges, of whatever nature, purchased from PDM in the Acquisition. This divestiture shall be complete and shall include, but is not limited to, all buildings, machinery, equipment, raw material reserves, inventory, customer lists, trade names, trademarks, patents, and any other assets, of whatever description, that were acquired by CB&I from PDM in the Acquisition.

1. Complete divestiture shall include any assets that have been purchased by CB&I to replace or maintain assets purchased in the Acquisition.

2. Complete divestiture shall include any intellectual property or any rights to intellectual property as were purchased by CB&I from PDM in the Acquisition. Any rights acquired by CB&I to the "Pitt-Des Moines," "PDM," "Pitt-Des Moines EC," "PDM EC," "Pitt-Des Moines Water," and "PDM Water" names or any other variation of these names shall be divested.

3. Complete divestiture shall include a worldwide, royalty-free, perpetual, irrevokable, transferable, sublicensable, non-exclusive license to all intellectual property that was (1) created in part by former PDM employees who became employed by CB&I as a result of the Acquisition or (2) was premised in part upon intellectual property formerly owned by PDM and transferred to CB&I in the Acquisition.

4. Complete divestiture shall include a worldwide, royalty-free, perpetual, irrevokable license to any intellectual property owned by CB&I that would block Acquirer's legal use of the intellectual property that shall be required to be licensed to Acquirer, pursuant to Paragraph II.A.3 of this Order.

5. Complete divestiture shall include the assignment of all construction contracts formerly held by PDM and obtained by CB&I in the Acquisition that have not been fully performed by CB&I one hundred and eighty (180) days after this Order becomes final. Acquirer shall compensate CB&I in quantum meruit for any work completed under these contracts by CB&I prior to assignment. If a third party's consent must be obtained to assign any of these contracts, CB&I must use all available means, in good faith, to obtain such consent.

6. Complete divestiture shall include all non-construction contracts formerly held by PDM and obtained by CB&I in the Acquisition that have either not been fully performed by CB&I or that have not yet expired. These contracts include, but are not limited to, sales representative agreements, cooperation agreements, license agreements, partnership agreements, term employment contracts, and leases. If a third party's consent must be obtained to assign any of these contracts, CB&I must use all

available means, in good faith, to obtain such consent.

B. If at all possible, irrespective of loss suffered by CB&I, the divested assets shall be sold as a viable going concern that will enhance competition in the relevant markets.

C. Prior to the execution of the divestiture sale, a full accounting of all assets purchased in the Acquisition shall be provided to the Commission. The accounting shall disclose the approximate value, both at the time of the Acquisition and at the time that this Order becomes final; the current location; and the current condition of all of the assets purchased in the Acquisition. In the event that an asset is no longer in the possession of CB&I, any consideration received for the sale of such an asset shall be disclosed.

D. The divestiture sale shall be conducted in good faith, at no minimum price, and in compliance with the laws of the United States. The Acquirer, a divestiture agreement, and the manner of the sale must be approved by the Commission prior to the execution of the divestiture sale. The divestiture agreement shall not vary from or contradict, or be interpreted to vary from or contradict, the terms of this Order.

E. The divested assets shall not be sold or transferred, directly or indirectly, to any entity that at the time that this Order becomes final is a substantial stockholder, officer, director, employee, agent of, or otherwise directly or indirectly connected with or under the control or influence of CB&I.

III.

IT IS FURTHER ORDERED that CB&I shall comply with all terms of the divestiture agreement to be approved by the Commission, pursuant to Paragraph II.D of this Order. The divestiture agreement shall be deemed incorporated by reference into this Order, and any failure by CB&I to comply with the terms of the divestiture agreement shall constitute a failure to comply

with this Order.

IV.

IT IS FURTHER ORDERED that CB&I shall, from the date that this Order becomes final and extending for a period of two (2) years after the divestiture required by Paragraph II.A of this Order is completed: (1) not offer or provide any incentive to any employee of CB&I to decline employment with the Acquirer; (2) waive any non-compete clauses in CB&I employees' contracts that would prevent such employees from seeking employment with the Acquirer.

V.

IT IS FURTHER ORDERED that from the date that this Order becomes final, until such time as the divestiture required by Paragraph II.A of this Order is completed, CB&I shall take all measures necessary to maintain all assets ordered to be divested in their accounted for condition and to prevent any further deterioration, except normal wear and tear, so as to not impair the assets' operating viability, marketability, or confidentiality, if applicable.

VI.

IT IS FURTHER ORDERED that:

A. CB&I shall, within sixty (60) days from the date that this Order becomes final and every sixty (60) days thereafter, for one (1) year from the date that the divestiture required by Paragraph II.A of this Order is completed, submit in writing to the Commission a verified compliance report. Each report shall set forth, in detail, the manner and form in which CB&I intends to comply, is complying, or has complied with each of the requirements of this Order.

B. CB&I shall include in the compliance reports, among other relevant information requested by the Commission, a description

of all substantive contracts or negotiations relating to the divestiture, both oral and written; the identity of all potential Acquirers; copies of all written communications (including email) to and from such entities regarding the divestiture; internal documents and communications relating to the divestiture; and a statement that the provisions of this Order have been and are being fully complied with.

VII.

IT IS FURTHER ORDERED that:

A. If CB&I has not fully complied with Section II.A of this Order within one hundred and eighty (180) days of this Order becoming final, the Commission may, at its discretion and at any time thereafter, appoint a Divestiture Trustee to fulfill the requirements of Paragraph II.A. This provision by no means hinders either the Commission or the U.S. Attorney General from seeking civil penalties or a court-appointed trustee for any violation of this Order by CB&I.

B. If a Divestiture Trustee is appointed, that Divestiture Trustee shall have the following powers, duties, authority, and responsibilities:

1. Subject to the prior approval of the Commission, the Divestiture Trustee shall have the exclusive authority to effect the divestiture, in accordance with the requirements of this Order, for which the Divestiture Trustee has been appointed.

2. Within ten (10) days of the Divestiture Trustee's appointment, CB&I shall grant the Divestiture Trustee, with the prior approval of the Commission, all of the rights and powers necessary to effect the divestiture for which the Divestiture Trustee has been appointed.

3. The Divestiture Trustee shall have twelve (12) months, from the date that the Commission approves the grant of rights and powers, to complete the divestiture in accordance with this Order. This temporal duration may be extended for good cause or extenuating circumstances with the consent of the Commission.

4. CB&I shall provide the Divestiture Trustee with full and complete access to personnel, books, records, facilities, or any other information that is related to the assets ordered to be divested. CB&I shall cooperate with the Divestiture Trustee in good faith and comply with any reasonable requests for the production of additional relevant information. Should CB&I delay or hinder the Divestiture Trustee, the duration of time lost due to the delay or hindrance shall be credited to the twelve-month temporal deadline for completion of the divestiture.

5. Best efforts shall be used by the Divestiture Trustee to negotiate the most favorable price and terms available for the assets being divested; but at the same time, the Divestiture Trustee shall seek to submit the proposed sales contracts to the Commission as promptly as possible at no minimum price. If the Divestiture Trustee receives good faith offers from more than one eligible potential Acquirer, and if the Commission approves more than one of these entities, the Divestiture Trustee shall divest the assets to the Acquirer that is selected by CB&I from those approved by the Commission. However, if CB&I does not respond within five (5) business days to the Commission's request for such a selection, the Divestiture Trustee shall have complete discretion in choosing the Acquirer from those entities approved by the Commission.

6. The Divestiture Trustee shall serve without bond or other security, at the cost and expense of CB&I, on such reasonable and customary terms and conditions as the Commission may set. The Divestiture Trustee shall have the authority to employ, at the cost and expense of CB&I, such consultants, accountants, attorneys, investment bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the Divestiture Trustee's duties and responsibilities. The Divestiture Trustee shall account for all consideration derived from the sale and all expenses incurred. Upon approval by the Commission of the Divestiture Trustee's accounting, all remaining fees and expenses shall be paid and the remainder of the consideration shall be distributed at the discretion of CB&I. Following the final distribution, the Divestiture Trustee's power and authority shall be terminated.

7. CB&I shall indemnify and hold the Divestiture Trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of or in connection with the performances of the Divestiture Trustee's duties. This indemnification shall include all reasonable fees for counsel and other expenses incurred in connection with the preparation for or defense of any claim, whether or not resulting in any liability, except to the extent that such liabilities, losses, damages, claims, or expenses result from gross negligence or willful misconduct by the Divestiture Trustee. This indemnification shall be inclusive of all agents of or entities retained by the Divestiture Trustee, pursuant to Paragraph VII.B.6 of this Order.

8. The Commission may appoint a substitute in the event that the Divestiture Trustee fails to perform in a diligent manner, acts with gross negligence, or engages in willful misconduct.

9. The Divestiture Trustee shall have no obligation or authority to operate or maintain the assets ordered to be divested.

10. The Divestiture Trustee shall report to the Commission, in writing, every sixty (60) days to inform it of the Divestiture Trustee's efforts to complete the ordered divestiture.

C. The Commission may, at the request of the Divestiture Trustee, issue such additional orders or directions, within the scope of this Order, as may be necessary or appropriate to further the completion of the divestiture.

VIII.

IT IS FURTHER ORDERED that CB&I shall provide a copy of this Order to each of CB&I's officers, employees, or agents possessing managerial responsibility relating to any of the provisions contained in this Order, no later than ten (10) days after the date that this Order becomes final.

IX.

IT IS FURTHER ORDERED that CB&I shall notify the Commission at least thirty (30) days prior to any proposed change in the corporate structure or financial condition of CB&I that could affect compliance with the requirements of this Order, including, but not limited to, dissolution, assignment, sale, merger, sale or dissolution of subsidiaries, or bankruptcy.

X.

IT IS FURTHER ORDERED that, for the purpose of determining or securing compliance with this Order, subject to any legally recognized privilege, and upon written request with reasonable notice, CB&I shall permit any authorized agent of the Commission:

A. Access, during office hours and in the presence of counsel, to all relevant facilities and documents. Such documents that may be inspected and copied include, but are not limited to, non-privileged books, ledgers, accounts, and correspondence memoranda that are in the possession of or under the control of CB&I and relate to any matter contained in this Order.

B. Access to interview CB&I's officers, directors, or employees who may possess information relevant to any matter contained in this Order. Counsel may be present for such interviews.

INITIAL DECISION

By D. Michael Chappell, Administrative Law Judge

I. INTRODUCTION

A. Federal Trade Commission Complaint

The Federal Trade Commission ("FTC") issued its Complaint in this matter on October 25, 2001. The Complaint charges that Chicago Bridge & Iron Company N.V., a foreign corporation, Chicago Bridge & Iron Company, a corporation (collectively, "CB&I") and Pitt-Des Moines, Inc. ("PDM"), a corporation, entered into an agreement in violation of Section 5 of the Federal Trade Commission Act ("FTC Act"), as amended. 15 U.S.C. § 45. The Complaint alleges that on or about February 7, 2001, CB&I acquired, pursuant to agreement with PDM, PDM's Water Division and Engineered Construction ("EC") Division for approximately $ 84 million ("the Acquisition"). The Complaint alleges that the relevant geographic market is the United States as a whole and that the relevant product markets are large, field-erected: (1) liquefied natural gas ("LNG") storage tanks (individually, or as a component of an import terminal or a LNG peak shaving plant); (2) refrigerated liquid petroleum gas ("LPG") storage tanks; (3) liquid nitrogen, oxygen and argon ("LIN/LOX") storage tanks; and (4) thermal vacuum chambers ("TVCs").

The Complaint charges two violations. Count I alleges the effect of the Acquisition may be substantially to lessen competition or tend to create a monopoly in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act. Count II alleges that CB&I and PDM ("Respondents"), through the Acquisition and the Acquisition agreement have engaged in unfair methods of competition in or affecting commerce in violation of Section 5 of the FTC Act.

B. Respondents' Answers

Following the issuance of the Complaint, the parties filed

three joint motions seeking extensions of time for Respondents to file the Answer to the Complaint. In each motion, the parties represented an extension was needed in order for the parties to pursue settlement of this action. CB&I and PDM each filed an Answer on February 4, 2002. Respondents denied most of the allegations of the Complaint. CB&I admitted that on February 7, 2001, CB&I completed its acquisition of certain assets of PDM related to its Water Division and Engineered Construction Division. Respondents asserted that the Acquisition has caused a repositioning, which has given an incentive to previously dormant competitors to invest in this business to attempt to replace PDM as a bidder in the relevant markets.

C. Procedural History

On August 29, 2000, CB&I and PDM entered into a letter of intent for CB&I to acquire PDM's Engineered Construction and Water Divisions. Respondents made their filings under the Hart-Scott-Rodino Act ("HSR"), 15 U.S.C. § 18a, on September 12, 2000. The initial waiting period under HSR expired on October 12, 2000.

The FTC did not seek a preliminary injunction in a U.S. district court, pursuant to Section 13(b) of the FTC Act, 15 U.S.C. § 53(b), to halt CB&I's impending acquisition. On February 7, 2001, CB&I completed its acquisition of certain assets of PDM's Water Division and Engineered Construction Division.

On October 25, 2001, the FTC issued its Complaint. After extensive pretrial discovery, the administrative trial in this case commenced on November 12, 2002. By Order signed on June 18, 2002 by the previous Administrative Law Judge in this litigation, Respondents' motion for a 60 day extension was granted, extending the deadline for filing the Initial Decision to December 25, 2002. By Order issued December 17, 2002, because the trial in this matter was then still proceeding, an additional 60 day extension was granted, extending the deadline for filing the Initial Decision to February 24, 2003.

The administrative trial concluded on January 16, 2003. On January 21, 2003, the parties filed a joint motion to extend the deadline for filing the Initial Decision. By Order dated January 28, 2003, extraordinary circumstances were found to exist sufficient to extend the deadline for filing the Initial Decision by an additional 60 days, to April 28, 2003. The January 28, 2003 Order also revised the post trial briefing schedule and closed the hearing record pursuant to Commission Rule 3.44(c). On April 24, 2003, in response to a request made pursuant to Commission Rule 3.51(a), the Commission issued an Order extending the time to file the Initial Decision until June 12, 2003.

D. Evidence

The Initial Decision is based on the transcript of the testimony, the exhibits properly admitted in evidence, and proposed findings of fact and conclusions of law and replies thereto filed by the parties. Citations to specific numbered Findings of Fact in this Initial Decision are designated by "F."

The parties submitted extensive post-trial briefs and reply briefs. The Initial Decision addresses only material issues of fact and law. Proposed findings of fact not included in the Initial Decision were rejected, either because they were not supported by the evidence or because they were not dispositive to the determination of the allegations of the Complaint. The Commission has held that Administrative Law Judges are not required to discuss the testimony of each witness or all exhibits that are presented during the administrative adjudication. In re Amrep Corp., 102 F.T.C. 1362, 1670 (1983). Administrative adjudicators are "not required to make subordinate findings on every collateral contention advanced, but only upon those issues of fact, law, or discretion which are 'material.'" Minneapolis & St. Louis Ry. Co. v. United States, 361 U.S. 173, 193-94 (1959).

On March 7, 2003, Respondents filed a motion to strike, seeking an order striking certain exhibits that were never admitted into evidence and striking a number of Complaint Counsel's Proposed Findings of Fact ("CCPFF") from the record. Complaint

Counsel filed its opposition to the motion to strike on March 13, 2003. By separate Order issued June 12, 2003, Respondents' motion was granted. For the reasons set forth in that Order, proposed findings of fact that fail to cite any evidence or that cite to documents, graphs, or charts not in evidence have been disregarded.

Many of the documents and parts of the oral testimony were received into the record in camera. Where an entire document or where certain trial testimony was given in camera treatment, but the portion of the document or the trial testimony utilized in this Initial Decision does not rise to the level necessary for in camera treatment, such information is disclosed in the public version of this Initial Decision, pursuant to Commission Rule 3.45(a) (the ALJ "may disclose such in camera material to the extent necessary for the proper disposition of the proceeding"). Material that has been given in camera treatment is indicated in bold font and brackets in the in camera version and is redacted from the public version of the Initial Decision, in accordance with 16 C.F.R. § 3.45(f).

E. Summary

As fully set forth below, Complaint Counsel has established by reliable and probative evidence that the effect of the Acquisition of PDM's EC and Water Divisions by CB&I may be to substantially lessen competition in the relevant markets. CB&I's asserted exiting assets defense fails as a matter of fact and law. Complaint Counsel has met its burden of proof on Count I and Count II of the Complaint. The appropriate remedy is divestiture.

II. FINDINGS OF FACT

A. Respondents

1. Chicago Bridge and Iron

1. Respondent Chicago Bridge & Iron Company N.V. is a

foreign corporation organized and existing under the laws of the Netherlands, with its principal place of business at Polarisavenue 31, 2132 JH Hoofddorp, The Netherlands. (Complaint P1; Answer P1).

2. Respondent Chicago Bridge & Iron Company ("CB&I"), a wholly owned subsidiary of Chicago Bridge & Iron Company N.V., is a corporation, as "corporation" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44, organized and existing under the laws of the State of Delaware, with its principal place of business at 1501 North Division Street, Plainfield, Illinois 60544. (Complaint P2; Answer P2).

3. Among other products and services, CB&I is engaged in the business of designing, engineering, manufacturing and constructing field-erected LNG, LPG and LIN/LOX storage tanks and TVCs in the United States and abroad. (CX 1033 at 6; CX 212 at CBI-PL 031711).

4. In 1999, prior to the merger, CB&I had revenues of $ 674 million; in 2000, revenues were $ 612 million; in 2001, after the merger with PDM, revenues were approximately $ 1.081 billion. (CX 1033 at 22). CB&I's acquisition of Howe Baker, Inc. (a process contractor operating in gas refining and processing) in December 2000 accounts for an increase in CB&I's revenues. (Glenn, Tr. 4086, 4403-05).

5. CB&I's acts and practices, including the acts and practices alleged in the Complaint, are in or affect commerce as "commerce" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44. (Complaint P7; CB&I Answer at P7).

2. Pitt-Des Moines

6. Pitt-Des Moines, Inc. ("PDM") was a corporation organized and existing under the laws of the Commonwealth of Pennsylvania, publicly traded on the American Stock Exchange, with its principal place of business at 1450 Lake Robbins Drive,

Suite 400, the Woodlands, Texas, 77380. (CX 328 at CBI 001253-CHI; CX 21 at PDM-C 1000003; Byers, Tr. 6732). PDM's headquarters was located at 10200 Grogan's Mill Road, Suite 300, the Woodlands, Texas, 77380. (CX 661 at PDM-HOU017554).

7. In 1999, PDM had a total revenue of $ 629 million and Earnings Before Interest and Taxes ("EBIT") of $ 41 million. (CX 520 at TAN 1003289; Scheman, Tr. 2915-16). In 2000, PDM had a total revenue of $ 659 million and EBIT of $ 76 million. (CX 520 at TAN 1003289; Scheman, Tr. 2915-16). In 1999, PDM's EC and Water Divisions had total revenues of $ 281 million and EBIT of $ 16.1 million. (CX 525 at TAN 1000385). In 2000, PDM's EC and Water Divisions had total revenues of $ 268 million and EBIT of $ 0.7 million. (CX 525 at TAN 1000385).

8. Prior to the Acquisition, PDM was a diversified company with several divisions, two of which were PDM Engineered Construction (PDM EC) and PDM Water. Both divisions were acquired by CB&I. (CX 328 at CBI 001253-CHI).

9. Among other products and services, PDM was engaged in the business of designing, engineering, manufacturing and constructing field-erected LNG, LPG and LIN/LOX storage tanks and TVCs in the United States and abroad. (CX 522 at TAN 1003371; CX 850 at PDM-HOU 0129192-0129195, 0129199; CX 911 at CBI 028717-HOU -028726).

B. The Acquisition

10. In August 2000, CB&I offered $ 93.5 million to PDM. (CX 521 at TAN 1000328). On August 29, 2000, CB&I and PDM entered into a letter of intent for CB&I to acquire PDM's Engineered Construction and Water Divisions. (CX 21 at PDM-C 1000003).

11. CB&I's initial offer of $ 93.5 million to PDM was negotiated downward to $ 84 million in December of 2000 because of financial losses suffered by PDM EC in 2000. (Byers,

Tr. 6789-90). CB&I's purchase price of $ 84 million was eventually lowered to approximately $ 76 to $ 77 million because of losses in PDM's foreign subsidiary, PDM Venezuela, that did not become apparent until after the transaction was consummated. (Byers, Tr. 6793-94).

12. Respondents made their filings under the Hart-Scott-Rodino Act ("HSR") on September 12, 2000. (CX 56 at PDM-HOU 002331). The initial waiting period under HSR expired on October 12, 2000. (CX 56 at PDM-HOU 002331). The Federal Trade Commission did not seek an injunction to prevent CB&I from purchasing PDM EC and PDM Water. On February 7, 2001, CB&I acquired PDM EC and PDM Water ("the Acquisition"). (Byers, Tr. 6764-66).

13. The Complaint in this matter was filed on October 26, 2001. On November 12, 2002, the administrative trial began before D. Michael Chappell, Administrative Law Judge. (Tr. 4).

C. The Relevant Geographic Market

14. The relevant geographic market is the United States. F. 15-17.

15. The parties agree that the relevant geographic market in which to analyze the merger is the United States. (Respondents' Position on Each Element of the Case, October 21, 2002, p.1). Complaint Counsel's expert, Dr. John Simpson, and Respondents' expert, Dr. Barry Harris, agree that the relevant geographic market in which to assess the impact of the Acquisition is the United States. (Simpson, Tr. 3035 (LNG); Harris, Tr. 7192 (LNG); Simpson, Tr. 3361-62 (LPG) (citing CX 116); Harris, Tr. 7280 (LPG); Simpson, Tr. 3421 (LIN/LOX); Harris, Tr. 7300-01 (LIN/LOX); Simpson, Tr. 3488 (TVC); Harris, Tr. 7324 (TVC)).

16. By definition, field-erected LNG, LPG and LIN/LOX storage tanks and TVCs must be built at customers' sites in the United States. "LNG tanks are purchased as part of a larger facility that is designed to supply natural gas to gas users in a

particular area. As a consequence, the LNG tanks have to be located in a particular locality." (Simpson, Tr. 3034). "LIN/LOX/LAR tanks are purchased as part of a facility that makes liquefied gas, and those facilities are built close to a customer." (Simpson, Tr. 3420).

17. It is economically infeasible to import a field-erected storage tank from anywhere outside the United States. (Kistenmacher, Tr. 840, 881).

D. The Relevant Product Markets

18. The relevant product markets in which to analyze the Acquisition are large, field-erected: (1) liquefied natural gas ("LNG") storage tanks (individually, or as a component of an import terminal or an LNG peak shaving plant); (2) refrigerated liquid petroleum gas ("LPG") storage tanks; (3) liquid nitrogen, oxygen and argon ("LIN/LOX") storage tanks; and (4) large (over 20 feet in diameter) TVCs ("TVCs"). F. 19-45.

19. Respondents agree that the relevant product markets are field-erected LNG storage tanks, LPG storage tanks, and LIN/LOX storage tanks, and TVCs. (Respondents' Position on Each Element of the Case, October 21, 2002, p.1). Complaint Counsel's expert, Dr. John Simpson, and Respondents' expert, Dr. Barry Harris, agree on the relevant product markets, except that Dr. Harris believes that spheres should not be included in the LIN/LOX market. (Harris, Tr. 7301-02, 7192-95, 7280, 7324). (Simpson, Tr. 2989 (LNG); Harris, Tr. 7192 (LNG); Simpson, Tr. 3356-57 (LPG); Harris, Tr. 7280 (LPG); Simpson, Tr. 3416-17 (LIN/LOX); Harris, Tr. 7300 (LIN/LOX); Simpson, Tr. 3483 (TVC); Harris, Tr. 7324 (TVC)).

1. LNG tanks and facilities

20. Liquefied natural gas ("LNG") is natural gas that has been converted to a liquid by cooling and condensing the natural gas to about -162 [degrees] C (-260 [degrees] F). (Glenn, Tr. 4066; CX 1259 at CBI-HWH030454). LNG is composed primarily of

methane (typically at least 90%), but may also contain ethane, propane and heavier hydrocarbons. (Kistenmacher, Tr. at 889; CX 1259 at CBI-HWH030464). Neither LNG, nor its vapor, can explode by common ignition sources in an unconfined environment. (CX 1259 at CBI-HWH030469). LNG weighs approximately 45% as much as the same volume of water. (See CX 1259 at CBI-HWH030465).

a. LNG tanks

21. LNG storage tanks are a type of cryogenic tank that stores natural gas at a temperature of -260 [degrees] F. (Kistenmacher, Tr. 879; CX 1074 at CBI-001243-PLA). Due to these very cold temperatures, LNG storage tanks are made of 9% nickel steel which has certain crack arresting properties when containing LNG at low temperatures, and is less brittle than carbon steel. (Kistenmacher, Tr. 881-82; CX 1074 at CBI-001245-PLA; Glenn, Tr. 4109-10).

22. The purpose of an LNG tank is to contain natural gas in liquid form. (Glenn, Tr. 4066; Price, Tr. 530). When stored at ambient temperatures (i.e. room temperature), natural gas takes a gaseous form. (CX 1259 at CBI-HWH030454). When liquefied, natural gas is far easier to store, as natural gas in gaseous form takes up 600 times the volume of its liquid equivalent. (CX 1259 at CBI-HWH030454).

23. LNG tanks typically are double-walled and often use perlite insulation between the two shells and may have some form of concrete containment for safety reasons. (Glenn, Tr. 4110; Kistenmacher, Tr. 881-82; CX 1074 at CBI-001243-PLA). The outer walls of single containment tanks are carbon steel and the inner walls are nine percent nickel steel. (CX 1074 at CBI-001243-PLA).

24. An LNG tank often has a diameter of 200 feet or more and can store millions of gallons of LNG. (Price, Tr. 524-525; Kistenmacher, Tr. 879; CX 176 at CBI-PL010926, in camera; CX 162 at CBI-PL006153; Puckett, Tr. 4566; J. Kelly, Tr. 6260).

b. LNG import terminals

25. LNG import terminals are "facilities to receive an LNG tanker, offload LNG into LNG storage tanks, take the LNG from those storage tanks over time, vaporize it, pressurize the gas, and send it out into a pipeline." (Bryngelson, Tr. 6170). The terminals include storage tanks, ship loading/unloading facilities, send-out facilities and vapor handling systems. (CX 650 at CBI/PDM-H4019758). LNG is stored in the tanks, pumped out, vaporized and injected into pipelines for transmission to end users. (CX 853 at PDM-HOU011487).

c. LNG peak shaving plants

26. LNG peak shaving plants store LNG to provide an emergency reserve of LNG in the event that gas customers experience a severe shortage of natural gas. (CX 650 at CBI/PDM-H4019758). LNG peak shaving plants consist of a liquefaction unit, where the gas is turned into liquid, and LNG storage tanks. (Kistenmacher, Tr. 884-85). In LNG peak shaving facilities, natural gas from a pipeline is refrigerated in the liquefaction unit and stored in liquid form in an LNG tank during the warmer months when demand and prices are low. (CX 142 at CBI 000241-HOU). As gas demand increases in colder months, the stored LNG is heated, vaporized and put back into the supply stream to meet heating demand peaks, when prices are high. (CX 142 at CBI 000241-HOU; Hall, Tr. 1775-1776).

27. LNG tanks in peak-shaving facilities are similar to, but tend to be smaller than, LNG tanks used at import terminals. (Glenn, Tr. 4070; Bryngelson, Tr. 6141-42).

28. Luke Scorsone, President of CB&I Industrial and former President of PDM-EC, could not cite a single instance in which a potential customer of an LNG tank tried to get a lower price by threatening to switch to an alternative to an LNG tank. (Scorsone, Tr. 2845).

29. The large tanks required for LNG storage are much too large to practically shop-fabricate and ship to the site. (Andrukiewicz, Tr. 6697-98). Shop-fabricated tanks cannot provide the storage levels required for LNG facilities. A shop-fabricated tank provides less than 1% of the storage that a field-erected LNG tank provides. (RX 6 at CBI-PL 031593). Shop-built tanks have size limitations and are "not a direct substitute for larger quantities of LNG." (Davis, Tr. 3184). LNG tanks designed to hold above a certain volume of LNG must be field-erected. (Blaumueller, Tr. 287). The largest shop-built tanks "would pale in comparison to field tanks." (Davis Tr. 3184-85). For example, 420 shop erected tanks would be required to replace one large LNG tank. (Price, Tr. 536-37).

2. LPG tanks

30. Liquid petroleum gas ("LPG") tanks are field-erected, refrigerated tanks that store liquefied gases such as propane, butane, propylene and butadiene at refrigerated temperatures of around -50 [degrees] F. (Warren, Tr. 2275, 2306; CX 258 at CBI-H001793; CX 650 at CBI/PDM-H 4019758; CX 993 at PDM-HOU021479).

31. The LPG market does not include pressure vessels or tanks which store gases that are liquified using pressure and stored at ambient temperatures. There are two types of high pressure storage tanks used to store liquid petroleum gasses -- bullets and field-erected pressure spheres. Bullets are ambient temperature, low pressure spheres or storage vessels that are usually built in a shop. Pressure spheres are ambient temperature pressure vessels supported by columns or plate skirts. (JX 37 at 19 (Newmeister, Dep.)). These two types of storage tanks are not in the LPG market because they are not economic substitutes for field-erected, refrigerated tanks (which comply with the API 620, Appendix R standard). (JX 27 at 39-39, 141-42 (N. Kelley, Dep.); Crider, Tr. 6720).

32. LPG customers are oil and petrochemical companies, such as Marathon, Enron, and Texaco; owners of LPG terminals, such

as Sea-3, CMS Energy, and Intercontinental Terminals Co., that import/export LPG and transfer the LPG between ships and storage tanks via pipelines; and engineering, procurement, and construction ("EPC") contractors, such as Fluor, who subcontract tank suppliers to build LPG tanks for larger facilities. (CX 993 at PDM-HOU-021484).

3. LIN/LOX tanks

33. LIN is an industry expression for liquid nitrogen. A LIN tank is a special tank that stores liquid nitrogen at atmospheric pressure. LOX is the industry expression for liquid oxygen. A LOX tank stores liquid oxygen. (Kamrath Tr. 1982-83); V. Kelley Tr. 4596). LAR is the industry expression for liquid argon and a LAR tank stores liquefied argon. (Patterson, Tr. 340-41). Tanks to hold LIN, LOX or LAR are commonly referred to as LIN/LOX tanks. (Patterson, Tr. 340-41).

34. LIN/LOX tanks are field-erected cryogenic tanks that store various liquid gas products at cryogenic temperatures, typically at -300 [degrees] F or lower. (CX 650 at CBI/PDM-H4019758). LIN/LOX tanks typically hold 400,000 to 1,000,000 gallons and cost $ 500,000 to $ 1 million each. (CX 170 at CBI-PL009650).

35. The LIN/LOX market does not include spheres, which are constructed in a different manner, serve different functions, and are not a substitute for LIN/LOX tanks. (Harris, Tr. 7301-02).

36. LIN/LOX tanks typically include an inner and outer shell of steel material. (JX 37 at 13 (Newmeister, Dep.)). The inner tank is made of stainless steel to withstand cryogenic temperatures without becoming brittle and cracking. (Kistenmacher, Tr. 835). Between the two shells is perlite insulation. (Kistenmacher, Tr. 833-834). LIN/LOX tanks have dome roofs, safety relief valves and nozzles that connect to piping and other equipment. They are built to withstand wind and seismic conditions. (Kistenmacher, Tr. 864).

4. Thermal Vacuum Chambers

37. A thermal vacuum chamber ("TVC") is a large metal enclosure used to simulate the vacuum of space for the purpose of testing satellites and satellite components prior to launch. (Gill, Tr. 179-83; Neary, Tr. 1423-24). A TVC simulates the atmospheric and thermal conditions found in space. (Gill, Tr. 183; Proulx, Tr. 1722-23; Thompson, Tr. 2039-40; Higgins, Tr. 1264).

38. During a test, air is pumped out of the enclosure and, within the enclosure, liquid or gaseous nitrogen circulates through pipes to heat or cool the interior environment. Controls allow users to adjust the temperature and vacuum conditions inside the enclosure so that satellites can be tested in a space-like environment. (Thompson, Tr. 2039-40). Temperatures simulated within the chamber can range "from minus 180 degrees C to plus 150 degrees C" and the vacuum can range from 1 x 10-6 torr to 1x10-8 torr. (Higgins, Tr. 1262; Scully, Tr. 1143).

39. The customers of field-erected TVCs are aerospace companies such as Boeing Satellite Systems ("Boeing"), Raytheon Systems, Spectrum Astro and TRW Space & Electronics ("TRW"); and government agencies, such as NASA. TVCs are used to test satellites purchased by the Department of Defense, NASA and commercial buyers. (Neary, Tr. 1420; Glenn, Tr. 4074-75; see also CX 1196 at PDM-HOU011524-011525 (list of PDM customers)).

40. "Customers are typically testing satellites costing $ 50MM to $ 200MM in TVCs costing $ 5MM - $ 20MM." (CX 212 at CBI-PL031718). The satellites sold by TRW range in value from $ 750 million to $ 1.5 billion, while those sold by Spectrum Astro, a smaller satellite manufacturer, range in value from $ 10 million to $ 55 million. (Neary, Tr. 1420-21; Thompson, Tr. 2038).

41. TVCs are the only satellite testing equipment capable of

simulating the vacuum and thermal conditions of outer space. (Higgins, Tr. 1262-63). Other testing chambers are not substitutes for TVCs because they only simulate other conditions. (Scully, Tr. 1139; Proulx, Tr. 1729). Large satellite customers require that manufacturers test their satellites in TVCs. (Neary, Tr. 1424).

42. Scorsone could not recall an instance in which a potential customer of a TVC tried to get a lower price by threatening to switch to an alternative. (CX 646 at 76-77 (Scorsone, IHT)).

43. The construction of a shop-fabricated TVC is "markedly different" from the construction of a field-erected TVC. (Scully, Tr. 1101-02; Gill, Tr. 235). "In shop-built chambers, all of the equipment and capability, personnel capability, lies within the confines of the shop." (Scully, Tr. 1103). However, some shop-built TVCs still require field-erection, including for example, the small field-erected chambers being built by XL/Votaw for Raytheon Systems. (Hart, Tr. 406-07). In contrast, field-erected chambers require a crew that "virtually lives in the field for elongated periods of time. . . . It's a vastly different technology than what a shop-built chamber requires." (Scully, Tr. 1103).

44. Satellites above a certain size cannot be tested in shop-fabricated TVCs. (Scully, Tr. 1139; Neary, Tr. 1425). Consequently, shop-fabricated TVCs are not an alternative to large, field-erected TVCs for testing large satellites. (Scully, Tr. 1140).

45. Other products, such as "thermal cycling chambers" and "altitude chambers" are not functional equivalents because they cannot mimic the conditions a satellite will face in space. (Neary, Tr. 1463-64; see Scully, Tr. 1135-39).

E. Effects on Competition in the LNG Market

1. Overview of the LNG market

46. Construction of an LNG tank is "highly specialized" work. (Hall, Tr. 1831; Kistenmacher, Tr. 881; see Andrukiewicz, Tr. 6702 ("just in my own knowledge of LNG we're talking about a cryogenic fluid that is stored at minus 260 degrees Fahrenheit, clearly has different handling characteristics than the oil tank that may be located in my basement for heating fuel. So clearly there is a degree of specialized -- in fact, the preliminary engineering report speaks to the specialty nature of the construction of these facilities."). When addressing his investors, Mr. Gerald Glenn, Chairman, President and CEO of CB&I, emphasized that "a lot of owners out there, if they go to build a sophisticated project, like an LNG project or an LNG tank, they don't want to take a chance on a low price and a potential second class job or shoddy welding or any of that kind of stuff. The kind of work that we do is very specialized, very sophisticated." (CX 1731 at 44).

47. There is special expertise required in constructing an LNG tank, because "you would have to use the right welding technique to weld that particular type steel," which is a "different type of welding technique from ordinary carbon steel." (Hall, Tr. 1792). LNG tanks require sophisticated engineering analysis to take into account expansion and contraction because of differences in temperatures. (Newmeister, Tr. 1566; Kistenmacher, Tr. 881).

48. The engineering of an LNG tank entails special challenges. The inner tank of an LNG tank holds cryogenic fluid at a very low temperature while the outer tank is at ambient temperature. (Kistenmacher, Tr. 842). The inner tank shrinks when it comes into contact with the cryogenic fluid and there are differential rates of shrinking between the inner and outer tank. (Kistenmacher, Tr. 842). Consequently, an LNG tank engineer must have very specialized knowledge relating to how tank materials behave during the shrinking process; how to design piping for the tank; and how to avoid cracking of the tank components. (Kistenmacher, Tr. 842).

49. PDM EC used three fabrication facilities located in Warren, Pennsylvania, Clive, Iowa, and Provo, Utah. (Scorsone, Tr. 4892). CB&I Industrial utilizes fabrication shops in Houston, Texas and Provo, Utah. (Scorsone, Tr. 4893).

50. In assembling its labor force, CB&I uses a core team of 4-5 management employees, including a project manager and two or three key people to begin the project. (Rano, Tr. 5917-18, 5952-53). CB&I recruits local labor, workers who live less than 100 miles from the jobsite, to help construct the facility. (Rano, Tr. 5906-07).

51. To build a field-erected LNG tank requires constructing the foundation. (Rano, Tr. 5920). CB&I subcontracts the foundation work to a company with an expertise in concrete work. (Rano, Tr. 5920).

52. The field-erection process for an industrial tank involves erecting the structure in accordance with the plans and contract specifications and testing the work quality. (Scorsone, Tr. 4895-96). The construction of LNG tanks involves rigging, which is the practice of attaching cables, slings, and ropes to pieces and hoisting them into position. (Scorsone, Tr. 4897-98).

53. To weld a field-erected LNG tank, two different welding processes are used: (1) hand welding, in which the welder holds the welding cable in his hand; and (2) submerged arc welding, which involves the use of a welding machine. (Rano, Tr. 5930-31). These welding processes are not only used for LNG tanks, but also for LPG tanks, water tanks, and oil tanks. (Rano, Tr. 5931). Construction of LNG tanks requires welders trained in procedures unique to welding 9% nickel steel (a special alloy that is not widely used), that can weld together the tank's large steel pieces with a precision that eliminates leaks. (Cutts, Tr. 2379; Kistenmacher, Tr. 881-82; Fahel, Tr. 1628-29, in camera; Hall, Tr. 1792; JX 30 at 180-81 (Outtrim Dep.)). A CB&I due diligence report on PDM's construction practices states that "CB&I has some of the best welders in the industry . . . Over the years CB&I

has felt that our welding expertise is one of our core strengths." (CX 1357 at CBI-H 4000270-271).

54. Mr. W. T. Cutts, Vice President with American Tank & Vessel, Inc. ("AT&V"), states that LNG tanks are ". . . built out of fairly sophisticated materials. You don't just weld them up any old way. And its actually automated equipment that you weld them up with. The equipment is quite expensive to develop. You can go buy it, but the stuff you buy has to be modified and tailored, and then you have to build procedures around it. So it's not like you can go buy an automobile. It's unique equipment and the procedures that go with that make it very unique. . . ." (Cutts, Tr. 2379). Peter Rano, a CB&I vice president, testified that CB&I considers its welding procedures for LNG projects to be proprietary work product which it does not want to fall into the hands of its competitors. (Rano, Tr. 6028-29).

2. Demand in the LNG market

55. The LNG tank market is a "worldwide market" in which a few LNG contractors compete against each other all over the world. (Eyermann, Tr. 6994; J. Kelly, Tr. 6262). Demand for LNG in the United States had been very small over the past 20 to 30 years. (Glenn, Tr. 4091; Carling, Tr. 4513; J. Kelly, Tr. 6263). However, demand for LNG facilities has increased since the 1990s, as a number of companies are developing LNG import terminals in the U.S., the Caribbean, and Mexico. (Scorsone, Tr. 4934; Jolly, Tr. 4701-02, in camera). See generally F. 88-143. CB&I believes demand is rising and will continue to rise over the next 10 to 20 years, due to rising gas prices. (Glenn, Tr. 4091). [redacted] (Outtrim, Tr. 699, in camera).

56. There are three basic types of LNG tanks: (1) single containment; (2) double containment; and (3) full containment. (Puckett, Tr. 4541; Bryngelson, Tr. 6170-71).

57. Single containment LNG tanks store LNG in a nine percent nickel steel inner tank that is surrounded by a low earthen dike which would contain LNG in case of a leak. (Puckett, Tr.

4541; Bryngelson, Tr. 6170-71; CX 1074 at CBI 001243-PLA). Double containment tanks have the same nine percent nickel steel inner tank as a single containment tank, but offer a concrete outer tank to contain spillage from the inner tank. (Price, Tr. 530-32; CX 1074 at CBI 001243-PLA). Full containment tanks consist of a self-supporting inner tank and the outer tank used in a double-containment tank, but also include a concrete roof, so that the inner tank is completely encapsulated in a concrete shell. (CX 1074 at CBI 001243-PLA). Full containment tanks are designed to contain both the spillage of refrigerated liquid and the vapor resulting from leakage. (CX 1074 at CBI 001243-PLA- 1244).

58. With the exception of the tank built by PDM for Enron in Puerto Rico, all LNG tanks that have been built in the United States are single containment tanks. (CX 1645; Glenn, Tr. 4110-4111; Jolly, Tr. 4701-02, 4708-09, in camera).

59. Customers view full and double containment tanks as safer than single-containment tanks. (Glenn, Tr. 4112-13; Hall, Tr. 1843; Scorsone, Tr. 4922).

60. An owner can site a double and full containment LNG tank on a smaller piece of property than it could for a single containment tank in order to comply with federal laws relating to vapor dispersion and thermal radiation in the event of a spill. (Scorsone, Tr. 4922). Full-containment tanks are more likely to be used "if you are closer to population in more of an urban setting or close to an urban setting, full-containment typically is used just for the extra bit of safety it has." (Bryngelson, Tr. 6133).

61. Full-containment tanks are 30-100% more expensive than single-containment tanks. (RX 157 at BP 02 004; CX 124 at PDM-HOU2011156; CX 1075 at CBI-001240-PLA; CX 1161 at CBI/PDM-H4008131-133, in camera; JX 23a at 89 (Cutts, Dep.); Jolly, Tr. 4724-25, in camera).

62. Two expansion projects in Cove Point, Maryland ("Cove Point I," Williams Energy) and Lake Charles, Louisiana (CMS Energy) specify the use of additional single containment tanks.

(Eyermann, Tr. 7053-54). Southern Natural Gas, an affiliate of El Paso, is planning on building a single containment LNG tank at Elba Island, Georgia. (Bryngelson, Tr. 6214). Memphis Light Gas & Water will likely build a single containment tank when it expands its current facility. (Hall, Tr. 1831, 1842). The tanks for Dynegy's Hackberry facility will be full containment tanks. (Puckett, Tr. 4541-42). Cheniere Energy's Freeport LNG tank will be double containment. (Eyermann, Tr. 6968). Williams Energy's Cove Point II tanks will be full containment. (Scorsone, Tr. 4987-88). Yankee Gas and Calpine have not determined what types of tanks will be built. (Andrukiewicz, Tr. 6464-65; Izzo, Tr. 6522).

3. Market shares and concentration in the LNG market prior to Acquisition

a. Tank projects awarded

63. There are four LNG import terminals in the United States: Everett, Massachusetts; Cove Point, Maryland; Elba Island, Georgia; and Lake Charles, Louisiana. (Glenn, Tr. 4068-69). PDM constructed the storage tanks for the Cove Point, Maryland and Lake Charles, Louisiana terminals. (CX 853 at PDM-HOU011488). CB&I constructed an LNG tank in Everett, Massachusetts and built three LNG tanks in Elba Island, Georgia. (CX 154 at CBI-PL002958, 961).

64. There are seventy five LNG peak shaving plants in the United States. (CX 125, at CBI-HOU 2017163-167). CB&I and PDM have constructed all but six of these. (CX 125, at CBI-HOU 2017163-167). The last time a firm other than CB&I or PDM built an LNG tank in the United States was in 1975, by Graver, a company that is now out of business. (CX 125 at PDM-HOU2017165; CX 1546).

65. From 1990 to the Acquisition, there have been nine LNG tank projects awarded. Of the nine awarded projects, CB&I won five projects and PDM won four. A project for [redacted] and a project for Atlanta Gas Light Co. were subsequently canceled. (Simpson, Tr. 3046, 3052-54; CX 1210, in camera; CX 824; CX

1212, in camera; CX 26 at CBI-PL069530, in camera; RX 757).

66. LNG tank awards to CB&I are: South Carolina Pipeline Corp. (1991); Liquid Carbonic (1992); Memphis Light Gas & Water ("MLGW") (1995); [redacted]; Pine Needle LNG Co. (1995). LNG tank awards to PDM are: Citizens Gas & Coke Utility (1991); Enron (1997); Atlanta Gas Light Co. (1998); Cove Point I (2001). (Simpson, Tr. 3046, 3052-3055; CX 1210, in camera; CX 824; CX 1212, in camera; CX 26 at CBI-PL069530, in camera; RX 757).

67. No foreign company has ever built an LNG tank in the United States. (Jolly, Tr. 4683, in camera; CX 125).

b. HHI calculations

68. From 1990 to Acquisition, CB&I's market share, based on sales, is 45.3%. PDM's market share, based on sales is 54.7%. (See Simpson, Tr. 3055-58; CX 1646). The combined market share of the two companies is 100%. Assigning shares based on sales, Dr. Simpson testified that the premerger HHI was 5,044, the change in the HHI as a result of the Acquisition was 4,956, and the post-acquisition HHI is 10000. (Simpson, Tr. 3055 (referencing CX 1646)).

69. Dr. Simpson calculated LNG HHI based on data from 1990 to Acquisition. (Simpson, Tr. 3703). Dr. Simpson admitted that he chose 1990 as the beginning date for his HHI analysis because 1990 was the cut-off date for discovery and thus his information dated back to 1990. (Simpson, Tr. 3704-05).

70. If data dating back to 1996 instead is used to calculate HHI, CB&I had no sales over that time period and the change in the HHI based on sales in the LNG market would be zero. (Harris, Tr. 7228; Simpson, Tr. 3721-22, 3743-44).

71. The LNG tank market is a thin market, with very few data points to look at. (Harris, Tr. 7218).

c. Bidders on projects

72. For all but two LNG tank projects from 1990 to Acquisition (MLGW and Atlanta Gas & Co.), no company other than CB&I and PDM submitted bids. (Simpson, Tr. 3670; CX 161 at CBI-PL006114).

73. On the 1994 MLGW LNG tank, in addition to CB&I, PDM, Lotepro/Whessoe International, and Black & Veatch/Toyo Kanetsu K.K provided bids. (Hall, Tr. 1804-05).

4. Respondents were each others' closest competitors in the LNG market

74. Dr. Harris acknowledges that prior to the merger, United States LNG tanks were built entirely by CB&I and PDM. (Harris Tr. 7196, 7521-22). According to Dr. Harris, "until roughly 2001 I guess, the competitors in the market, . . . were almost entirely limited to CB&I and PDM." (Harris, Tr. 7220).

a. Respondents' views

75. An LNG/Aerospace marketing presentation, dated November 2000, states that CB&I was "PDM's competition for LNG tanks alone." (CX 116 at PDM-HOU019176).

76. PDM's 2000 Business Plan states that "CB&I is PDM EC's domestic competition for LNG tanks." (CX 94 at PDM-HOU017580).

77. PDM characterized CB&I as "PDM EC's only competitor on domestic cryogenic, LNG, LPG, Ammonia and thermal vacuum projects." (CX 107 at PDM-HOU005016).

78. In a 1997 PDM Customer Briefing, PDM determined that

with "only two capable LNG tank builders in the U.S. (PDM and CB&I) our teaming with Air Products has essentially put Lotepro and other liquefaction design companies out of the LNG business in the domestic U.S." (CX 113 at PDM-HOU014838).

b. Industry views

79. Industry participants recognize that prior to the merger, CB&I and PDM built nearly all of the field-erected LNG tanks in the United States. (Kistenmacher, Tr. 891; Outtrim, Tr. 714-15, in camera ("From 1965 through '97 or so, the only two companies pretty much across the board that built LNG plants in the United States were PDM and CB&I"); Cutts, Tr. 2390 (CB&I and PDM "dominated the marketplace significantly and the interpretation by most people would have been that any large cryogenic projects in the United States would have been built by CB&I or PDM.")).

80. Robert Davis, Director of HYCO Services for Air Products, testified that "virtually all, with just very few exceptions, of the LNG tanks in this country had been built by CB&I and PDM." (Davis, Tr. 3131-32).

81. John Newmeister, Vice President of Marketing and Business Development at Matrix Services, Inc., explained that historically the suppliers of LNG tanks in the U.S. were "CB&I, PDM and possibly Graver," but with Graver's exit and CB&I's acquisition of PDM, "the list of qualified LNG tank suppliers decreased to one." (Newmeister, Tr. 2166).

82. Brian Price, Vice President of LNG Technology for Black & Veatch, who competed against CB&I and PDM for the MLGW LNG project, saw first-hand that "the two competitors with the lowest prices were CB&I and PDM." (Price, Tr. 558).

c. Competition between Respondents lead to lower prices

83. In 1994, MLGW sought bids for the construction of a peak-shaving plant in Capleville, Tennessee. (Hall, Tr. 1778). Mr. James Clay Hall, project engineer and manager for MLGW,

believed that "essentially we had two viable companies in the United States that could compete" for the project - CB&I and PDM. (Hall, Tr. 1799-1800). Nevertheless, MLGW encouraged Black & Veatch, an engineering firm, "to team up with a foreign tank builder to compete," and also encouraged Lotepro, a German engineering firm, to compete in the bidding process. (Hall, Tr. 1799).

84. PDM was the lowest bidder for the MLGW project, but PDM's bid was rejected as non-conforming to the specifications. (Price, Tr. 560; Hall, Tr.1877-78). The prices quoted by CB&I and PDM were comparable. (Hall, Tr. 1876). CB&I provided the next lowest bid at $ 10,500,000. (Price, Tr. 560; Kistenmacher, Tr. 899; CX 829 at 5). Lotepro/Whessoe International's bid for the LNG tank was $ 15,000,000. (Kistenmacher, Tr. 899; CX 829 at 5). Black & Veatch/Toyo Kanetsu K.K's bid for the LNG tank was $ 16,700,000. (Price, Tr. 648).

85. The tank was awarded to CB&I and included an [redacted]. (Harris, Tr. 7501; CX 906 at CVI 031076-HOU, in camera).

86. In 1998, Atlanta Gas Light Company ("Atlanta") sent requests for bids to CB&I, PDM/Air Products, and a third competitor, Marlborough Enterprises, for a proposed LNG peak shaving facility. According to CB&I, "[Atlanta] considered the Marlborough bid more of a courtesy proposal with the real competition between CB&I and PDM/AP." (CX 161 at CBI-PL006113). Atlanta awarded the business to PDM because it offered a lower price than CB&I [redacted] and a shorter construction schedule. (CX 161 at CBI-PL006114; CX 1321 at CBI-PL 069518, in camera). The Atlanta project was never built. (Simpson, Tr. 3054).

87. In 2000, CB&I and PDM competed against each other to win a 750,000 barrel LNG tank for Columbia LNG to be built at Cove Point. (CX 293 at CBI/PDM-H 4008141). Prior to the Acquisition, CB&I and PDM bidding against each other constrained pricing for the Cove Point project. F. 184-85.

5. Competition in the LNG market from Acquisition to time of trial

88. The parties presented evidence on numerous LNG projects announced recently. LNG projects that are outside the United States are outside the relevant geographic market. Findings relating to tank projects in the relevant market follow.

a. Dynegy's Hackberry Facility

89. Dynegy is currently scheduled to build a large LNG import facility that will be located on the Calcasieu River, south of Lake Charles, Louisiana, in the town of Hackberry. (Puckett, Tr. 4539). The facility will contain three LNG full containment tanks, two docks for receiving LNG ships, pump and vaporization capacity of 1.5 billion cubic feet per day, and roughly 30 miles of pipeline to move the gas from the terminal to other interstate pipelines for delivery. (Puckett, Tr. 4539-40). When completed, the Hackberry facility will be the largest LNG regasification facility in the United States. (Puckett, Tr. 4540).

90. Dynegy estimates that the approximate dollar value for the entire project is somewhere between $ 550 to $ 700 million. (Puckett, Tr. 4565). Dynegy estimates that each of the three LNG tanks will cost around $ 40 or $ 50 million. (Puckett Tr. 4566).

91. Dynegy asked four tank builders, Toyo Kanetsu K.K. ("TKK"), S.N. Technigaz ("Technigaz"), Skanska AB ("Skanska")/Whessoe International ("Whessoe"), and CB&I, to provide lump-sum turnkey bids for the construction of the Hackberry LNG tanks. (Puckett, Tr. 4552-53).

92. As part of the bid procedure, Dynegy required CB&I to submit its drawings, technical information and a firm price to Black & Veatch, Dynegy's consultant. (Glenn, Tr. 4130-31).

93. Black & Veatch had concerns that if a domestic tank manufacturer did not participate in the bid contest, Dynegy would

receive higher prices for the tanks. (Price, Tr. 622).

94. CB&I met with Dynegy and indicated that it was uncomfortable providing a bid given that Black & Veatch, a major competitor, was acting as the EPC contractor, and was under contract with Skanska/Whessoe. Skanska/Whessoe was a bidder for the LNG tanks. (Glenn, Tr. 4411). CB&I did not want Skanska to obtain its bidding information or to gain access to its prices and designs. (Puckett, Tr. 4577-78). Further, given these circumstances, CB&I believed that its chances of being awarded the project were slim. (Glenn, Tr. 4411). Prior to the bid due date, CB&I indicated to Dynegy that it was not going to submit a bid, however, CB&I was prepared to submit a proposal to cover the construction of the entire project on a turnkey basis. (Puckett, Tr. 4559). CB&I told Dynegy that the "project as structured does not fit our corporate strategy." (CX 139 at CBI 019779-HOU).

95. Generally, "turnkey, design build projects typically return higher margins than standalone storage tank projects." (CX 660 at PDM-HOU 005013). Scorsone agreed that industry participants view a turnkey project to result in "higher margins." (Scorsone, Tr. 2812-13).

96. CB&I sent Dynegy a letter expressing its decision not to submit a tank-only bid. (Glenn, Tr. 4133-34; RX 143). In its letter, CB&I again offered to construct the Hackberry facility on a turnkey basis. (RX 143). Dynegy rejected CB&I's second attempt to propose a turnkey approach. (Puckett, Tr. 4559-60).

97. After learning of CB&I's decision not to bid, Dynegy further solicited a tank-only bid by offering to let CB&I submit its bid directly to Dynegy and promising not to share the information with Black & Veatch. (Puckett, Tr. 4578; Glenn, Tr. 4134-35; RX 144).

98. Dynegy received bids sometime after February 1, 2002 from TKK/AT&V, Skanska/Whessoe, and Technigaz/Zachry. (Puckett, Tr. 4556). All three of the bids Dynegy received met its

technical expectations and were within Dynegy's expected price range. (Puckett, Tr. 4557).

99. CB&I decided that if Dynegy would accept and evaluate the bids itself, CB&I would submit a tank-only bid. (Glenn, Tr. 4136). CB&I communicated its decision to Dynegy within two to three weeks after it received Dynegy's offer. (Glenn, Tr. 4136). CB&I requested to submit a tank-only bid in March of 2002. (Glenn, Tr. 4412; Puckett, Tr. 4578).

100. Dynegy responded to CB&I's request by informing CB&I that Dynegy was satisfied with the three tank-only bids it had received and telling CB&I that it was too late in the process to accept its bid. (Puckett, Tr. 4559-60; Glenn, Tr. 4137).

101. [redacted] (Jolly, Tr. 4690-91, in camera). [redacted] (Jolly, Tr. 4760, in camera).

b. CMS Energy, Lake Charles, Lousisiana Expansion

102. CMS Energy ("CMS") is planning to build one single containment tank expansion to its existing Lake Charles, Louisiana facility. (J. Kelly, Tr. 6260). The CMS expansion project will involve constructing an LNG tank on a site that already contains numerous single containment LNG tanks. (Eyermann, Tr. 7053-54).

103. [redacted] (J. Kelly, Tr. 6284, 6292, in camera). [redacted] (J. Kelly, Tr. 6293, in camera).

104. [redacted] (RX 595 at CBI 060850, in camera). [redacted] (Scorsone, Tr. 5075-76, in camera) [redacted] (RX 595 at CBI 060850, in camera).

105. CMS Energy has awarded the tank portion of the contract to CB&I over Skanska/Whessoe. (Glenn, Tr. 4399).

c. El Paso/Southern LNG: Elba Island

106. [redacted] (Scorsone, Tr. 5077-78, in camera). [redacted] (Scorsone, Tr. 5078, in camera).

107. [redacted] (RX 640 at CBI 069126, in camera). [redacted] (Scorsone, Tr. 5079, in camera).

d. Poten & Partners

108. CB&I is negotiating a sole-source contract to construct an LNG import terminal for Poten & Partners in the Northeastern United States. (Glenn, Tr. 4399).

e. British Petroleum

109. British Petroleum ("BP") is a global petrochemical company based in Britain with operations all over the world. (JX 33 at 19-20 (Sawchuk, Dep.)). BP is evaluating the possibility of constructing three new LNG import terminal facilities in the United States. (JX 33 at 9-10 (Sawchuk, Dep.)).

110. BP has decided to work with CB&I on the front end development of these projects. (Glenn, Tr. 4180). If BP is satisfied with CB&I's pricing, schedule and terms and if the projects move forward, BP has indicated that CB&I will be awarded those jobs. (Glenn, Tr. 4180).

111. Generally, a sole-source supplier can earn higher margins than if competing against other firms in a competitive bidding situation. (See Kamrath, Tr. 2030 ("we found that always a competitive bid resulted in a better cost for us, lower cost [than 'sole sourcing']"); Outtrim, Tr. 720-21, in camera (cost of sole-sourced LNG tank from CB&I was [redacted] more than comparable facilities). However, using one contractor may provide an owner with greater flexibility, lower costs, and may save time when a project is under development. (Bryngelson, Tr. 6134; Scorsone, Tr. 4959).

112. In an internal memorandum discussing the status of BP's LNG re-gas terminals and storage tanks and status of work with CB&I, BP noted, "there is less competition than we would like on a regional basis. Since their acquisition of PDM, CB&I now dominate the US market." (CX 693 at BP 01 027). Having assessed the firms that could supply the LNG tanks as a subcontractor or as a main contractor, BP asked what would be the best way of going forward. BP's "key choices in the US will be: - do we form a closer relationship with CB&I in order to guarantee access to the resources we need for our US regas projects? - or do we deepen the market in the US by encouraging competition?" (CX 693 at BP 01 028).

113. In an internal memorandum assessing competition in the LNG market in August 2001, BP stated: "since the acquisition of PDM, a couple of companies have come forward to state that they can build LNG tanks in the US. . . . [However], the reality for today is that in the US, [CB&I is] the leading company in the LNG Tank business and the other competitors will need to demonstrate their capabilities in this market." (CX 691 at BP 10 032).

f. Cove Point II

114. Williams Energy ("Williams") has plans to add between four and six new LNG tanks to its existing Cove Point facility in Cove Point, Maryland ("Cove Point II expansion").

(Scorsone, Tr. 4987-88). These additional tanks are required to be full-containment designs because of property limitations at Cove Point. (Scorsone, Tr. 4988).

115. CB&I has submitted budgetary pricing for the Cove Point II expansion. (Scorsone, Tr. 4962; Glenn, Tr. 4148).

116. TKK, in partnership with DYWIDAG and AT&V, submitted budgetary pricing to Halliburton KBR for the Cove Point II expansion. (RX 185 at TWC 000003). Under this arrangement, TKK would execute the engineering, procurement,

and select vendors/subcontractors. (RX 185 at TWC 000036). AT&V will be responsible, under TKK's direct control, for site construction and fabrication of materials done in the U.S. (RX 185 at TWC 000036). DYWIDAG will be responsible for the civil engineering aspects of the facility. (RX 185 at TWC 000035).

g. Yankee Gas

117. In 2001, Yankee Gas, a natural gas distribution company, initiated plans to construct an LNG peak shaving facility in Waterbury, Connecticut. (JX 21 at 17-18 (Andrukiewicz, Dep.); Andrukiewicz, Tr. 6439-40).

118. During the first quarter of 2001, Yankee Gas retained the services of CHI Engineering ("CHI"), a consulting firm, to perform a preliminary engineering and budget study. (JX 21 at 23 (Andrukiewicz, Dep.); CX 1507 at CBI 059483).

119. On April 23, 2001, CHI issued a request for prices exclusively for the LNG tank portion of the project rather than "facility turnkey pricing." (CX 1507 at CBI 059483). CHI's request was sent to CB&I, Skanska/Whessoe and Technigaz. (JX 21 at 24 (Andrukiewicz, Dep.)).

120. On May 4, 2001, CB&I wrote Chris Beschler, VP of Operations at Yankee Gas, that CB&I wanted to do the work on a turnkey basis but also expressed that CB&I would be "an excellent choice to support any project Yankee Gas Services Company may have in the LNG industry." (CX 417 at CBI 026845-HOU). Eric Frey, CB&I's representative to Yankee Gas, intended to "make every effort to restructure how the project will be bid and executed." (CX 430 at CBI 026934-HOU).

121. CB&I submitted its budgetary pricing to CHI on June 12, 2001. (RX 4 at 4). CB&I submitted rough pricing because: (1) the owner requested "broad" numbers; and (2) CB&I viewed CHI as a potential competitor. (CX 1507 at CBI 059483).

122. On October 26, 2001, Yankee Gas requested that CB&I submit a proposal for contracting for the facility directly to Yankee Gas. (CX 1507 at CBI 059484; see also CX 787 at CBI 065244, in camera) ([redacted]).

123. CB&I's budget estimate for the Yankee Gas project anticipates a margin of [redacted]. (RX 54 at CBI 026812-HOU, in camera; CX 421 at CBI 026843-HOU; Scorsone, Tr. 5317, in camera). CB&I cited the price paid for the Cove Point LNG tank in setting the price for Yankee Gas. (CX 421 at CBI 026843-HOU [redacted]).

124. [redacted] (CX 787 at CBI 065242, in camera).

125. CHI sent a second request of prices for the liquefaction process. (CX 1507, at CBI 059483). CHI received pricing information from Whessoe and Technigaz. (JX 21 at 24 (Andrukiewicz, Dep.); CX 1507 at CBI 059484).

126. Skanska/Whessoe sent CHI Engineering information regarding the Waterbury facility that included: preliminary design solutions; preliminary design data sheets complete with design drawings; and pricing information. (Andrukiewicz, Tr. 6445; RX 4 at 2). Skanska/Whessoe provided pricing information as part of its submission. (Andrukiewicz, Tr. 6446).

127. [redacted] (Jolly, Tr.4693, in camera). On June 12, 2001, in response to a request from Yankee Gas' consultant CHI Engineering, the alliance submitted a preliminary pricing proposal for an LNG storage tank. (RX 4 at 3). [redacted] (Jolly, Tr. 4693, in camera). [redacted] provided pricing information as part of its submission. (Andrukiewicz, Tr. 6446).

128. CHI no longer has a "contractual relationship" with Yankee Gas. (Andrukiewicz, Tr. 6460). CHI has been replaced by SEA Consultants. (Id. at 6445). Yankee Gas will "look to SEA to provide us with the potential builders of this facility." (Id. at 6452).

129. Yankee Gas has not determined whether Skanska/Whessoe or Technigaz are qualified to bid; the "pre-qualification" process has not started. (Andrukiewicz, Tr. 6451). SEA Consultants, the consultant that replaced CHI, will be responsible for evaluating the potential builders. (Andrukiewicz, Tr. 6451-52). At this stage, Yankee Gas has not "built the criteria by which we will evaluate any particular contract constructor of any component of the plant." (Andrukiewicz, Tr. 6453).

130. In the preliminary engineering report CHI submitted to Yankee Gas, CHI specifically proposed a double containment tank, with a concrete roof, in which both the inner tank and outer tank would be made of concrete. (Andrukiewicz, Tr. 6464-65). Mr. Andrukiewicz of Yankee Gas testified that Yankee Gas has "made no commitment on tank design." (Andrukiewicz, Tr. 6464-65).

131. An April 12, 2002 CB&I internal memo prepared by Eric Frey, the sales representative to Yankee Gas, states Yankee Gas was beginning to realize that concrete inner tanks were not common and not the norm and that more conventional designs using steel as the product container were equally as safe (or safer) and probably less expensive. Yankee Gas agreed to do their best to get the concrete inner tank requirement removed. (CX 1507 at CBI 059484).

132. CB&I has stated it might not bid on the Yankee Gas project if the design calls for a double concrete wall full containment LNG tank. (Scorsone, Tr. 4989-90; Glenn, Tr. 4141).

h. Freeport LNG

133. The Freeport LNG project is in the early design stages and may never be built. (Eyermann, Tr. 7043-44). At the time of trial, Freeport LNG had not yet filed for FERC approval of the terminal. (Eyermann, Tr. 6977).

134. Freeport LNG and its predecessor Cheniere Energy have never built an LNG facility before. (Eyermann, Tr. 7033).

Freeport LNG has not obtained any bids or selected a supplier for the LNG tanks planned for the Freeport, TX import terminal. (Eyermann, Tr. 7029). Mr. Volker Eyermann, LNG Technical Director of Cheniere Energy Company, has never been involved in evaluating or selecting an LNG tank supplier for a project, and has never reviewed the prices submitted by LNG tank bidders. (Eyermann, Tr. 7025-7028).

135. CB&I sent Freeport LNG a proposal to do the front end engineering and design to the level of detail that is required for FERC and as a first phase for the operation. (Eyermann, Tr. 7049-50). CB&I sought a sole-source arrangement; it wanted to be the complete engineer on the whole project from the start through the EPC contracting. (Eyermann, Tr. 7069).

136. Black & Veatch sent Freeport LNG a letter which indicated that it had formed an alliance with Whessoe to build LNG tanks in the Western Hemisphere. (Eyermann, Tr. 6992). Based on this document, Freeport LNG believes that Black & Veatch and Whessoe are "serious and trying to compete." (Eyermann, Tr. 6992).

137. Skanska/Whessoe met with Freeport LNG in August 2002 to discuss contracting strategies and general tank designs. (Eyermann, Tr. 6983). Skanska/Whessoe provided Freeport LNG with marketing materials. (Eyermann, Tr. 6983). Freeport LNG believes Skanska's worldwide LNG director expressed interest in competing for the Freeport LNG project. (Eyermann, Tr. 6981-82). Freeport LNG knows that Skanska/Whessoe has built LNG tanks in Dabhol, India, Trinidad, and Greece, and that Whessoe did a "very good" job on the Dabhol project. (Eyermann, Tr. 6980-81). Freeport LNG believes that Skanska/Whessoe is a potential supplier of LNG tanks and plans to solicit a bid from Skanska/Whessoe for the Freeport LNG project. (Eyermann, Tr. 6993).

138. TKK/AT&V approached Freeport LNG in 2001 for the proposed LNG project in Freeport, Texas. (Eyermann, Tr. 7000-01). TKK/AT&V prepared presentations on the companies'

capabilities, and discussed contracting capabilities. (Eyermann, Tr. 7000-01). Freeport LNG perceives that AT&V has quality welders which will be sufficient to perform the proposed LNG project in Freeport, Texas. (Eyermann, Tr. 7001-02). Freeport LNG also believes that TKK is a qualified tank constructor with the ability to adapt to different working conditions in different countries. (Eyermann, Tr. 7000, 7004-05). Freeport LNG plans on soliciting bids from TKK/AT&V, even though the partnership has never constructed a field-erected LNG tank in the U.S. (Eyermann, Tr. 7005).

139. Technigaz/Zachry approached Freeport LNG to present its alliance. (Eyermann, Tr. 6994). The alliance sent Freeport LNG marketing materials describing its expertise in liquefied gas facilities and Technigaz's experience building LNG tanks. (Eyermann, Tr. 6996-98). Freeport LNG believes that Technigaz is "keenly interested" in working on the Freeport LNG project. (Eyermann, Tr. 6996-98).

140. S&B contacted Freeport LNG and indicated it had combined its efforts with Daewoo to compete in the American market for LNG tanks. (Eyermann, Tr. 6976-77). Representatives from S&B and Daewoo had a meeting with Freeport LNG to discuss its capabilities, experience with current projects, and contracting strategies. (Eyermann, Tr. 6976-77; 7008). S&B and Daewoo also presented various brochures to Freeport LNG. (Eyermann, Tr. 7008). Based on these discussions, Freeport LNG requested Daewoo's LNG tank drawings to be used in connection with Freeport LNG's FERC application for its proposed LNG facility in Freeport, Texas. (Eyermann, Tr. 6976-77).

i. Calpine, Humboldt Bay

141. Calpine's Humboldt, California facility is "in the early stages of possible development;" there is only a 50% chance that the facility will be built. (Izzo, Tr. 6521-22). Calpine expects that new LNG tanks in the United States will be "at least double containment if not full containment," but if FERC authorizes the construction of a single containment LNG tank at Humboldt Bay,

Calpine will not build a double or full containment tank. (Izzo, Tr. 6492, 6522-23).

142. Calpine has not spoken to Skanska/Whessoe, Zachry/Technigaz or AT&V/TKK about the Calpine project. (Izzo, Tr. 6524-25). Mr. Lawrence Izzo, Calpine's Senior Vice President, testified that he would have to "guess" as to whether any of these three firms will provide a bid to Calpine, what the price will be, and how they would compare to CB&I's price. (Izzo, Tr. 6525). Izzo admits that he knows "nothing firsthand" about AT&V's capabilities, and that he has never "worked with any foreign firm on a U.S. LNG project." (Izzo, Tr. 6520, 6539). Whessoe is the only foreign firm with which Izzo has first-hand knowledge about its construction performance and prices, and this was based on Whessoe's work in India. (Izzo, Tr. 6519).

143. The only firms with which Izzo has worked with on a U.S. LNG construction project are CB&I and PDM. (Izzo, Tr. 6514-16). Further, the only firm with which Izzo has discussed the project is CB&I. (Izzo, Tr. 6524-25).

6. Recent entry in the LNG market

a. TKK/AT&V

144. Toyo Kanetsu K.K. ("TKK") is a Japanese company involved in the construction of low temperature and cryogenic tanks. (RX 872 at 2). TKK has completed 72 LNG storage tanks throughout the world. (RX 772 at 2-21; RX 818). TKK has built more double containment and full containment LNG tanks than any other constructor in the world. (Cutts, Tr. 2572-73). TKK's annual sales are approximately 34.9 billion Yen. (RX 872 at 24).

145. American Tank & Vessel, Inc. ("AT&V") is an engineering and construction firm that was incorporated in 1982. (RX 818). AT&V, based in Mobile, Alabama, offers complete turnkey services for, and has extensive experience in, the engineering, design, and fabrication of tanks, vessels and spheres. (RX 31 at 9; Carling, Tr. 4489). AT&V has engineering facilities

in Birmingham, Alabama; Houston, Texas; George County, Mississippi; and Mobile, Alabama. (RX 31 at 1). AT&V has fabrication facilities in George County, Mississippi and Houston, Texas. (RX 31 at 1).

146. TKK has extensive LNG experience outside the U.S., but has never built an LNG tank in the United States. (Cutts, Tr. 2336). AT&V has never built an LNG tank of any kind. (Cutts, Tr. 2393-94).

147. TKK has teamed with AT&V to supply LNG tanks in the United States. (Cutts, Tr. 2437-38). Pursuant to this partnership, TKK will "carry the lead responsibility" for engineering and design of the LNG tank. (Cutts, Tr. 2327). AT&V will supply the field labor for the erection of the LNG tank and share some of the responsibility for estimating the costs of the project. (Cutts, Tr. 2327-28). TKK will train AT&V employees on how to construct LNG tanks, including the use of TKK's welding equipment. (Cutts, Tr. 2379). Cutts anticipates that the newly trained AT&V employees will need a few years of experience constructing LNG tanks before they work as efficiently as experienced CB&I employees. (Cutts Tr., 2379-80). TKK's sales force will supplement AT&V's sales force in the LNG area. (Cutts, Tr. 2570).

148. AT&V has undertaken steps to research, design, and develop procedures associated with scheduling, welding technology, and general construction sequencing for LNG tanks. (Cutts, Tr. 2440). AT&V has researched and developed techniques to weld nine percent nickel steel. (Cutts, Tr. 2464).

149. Prior to its alliance with TKK, one LNG customer, BP, expressed that it did not view AT&V as an LNG tank supplier. AT&V "will need to demonstrate [its] capabilities in this market" first. (CX 691 at BP 01 032).

150. TKK/AT&V provided a bid to Dynegy for its Hackberry facility which met Dynegy's technical expectations [redacted]. F. 100-01. TKK, in partnership with DYWIDAG and AT&V, has

submitted budgetary pricing to Halliburton KBR for the Cove Point II expansion. F. 116. TKK/AT&V approached Freeport LNG to present their capabilities. F. 138.

b. Skanska/Whessoe

151. Skanska AB ("Skanska") is one of the world's largest construction groups, and is a well-established Swedish based civil contractor that has operated internationally for more than 50 years. (RX 839 at 4; RX 870 at 25). In 2002, Engineering News Record ("ENR"), a leading industry publication, ranked Skanska as the number one contractor in the world. (RX 736 at 1). Skanska earned an annual revenue of more than $ 14 billion in 2001. (RX 736 at 1). In August of 2000, Skanska acquired Whessoe International ("Whessoe"). (RX 770 at 33).

152. Whessoe is a 200 year old engineering and construction firm with a well established reputation in the international LNG business. (RX 908 at 1). Whessoe has been involved in various aspects of LNG storage for facilities throughout the world including India, Spain, Greece and Algeria. (RX 839 at 5-8).

153. Skanska/Whessoe has never built an LNG tank in the United States. (Eyermann, Tr. 6993).

154. Skanska/Whessoe is poised as a specialist EPC company combining contracting and risk management with engineering and design skills to offer its clients a complete package in the design and construction of facilities for cryogenic gas storage and handling. (RX 870 at 5). Skanska/Whessoe combines the engineering and construction skills of Skanska Construction with the design, engineering and procurement skill of Whessoe International. (RX 870 at 6). From its UK base, Skanska/Whessoe operates worldwide to design and build LNG tanks and terminals. (RX 870 at 5).

155. PDM noted Whessoe's historically poor performance in communications with consultants. In August 1999, Luke Scorsone wrote that he expected a potential customer, Unocal, to look

favorably upon PDM relative to Whessoe on a project, "given that Noell Whessoe has performed poorly at Trinidad and Dabhol." (CX 115 at PDM-HOU017554).

156. Skanska/Whessoe provided a bid to Dynegy for its Hackberry facility which met Dynegy's technical expectations [redacted]. F. 100-01. [redacted]. F. 103, 105. Skanska/Whessoe provided pricing information and preliminary design solution for the Yankee Gas project. F. 126. Skanska/Whessoe met with Freeport LNG to discuss contracting strategies and general tank designs. F. 137. Skanska/Whessoe spoke to [redacted] a number of times regarding its capabilities and desire to construct LNG tanks in the United States. (Sawchuck, Tr. 6087, in camera).

c. Technigaz/Zachry

157. French based SN Technigaz and its parent company earn an annual revenue of more than $ 3 billion and employ about 20,000 people. (Jolly, Tr. 4438). Technigaz has considerable experience in the design and construction of LNG tanks worldwide. (RX 43 at ZCC000005). Technigaz is one of the world's leading suppliers of liquefied gas facilities. (RX 773 at 1-2). Technigaz offers a broad range of services including: feasibility studies and conceptual design, basic and detail engineering, project management, procurement, quality control, construction, coordination of subcontractors, supervision and technical assistance, commissioning and start-up, and operation. (RX 773 at 3).

158. Technigaz has never built an LNG tank in the U.S. (Jolly, Tr. 4719, in camera). Technigaz currently has eight full-containment LNG tanks under construction around the world: Spain, Egypt and India. (Jolly, Tr. 4440). Technigaz believes it is the "largest contractor today in full-containment tanks worldwide." (Jolly, Tr. 4689, in camera).

159. [redacted] (Jolly, Tr. 4757, RX 738 at FTC001537 (Jolly, Dec.), in camera). [redacted] (RX 738 at FTC 001535 (Jolly, Dec.), in camera).

160. Texas-based Zachry Construction Corporation is a leading United States construction company, with sales of around $ 1.7 billion and more than 14,000 employees in 2001. (RX 43 at ZC 000002). In 2001, Zachry was ranked eighteenth in the annual ranking of top construction contractors by ENR. (RX 871 at 71). Zachry placed fifteenth overall among construction firms that also sold their own design work. (RX 871 at 71).

161. Zachry is an experienced civil contractor in the United States with licensed engineers and access to local labor in the United States. (Price, Tr. 656-57). Zachry began as a civil constructor and therefore has a great deal of knowledge about concrete construction. (Fahel, Tr. 1682-83, in camera). Zachry has unlimited bonding capacity. (RX 45 at ZCC 000039).

162. Zachry has never constructed an LNG tank. (Fahel, Tr. 1402).

163. In June or July of 2001, Technigaz took a step toward entering the United States market for LNG tanks by entering into a Memorandum of Understanding ("Memorandum") with Zachry. (Jolly, Tr. 4685, in camera). A press release announcing the joint venture was issued in January of 2002. (RX 43 at ZCC000002). In the press release, the alliance held itself out as pooling Technigaz's recognized turnkey LNG project expertise and broad-based knowledge of the market with Zachry's construction capabilities and strong positions in the Americas. (RX 43 at ZCC000002).

164. Since signing the Memorandum, Technigaz/Zachry [redacted] (Jolly, Tr. 4692, in camera; Fahel, Tr. 1650-51, 1689, in camera). Technigaz/Zachry provided a bid for Dynegy's Hackberry facility which met Dynegy's technical expectations [redacted] F. 100-01. [redacted] F. 127. Technigaz/Zachry approached Freeport LNG to present its expertise in liquefied gas facilities and Technigaz's experience building LNG tanks. F. 139.

165. Mr. Jean-Pierre Jolly, Vice President of Marking at SN Technigaz, stated that [redacted] (RX 738 at FTC001536 (Jolly,

Dec.); see also Jolly, Tr. 4753-54, in camera).

7. Barriers to entry in the LNG market

166. LNG tanks are "built out of fairly sophisticated materials. You don't just weld them up any old way . . . . The equipment is quite expensive to develop. You can go buy it, but the stuff you buy has to be modified and tailored, and then you have to build procedures around it. So it's not like you can go buy an automobile. It's unique equipment . . . ." (Cutts, Tr. 2379).

167. There are "tremendous safety considerations" regarding LNG tanks. (Price, Tr. 564-65). If LNG should leak from a tank, the vaporized LNG could lead to fires and death, and liability for losses. (Bryngelson, Tr. 6234-35; see also Blaumueller, Tr. 293-94).

168. To avoid catastrophes, customers seek experienced tank suppliers. "If you're going to be handling something like liquefied natural gas, you don't want some amateur putting it together. The results can be catastrophic." (Hall, Tr. 1789). Dr. Hans Kistenmacher, a vice president at Linde BOC Process Plants ("Linde"), testified that risks associated with leakage causes Lotepro to subcontract the design and construction of LNG tanks to companies that have a long track record of experience in constructing these facilities. (Kistenmacher, Tr. 903-05).

169. Companies, such as Black & Veatch and Air Products, that provide the liquefaction systems and other components, but not the LNG tanks, do not want to partner with an inexperienced LNG tank supplier. (CX 157 at CBI-PL003348 (Black & Veatch "are looking to partner on a project with a firm which has better experience"); Davis, Tr. 3190-01 (Air Products chose to partner with PDM "because we needed to have somebody who would be competent to work with and capable of project execution, and they had demonstrated those capabilities.")).

170. There is a learning curve in building LNG tanks, because "any time you perform work for the first time you would incur

experience that you can improve when you perform the same work the second or third time or subsequent times." (Fahel, Tr. 1637-38, in camera).

171. Builders of LNG tanks benefit from learning by doing. Samuel Leventry, CB&I's Vice President of Technology Services, testified: "Again, if you have the same people doing the same work more continuously there's going to be some efficiencies in that." (CX 497 at 68 (Leventry, Dep.); CX 392 at 4).

172. CB&I has worked many "years" to "streamline its processes" and lower its costs. (CX 392 at 3). Experience can reduce a firm's costs. A Strengths, Weaknesses, Opportunities, and Threats ("SWOT") Analysis of CB&I acknowledges that its precontract costs for LNG projects has decreased as CB&I moves up the experience curve. (CX 629 at CBI-PL033069, in camera).

173. Newmeister of Matrix testified that if it were to enter the LNG tank market, it would be likely to operate at a higher cost level than an experienced supplier like CB&I for some time while it learned from its mistakes. (Newmeister, Tr. 1605-06).

174. A new entrant would be disadvantaged by not having a fabrication facility. [redacted] testified that the lack of a fabrication plant currently obstructs the [redacted] partnership's penetration of the LNG market. ([redacted], Tr. 1635-37, in camera). Companies that have fabrication capabilities have lower total installed cost because they would not have to incur the additional markup that's normally associated with a third party subcontractor. ([redacted], Tr. 1635-37 in camera). [redacted] considered that its pricing will be perhaps higher than others who have their own fabrication facilities. ([redacted], Tr. 1635-37 in camera).

175. A new entrant must have a sufficiently large revenue base to enhance the tank supplier's ability to offer the financial guarantees necessary to win contracts. (CX 891 at 43, 47 (Glenn, Dep.); Izzo, Tr. 6511-12). Customers require the tank supplier "to provide a bond to the contractor . . . that guarantees the project

will get finished." (Stetzler, Tr. 6385). An entrant's ability to bond a project, or bonding capacity, "has to do with your financial strength, and also the size of your company." (Stetzler, Tr. 6385).

176. LNG facility contracts often impose large liquidated damage provisions on the constructor if the project is completed late. (CX 891 at 46 (Glenn, Dep.); Izzo, Tr. 6485-86; Bryngelson, Tr. 6154-55). Customers want suppliers with a large asset base, because there is a larger target to go after if the contractor is late in completing the project and the customer sues for liquidated damages. (Bryngelson, Tr. 6154-55; JX 27 at 69 (N. Kelley, Dep.); Izzo, Tr. 6485-86; CX 1121 at CBI-HWH 053087).

8. Alleged post-acquisition price increases

a. MLGW

177. In 2002, Memphis Light Gas & Water ("MLGW") sought budgetary prices for another LNG peak shaving tank. (Hall, Tr. 1824-1825). In January 2002, MLGW contacted CB&I's Eric Frey, a business development manager. MLGW called CB&I because MLGW has a "working relationship with CB&I", Hall has "contacts there," and MLGW believed CB&I is the ["only ones (sic)"] that can provide ["reliable"] tank pricing in the United States. (Hall, Tr. 1825-27). MLGW did not contact other LNG firms because MLGW cannot "trust" the pricing information from foreign firms. (Hall, Tr. 1827-28). Hall stated that he would need a lot of additional information from Whessoe and TKK to determine if they were viable competitors in the U.S. (Hall, Tr. 1832-33, 1846-48, 1853-54).

178. On January 15, 2002, Marty Smith, CB&I's Vice President of Global LNG Sales, instructed Frey to quote MLGW [redacted] for a 300,000 barrel tank. (RX 732 at CBI 071501, in camera; CX 422 at CBI-E 009500, in camera; Scorsone, Tr. 5323, in camera). Smith explained that Frey's original estimate was [redacted]. (CX 422 at CBI-E 009500, in camera.) Smith also

instructed Frey [redacted] (CX 422 at CBI-E 009500, in camera).

179. On January 15, 2002, Frey e-mailed Smith with the proposal to quote MLGW a price that [redacted] (RX 732 at CBI 071501, in camera).

180. Margins contained in budget prices are not representative of the actual profit margin that CB&I seeks in fixed, firm price bids. (Scorsone, Tr. 5003). Because CB&I's internal budget documentation does not contain a line item for these contingencies and uncertainties that exist when preparing budget pricing, CB&I accounts for these contingencies in the margin line calculation of the budget estimate. (Scorsone, Tr. 5002-03). Thus, although a margin line item on a budget price may be [redacted], this does not mean that CB&I will seek a [redacted] profit margin if, and when, a firm, fixed price bid is submitted. (Scorsone, Tr. 5003).

181. On January 16, 2002, Frey quoted MLGW a budget price of [redacted], almost [redacted] higher than what Frey had originally prepared. (RX 732 at CBI 071499-500, in camera; CX 422 at CBI-E 009500, in camera; Scorsone, Tr. 5323, in camera). [redacted] (RX 732 at CBI 071499, in camera). [redacted] (CX 422 at CBI-E 009500, in camera).

182. The budget price CB&I provided "was not a buying offer." (Scorsone, Tr. 5250). Rather, the estimate that CB&I provided to MLGW was a SWAG -- a "scientific wild assed guess." (Hall, Tr. 1865-66). Hall testified that MLGW did not provide CB&I nearly enough information to receive an accurate price, and agreed that "volumes more" information would be required for this purpose. (Hall, Tr. 1865-66). Because MLGW was asking CB&I to "extrapolate" into the future, and because it did not provide detailed information, Hall was not expecting a number of more than plus or minus 40% accuracy. (Hall, Tr. 1866-68).

183. On July 17, 2002, Clay Hall of MLGW e-mailed Frey to comment that "we all know that CB&I/PDM is, in fact, the only

qualified US based firm capable of executing the work." (CX 786 at CBI 065153). Hall added that MLGW is "concerned about where we're going to get competition for our bids in the next few years . . . because we don't see anyone out there with experience that could come into the market and compete with CB&I/PDM." (Hall, Tr. 1830).

b. Cove Point I

184. In 2000, CB&I and PDM competed against each other for a 750,000 barrel LNG tank for Columbia LNG ("Columbia") to be built at Cove Point. (CX 293 at CBI/PDM-H 4008141).

185. In January 2000, PDM's Mike Miles announced to PDM staff working on the Cove Point bid, including Jeff Steimer, that (a) "PDM is bidding against CB&I on this one;" and (b) PDM needed a "very competitive price to be successful." (CX 293 at CBI/PDM-H 4008141).

186. On March 29, 2000, Gary Marine of CB&I relayed minutes of a meeting that he had with a representative from Columbia. (CX 226 at CBI-PLO 44978, in camera). Marine wrote: "I told him I bet that by getting two bids, they saved a lot of money over whatever budget they had previously (from PDM). I told him I guessed the price came down at least [redacted] million, and he said it was more like [redacted] million. So PDM had given them a budget of something like [redacted] million for this work." (CX 226 at CBI-PL044978, in camera).

187. Marine advised that CB&I should reduce its price to [redacted] (CX 226 at CBI-PL044979, in camera).

188. Columbia sold Cove Point to Williams Energy ("Williams") in June of 2000. (See CX 863 at CBI/PDM-H 4018410; Harris, Tr. 7724-25). In June of 2000, PDM's Miles reminded the team that Cove Point was a "very competitive situation," and, "in accordance with Luke's [Scorsone's] direction," emphasized the need to get to "the lowest price possible" and to "save every dollar we can." (CX 863 at

CBI/PDM-H 4018410).

189. Williams considered an increase in the size of the Cove Point tank from 750,000 barrels to 850,000 barrels and initiated a second phase of bidding for the 850,000 barrel tank. (CX 863 at CBI/PDM-H 4018410; Scorsone, Tr. 4964-66).

190. On August 29, 2000, CB&I and PDM agreed to merge. (CX 21 at PDM-C 1000003).

191. Williams' modifications of the project's specifications and increasing the tank size from 750,000 barrels to 850,000 barrels required PDM to re-design and re-price the tank. (Scorsone, Tr. 4964). The re-design took approximately 200 hours, and the follow-up estimating for the project took between 100 and 200 hours. (Scorsone, Tr. 4964).

192. CB&I did not submit a price on the 850,000 barrel tank. (Scorsone, Tr. 4965).

193. On September 8, 2000, PDM quoted Williams a budget price of [redacted] for an 850,000 barrel tank and [redacted] for a 750,000 barrel tank. (CX 1388 at CBI/PDM-H 4015363, in camera).

194. After the September 8, 2000 budget price, PDM prepared a new estimate for the 850,000 barrel tank because the "tank geometry changed." (Scorsone, Tr. 4966).

195. PDM held a bid review meeting to discuss the re-estimated cost of the 850,000 barrel tank for the Cove Point facility. (Scorsone, Tr. 4967-68). The participants at the meeting included Luke Scorsone, acting as the chair of the meeting; Steve Owens, Vice President of Operations for PDM; Jeff Steimer, the sales representative for the project; Mike Wilson, a manager of PDM's estimating group; Kurt Schneider, a manager of the engineering group; and Ron Blum, who was the head of sales. (Scorsone, Tr. 4968). As reflected on a document created for evaluating an estimate in a formal bid review meeting, the

materials estimate and engineering estimate were revised at the bid review meeting. (Scorsone, Tr. 4971-73; CX-1160 at CBI/PDM-H 4007485, in camera). PDM's management team increased the cost estimates for the Cove Point project because there was "a very uncertain start date for this project . . . ." (Scorsone, Tr. 4978).

196. [redacted]. (CX 1160 at CBI/PDM-H 4007486-7487, in camera). [redacted] (CX 1160 at CBI/PDM-H 4007486-7487, in camera).

197. Overall, Steimer viewed the November 2 [redacted] bid for Cove Point as [redacted]. (CX 1160 at CBI/PDM-H 4007486, in camera).

198. Neither Scorsone nor the bid review group agreed with Steimer's comments with respect to the revised estimates for fabrication, field-erection, subcontracting, and project management or regarding the final bid submitted to Williams. (Scorsone, Tr. 4981-82).

199. PDM entered into sole-source negotiations with, and was granted a letter of intent by, Williams to construct the expansion of the Cove Point facility. (Scorsone, Tr. 4963). The letter of intent was ultimately transferred into a negotiated contract after PDM was acquired by CB&I in February 2001. (Scorsone, Tr. 4963).

200. The price of the Cove Point project that CB&I is constructing for Williams is currently at [redacted]. (Scorsone, Tr. 5333, in camera). Since November 3, 2001, the price increased from [redacted] to [redacted] for the 850,000 barrel tank. (Scorsone, Tr. 5333-34, in camera). Scorsone testified that this increase occurred because: [redacted] (Scorsone, Tr. 5334, in camera).

201. The current price of [redacted] million includes a gross profit margin of [redacted]. (Scorsone, Tr. 5334, in camera). The gross profit margin includes SG&A (sales and general administrative) costs plus profit. (Scorsone, Tr. 5335, in camera).

202. PDM's November 2, 2000 bid of [redacted] anticipates a profit of [redacted], or [redacted] on the sold price. (CX 1160 at CBI/PDM-H 4007485, in camera).

203. Scorsone testified that CB&I was able to increase its profit due to [redacted] (Scorsone, Tr. 5336, in camera). [redacted] (Scorsone, Tr. 5337, in camera). [redacted] (Scorsone, Tr. 5337-38, in camera).

9. Sophistication of customers

204. LNG owners do not routinely purchase LNG tanks. (Bryngelson Tr. 6060-61, 6208) (the last time El Paso purchased an LNG tank was in the late 1970's or early 1980's); (Eyermann, Tr. 7033) (Freeport LNG and its predecessor Cheniere Energy have never built an LNG facility before); (J. Kelly, Tr. 6257) (the tanks at CMS's only U.S. LNG terminal were built in the late 1970's).

205. Most owners of LNG facilities are not very knowledgeable about procuring LNG tanks. (Outtrim, Tr. 705, in camera; see CX 1507 at CBI 059484 (Yankee Gas must hire someone to evaluate pricing because "they know very little about the LNG industry and they were banking heavily on the report from CHI); CX 138 at CBI 019913-HOU ("Dynegy is not willing to take bids directly themselves since they do not have the staff, experience, and knowledge to analyze the bids and make an informed selection."); (JX 26 at 53 (J. Kelly Dep.) [redacted]

206. Past pricing for LNG tanks is "not something that's well known." (Bryngelson, Tr. 6207). Because of confidentiality provisions, "experienced engineering firms such as Kellogg . . . can provide a rough benchmark, but that's about the best we can do." (Bryngelson, Tr. 6239).

207. Even with open book sole-source contracts, customers do not know how a supplier's pricing compares to that of other suppliers. Bryngelson of El Paso, which has an open book contract with CB&I for its Bahamas LNG terminal, admits to being "in the dark in terms of knowing what the costs are for LNG tanks suppliers." (Bryngelson, Tr. 6238, see also 6177-78).

F. Effects on Competition in the LPG Market

1. Overview of the LPG market

208. Typically, LPG tanks are manufactured the same way as LNG tanks, but for storage at a lower temperature. (G. Glenn, Tr. 4073).

209. The time needed to fabricate and construct an LPG tank varies. For a small LPG tank, construction can take 8 to 10 weeks of fabrication in the shop -- from buying steel, fabricating, and preparing to send out the pieces. The tank construction process can take 16 weeks in the field. Finally, the remaining site work and piping systems occur after the tank is completed. (N. Kelley, Tr. 7109-10). In an example of a large LPG tank, 60 weeks to field-erect the tank was scheduled. (Maw, Tr. 6634).

2. Market shares and concentration in the LPG market prior to Acquisition

a. Tank projects awarded

210. From 1990 to the Acquisition, CB&I and PDM built the majority of LPG tanks constructed in the United States. Of the eleven LPG tank projects awarded in the United States between 1990 and 2001, CB&I won five and PDM won four. From 1994 to the Acquisition, of the five LPG tank projects built in the United States, CB&I won zero and PDM won three. Morse Tank and AT&V each won one in 1994 and 2000, respectively. (CX 486; CX 824; CX 1210, in camera; CX 1212 at 7, in camera; CX 397, in camera; (CX 396 at 2, in camera; RX 757; Simpson, Tr. 3368, 3372-3375).

211. LPG tank awards to CB&I are: Texaco Chemical (1990); Intercontinental Terminals (1991); Mitsui & Co. (1991); Hess Oil (1992); and Koch Refining (1993). LPG tank awards to PDM are: Koch Hydrocarbons (1991); Enron (1995); Sea-3 (1996); Sea-3 (1998). (CX 486; CX 824; CX 1210, in camera; CX 1212 at 7, in camera; CX 397, in camera; (CX 396 at 2, in camera; RX 757; Simpson, Tr. 3368, 3372-3375).

212. Dr. Simpson's calculated each company's market share from 1990 through 2001. In his calculation, he included the 2001 LPG project for BASF in Port Arthur, Texas that CB&I won. (Simpson, Tr. 3375). The Port Arthur project was awarded post-acquisition. (Simpson, Tr. 3686, 3829).

213. Using data dating back to 1990 and including a post-acquisition win by CB&I, Dr. Simpson calculated the data to the advantage of Complaint Counsel to conclude that, based on sales, PDM had a 34.5 percent market share, CB&I had a 56.7 percent market share, Morse Tank had an 8.2 percent market share, and AT&V had a 0.6 percent market share. (Simpson, Tr. 3404). Using this time frame, the combined market share of the merged company is 91.2 percent. (Simpson, Tr. 3404-3405). If the post-acquisition win is excluded, the combined market share of the merged company is 90.9 percent. (See CX 486; CX 824; CX 1210, in camera; CX 1212 at 7, in camera; CX 397, in camera; CX 396 at 2, in camera; RX 757; Simpson, Tr. 3368, 3372-3375).

214. On November 30, 2001, CB&I acquired Morse Tank, the firm that had accounted for the next most substantial share of LPG sales prior to the Acquisition. (Maw, Tr. 6545). If Morse's market share is added to CB&I's market share, the combined market share of Morse, CB&I and PDM is nearly 100%. See F. 213.

215. Respondents' expert, Dr. Harris acknowledged that CB&I and its two acquisitions, PDM and Morse, account for all but one of the sales of LPG tanks in the United States from 1990 to the time of the Acquisition. (Harris, Tr. 7522).

b. HHI calculations

216. Complaint Counsel's expert, Dr. John Simpson, calculated the HHI index for the LPG market from 1990 to early 2001. (Simpson, Tr. 3368).

217. Dr. Simpson's HHI calculation included the 2001 LPG project for BASF in Port Arthur, Texas that CB&I won. (Simpson, Tr. 3375). The Port Arthur project was awarded post-acquisition. (Simpson, Tr. 3686, 3829).

218. Dr. Simpson calculated that, using data from 1990 to 2001, CB&I's acquisition of PDM increased LPG market concentration, as measured by the HHI, by 3911 points to a level of 8380. (Simpson, Tr. 3404-3405).

219. If data dating back to 1994 is used and the 2001 post-acquisition win by CB&I is excluded, Dr. Simpson acknowledged that CB&I had no sales over that time period and that the change in the HHI based on sales in the LPG market would be zero. (Simpson, Tr. 3746-47).

220. Competition in the LPG market is extraordinarily thin, and the market is almost nonexistent. (Harris, Tr. 7281-82). HHI calculations are not accurate in determining the concentration in the LPG market due to the extraordinarily thin market and almost nonexistent demand. (Harris, Tr. 7281-82)

221. Use of data from 1990 to Acquisition does not accurately depict market concentration because it fails to take into account that CB&I had not won a job since 1993. (Harris, Tr. 7287).

c. Bidders on projects

222. For the Ferndale project that was won by Morse, there were four bidders: Morse, CB&I, PDM and San Luis Tank. (Maw, Tr. 6550.)

223. For the Tallaboa project that was won by PDM in 1995, the parties did not present sufficient evidence to determine which companies bid or whether competition constrained prices on this project.

224. For both Sea-3 projects, in 1996 and 1998, CB&I and PDM were the only bidders -- with PDM winning and constructing both projects based on a lower price (roughly 4% lower). (Warren, Tr. 2298-2300, 2302-04, 2305, 2306).

225. For the Deer Park project in 2000, CB&I, AT&V, and Matrix bid on the project. PDM was not a bidder. (N. Kelley, Tr. 7083-84).

226. The value of the 2000 Deer Park project built by AT&V is a small fraction of the value of the other LPG tanks sold during this period. (Simpson, Tr. 3394-95).

227. CB&I's acquisition of PDM combines the two strongest sellers of LPG tanks in the United States. (Simpson, Tr. 3406). According to Dr. Simpson: "Prior to the acquisition . . . CB&I's pricing was constrained principally by the presence of PDM EC. When CB&I acquired PDM EC, then CB&I's pricing would be constrained by much weaker competitors and constrained at a higher price." (Simpson, Tr. 3406). Dr. Simpson testified that he believed that CB&I's acquisition of PDM would lead to higher prices for LPG tanks. (Simpson, Tr. 3406).

3. Respondents were each others' closest competitors in the LPG market

228. Respondents referred to each other as a "formidable" competitor (CX 216 at CBI-PL-033886) or "major" competitor in the LPG market (CX 116 at PDM-HOU019181).

229. PDM believed CB&I was its "only competition on tanks over 100,000 bbl [barrels]." (CX 303 at CBI/PDM-H 4001285). PDM characterized CB&I as "PDM EC's only competitor on

domestic cryogenic, LNG, LPG, Ammonia and thermal vacuum projects." (CX 107 at PDM-HOU005016).

230. Scorsone testified that CB&I was "PDM EC's major competitor" for LPG tanks. (Scorsone, Tr. 5157, 5173-74; CX 94 at PDM-HOU017580). Scorsone also admitted that CB&I was PDM's only competitor on domestic LPG projects. (Scorsone, Tr. 5183; CX 660 at 5).

231. Dr. Harris testified that prior to the Acquisition, neither CB&I nor PDM could increase prices of LPG tanks in the United States without risking that each would lose sales to the other. (Harris, Tr. 7539-40, 7543-44).

232. Amy Warren, Contracts Administrator for Fluor testified that, in 1998, the only competitors were PDM and CB&I. (Warren, Tr. 2307-08).

4. Competition in the LPG market from Acquisition to time of trial

233. There has only been one LPG tank awarded since the Acquisition, the 2001 ABB Lummus project in Port Arthur, TX. CB&I won the Port Arthur, TX project. (Simpson, Tr. 3686, 3829; (G. Glenn, Tr. 4088-89, 4156).

234. The Port Arthur project included four ambient-temperature LPG spheres, one low-temperature LPG tank for butadiene and one flat bottom conventional storage tank. The total value of the project was $ 8.5 million. The LPG tank alone was $ 1.5 million. (Scorsone, Tr. 5039-40).

235. On the Port Arthur project, CB&I competed against Wyatt and AT&V in bidding for the project. (N. Kelley, Tr. 7086; Scorsone, Tr. 5040). CB&I initially bid a little above a 4 percent margin. ABB Lummus came back to CB&I after the initial round of bidding and informed CB&I that it was 3rd out of 3 bidders. (Scorsone, Tr. 5040).

236. Since it was instructed to by the customer, CB&I "sharpened its pencils" and developed an innovation whereby CB&I eliminated the need for one additional support column on each sphere. This innovation lowered the cost to the project overall. (Scorsone, Tr. 5040-41).

5. Recent entry in the LPG market

a. AT&V

237. AT&V constructed the 2000 project for Intercontinental Terminals Co. ("ITC") in Deer Park, Texas. (JX 27 at 117 (N. Kelley Dep.)). AT&V bid on the Port Arthur project in 2001. (N. Kelley, Tr. 7086; Scorsone, Tr. 5040).

238. AT&V is much smaller than CB&I. (CX 460 at CBI-E 007235; JX 23 at Exh. 1, in camera (Cutts, Dep.); Simpson, Tr. 3292-3315). AT&V's annual revenues are only 2-3 percent those of CB&I. (CX 460 at CBI-E 007235; JX 23 at Ex. 1, in camera (Cutts, Dep.); CX 1033 at 28). CB&I employs over 200 engineers. (CX 460 at CBI-E 007235). CB&I estimates that AT&V has only a small engineering staff. (CX 460 at CBI-E 007235).

239. AT&V is limited in its field capacity. (Cutts, Tr. 2375; Simpson, Tr. 3315 (citing JX 23a at 44 (Cutts, Dep.)). Capacity constraints at AT&V recently prevented AT&V from bidding on two cryogenic tanks. (Cutts, Tr. 2375). AT&V is limited in its capacity to bond projects in the United States, which could impede AT&V's ability to bid on large projects. (Cutts, Tr. 2366, 2375). Cutts, Vice President of AT&V, admitted that AT&V cannot compete with CB&I on large scale projects. (Cutts, Tr. 2375).

240. Cutts admits that his firm faces reputational and marketing disadvantages compared to Respondents. (Cutts, Tr. 2421-22). "AT&V is not a household name for cyrogenic tanks." (Cutts, Tr. 2385). Cutts contrasts CB&I by comparing it to the "Coca-Cola" brand-name. (Cutts, Tr. 2385). PDM had brand

name value also and, like CB&I, its name "could obviously break down a lot of walls and barriers." (Cutts, Tr. 2389).

b. Other domestic manufacturers

241. Matrix provided a bid on the 2000 Deer Park project for ITC. (N. Kelley, Tr. 7083-84). Matrix is capable of building LPG tanks and would pursue LPG opportunities in the future. (Newmeister, Tr. 2180-82).

242. Wyatt bid on the Port Arthur project. (Scorsone, Tr. 5040).

243. Chattanooga Boiler & Tank ("Chattanooga") has the capability to construct field-erected LPG tanks. (Stetzler, Tr. 6355). Chattanooga is familiar with how to construct LPG tanks. (Stetzler, Tr. 6354-55). Chattanooga builds similar API 650 storage tanks, API 620 storage tanks, and ASME pressure vessels. These tanks are both shop and field-erected. (Stetzler, Tr. 6356-59, 6308-09; RX 181 at 1-10).

244. Dr. Simpson testified that firms such as AT&V, Matrix Services, and Wyatt Field Services would not be able to restore the pre-acquisition level of competition in the LPG market. (Simpson, Tr. 3408-09). Dr. Simpson noted that all three firms lack the building experience and the reputation that PDM possessed. (Simpson, Tr. 3409).

c. Foreign manufacturers

245. Foreign tank suppliers build tanks around the world and advertise in U.S. trade journals. (N. Kelley, Tr. 7091, 7126; Harris, Tr. 7288-89, 7293). However, the testimony of one purchaser of LPG tanks, was that he has never sought a bid from a foreign tank supplier because he "didn't know who to go to, I guess. Went to the local boys." (JX 27 at 114 (N. Kelley, Dep.)). Moreover, his experience buying capital equipment is that he gets better pricing from buying equipment locally in the U.S. rather than from another country. (JX 27 at 74-75 (N. Kelley, Dep.)).

246. Respondents' economic expert Dr. Harris testified that he had no evidence that any foreign firms have chosen to produce LPG Tanks in the U.S. (Harris, Tr. 7778-79). No foreign tank supplier has won any U.S. LPG projects. F. 210, 215.

247. [redacted] testified that "[redacted] could not successfully compete against CB&I for single-containment LNG or LPG tank projects" in the U.S. ([redacted], Tr. 4711, in camera; RX 738 at P15, in camera). [redacted] has "no plans" to compete for single containment LPG tanks. (RX 738 at P15, in camera).

248. TKK has never built an LPG tank in the United States. (Cutts, Tr. 2351). Moreover, TKK is not interested in bidding on LPG tank projects in the United States. (Cutts, Tr. 2431).

249. Dr. Simpson testified that foreign companies, such as TKK, Skanska-Whessoe, and Technigaz, would not be sufficient to restore the pre-acquisition level of competition in the LPG market. (Simpson, Tr. 3407).

6. Barriers to entry in the LPG market

250. LPG tank suppliers must have sufficient personnel to design, engineer and construct an LPG tank. (RX 682 at MCG 000059 ("Texaco will verify that bidder is not overcommitted to perform that work."); Warren, Tr. 2295 (Before allowing a company to bid, Fluor reviews a potential LPG tank supplier's volume to ensure the supplier is capable of managing multiple projects simultaneously, and to ensure there is not too much backlog to prevent Fluor from accessing the supplier's resources promptly as needed); see CX 415 at 2).

251. LPG tank suppliers need sufficient personnel to handle adjustments to possible schedule changes. (Warren, Tr. 2296 (In order to bid on an LPG project, an LPG tank supplier needs enough staff to handle an adjustment if it becomes necessary to shorten the schedule or recover from delays); see CX 415 at 2).

252. LPG customers want a manufacturer with prior experience, at least in building API 620 tanks, and with experienced personnel. (N. Kelley, Tr. 7131-32). See also N. Kelley, Tr. 7104-05 ("I don't want to be a guinea pig"); JX 27 at 72 (N. Kelley, Dep.) (ITC would "definitely want [an LPG tank supplier] to have had prior experience building an LPG tank before [it] would hire them to build an LPG tank . . . .")).

253. Matrix's vice president of marketing testified that the LPG market presents the same barriers to entry as the LNG market and would be difficult to penetrate. (Newmeister, Tr. 1609-10).

7. Sophistication of customers

254. Intercontinental Terminals Company ("ITC") is the only recent LPG customer to testify in this case. ITC owns 10 field-erected low temperature tanks. (N. Kelley, Tr. 7093-94). Mr. Norman Kelley, Vice President of ITC, testified that during his 25 years at ITC he has procured LPG tanks over 23 of those 25 years. Tank procurement is Kelley's area of responsibility. (N. Kelley, Tr. 7079-80). Kelley regularly sorts confidential bids from multiple tank suppliers. (N. Kelley, Tr. 7082-83).

G. Effects on Competition in the LIN/LOX Market

1. Overview of the LIN/LOX market

255. LIN/LOX tanks are double-walled tanks made of stainless steel which store liquid oxygen and nitrogen at very low, even cryogenic, temperatures which allows them to be stored in a liquid form. (Stetzler, Tr. 6312). A LIN/LOX tank consists of an outer carbon steel shell and an inner tank, most commonly made out of stainless steel. There is insulation between the two shells to keep the temperature at minus 320 degrees. (Stetzler, Tr. 6312; Kistenmacher, Tr. 833-34).

256. LIN/LOX tanks are most commonly incorporated into the infrastructure of a functioning air separation facility. There are

no viable substitutes for storing liquid oxygen or nitrogen produced by such a plant. (Hilgar, Tr. 1386).

257. An air separation plant is a plant that liquefies ambient air, then distills the air into its component parts. The component parts of air are the industrial gases: oxygen, nitrogen, and argon. The liquefied gases are later cooled and stored in cryogenic storage tanks. Subsequently, the gases are delivered to the marketplace either in a gaseous form or liquid form. (Kamrath, Tr. 1980; V. Kelley, Tr. 4592; Kistenmacher, Tr. 824-25).

258. The cost to design and fabricate LIN/LOX tanks typically represents five to ten percent of the total cost of an air separation facility. (Hilgar, Tr. 1507). Construction of an air separation facility may cost $ 18 million. LIN/LOX tanks used at such a facility may cost from $ 1 to $ 1.5 million. (Kistenmacher, Tr. 836; Hilgar, Tr. 1507-08).

259. The following construction steps are taken for building LIN/LOX tanks: First, the project is engineered and drawings are developed in connection with the procurement of materials. Second, materials including the raw steel and steel components are procured. Third, steel materials are fabricated in fabrication shops. Next, tool and equipment lists are created and everything including the fabricated materials are shipped to the construction site. The structure is then erected on the project site and tested. (Scorsone, Tr. 4885-86).

260. The engineering phase involves the performance of calculations and an analysis to determine the size and shapes of the various components to be placed in the structure. This phase entails writing the specifications for the various materials and welding processes that will be used. Drawings are created to be used by fabrication shops, construction crews, and subcontractors. (Scorsone, Tr. 4886-87).

261. CB&I does not have an engineering staff that solely works on LIN/LOX projects. CB&I uses its engineers across several product lines. Engineers who design flat-bottom tanks

also have the capability to design LIN/LOX tanks. CB&I's engineers are located in Pittsburgh, Pennsylvania; Plainfield, Illinois; Houston, Texas; Canada, the Middle East, the Philippines, and Australia. (Scorsone, Tr. 4887-88).

262. The bill of materials contains a list of materials that are sent to the procurement group. The procurement group then procures these materials from a wide variety of vendors. (Scorsone, Tr. 4889-90).

263. The metal materials are fabricated in a fabrication shop by the same personnel and using the same equipment that is used to fabricate other types of tanks. (Scorsone, Tr. 4885; 4892-93).

264. The field-erection process for an industrial tank involves: (1) receiving the material from the fabrication source and the steel mills; (2) establishing a site office; (3) establishing a tool and equipment management system; (4) employing the field labor; (5) erecting the structure in accordance with the plans and contract specifications; and (6) testing the work quality. (Scorsone, Tr. 4895-96).

265. The field construction process used to field-erect a LIN/LOX tank is the same process that is used to erect any type of ambient-temperature flat-bottom tank. (Scorsone, Tr. 4885).

266. The welding processes used on a cryogenic tank are the same as the processes used for an ambient temperature tank. (Scorsone, Tr. 4899). The welding methods used for cryogenic tanks are an open art. (Scorsone, Tr. 4899).

267. CB&I does not regard LIN/LOX work as an important part of its business because it is so small. (Scorsone, Tr. 5016). The total revenue realized in the LIN/LOX market in the last two years for all construction vendors amounted to only approximately $ 5 million out of $ 2 1/2 to $ 3 billion. (Glenn, Tr. 4088). CB&I does not have any salespersons dedicated to the LIN/LOX market. (Scorsone, Tr. 5017).

268. Currently, there is overcapacity in the LIN/LOX market. Moreover, there will not be air separation plants requiring LIN/LOX tanks constructed in the next few years. (Hilgar, Tr. 1541-43). Demand for field-erected LIN/LOX tanks is not high. (Stetzler, Tr. 6382-83).

2. Market shares and concentration in the LIN/LOX market prior to Acquisition

a. Tank projects awarded

269. From 1990 to the Acquisition, CB&I, PDM, and Graver built nearly all the LIN/LOX/LAR tanks in the United States. From 1990 to Acquisition, 109 LIN/LOX tanks were constructed, with a total value of [redacted]. CB&I and PDM had a combined market share of 72.8% of the value of LIN/LOX awards. CB&I won 25 tanks (with a total value of [redacted] (33.9% of the total). PDM won 44 tanks (with a total value of [redacted] (38.9% of the total.) Graver won 34 tanks (23.3% of the total value). Matrix won 4 tanks (2.6% of total value), and AT&V won 2 tanks (1.4% of the total value). (Simpson, Tr. 3422, 3429-30; CX 26, in camera; CX 85; CX 155; CX 183; CX 260; CX 282; CX 397, in camera; CX 755; CX 1025, in camera; CX 1170; CX 1210 at 5-6, in camera; CX 1212 at 6, in camera; CX 1321, in camera; CX 1458; Cutts, Tr. 2451).

270. Graver went out of business, in 2001, and is no longer a competitor in the LIN/LOX market. (CX 1546; Hilgar, Tr. 1543). Graver's assets were sold at auction. (Harris, Tr. 7312, 7313).

271. MG Industries purchased [redacted] LIN/LOX tanks between 1994 and 1999. In all but perhaps one of these projects, MG Industries received bids from CB&I, PDM and Graver. (Patterson, Tr. 478-79, in camera).

272. Linde's policy in purchasing LIN/LOX tanks is to have at least three bidders. (Kistenmacher, Tr. 864). CB&I, PDM and Graver bid on tanks built for Linde. (Kistenmacher, Tr. 869.)

b. HHI calculations

273. Dr. Simpson calculated that, using data from 1990 to 2001, CB&I's acquisition of PDM increased LIN/LOX concentration, as measured by the HHI, by 2,635 points, to a level of 5,845. (Simpson, Tr. 3443).

274. Dr. Simpson's HHI calculations in the LIN/LOX market were based on sales from 1990 to the date of the Acquisition. (Simpson, Tr. 3704). Dr. Simpson admitted that he chose 1990 as the beginning date for his HHI analysis because 1990 was the cut off date for discovery and thus his information dated back to 1990. (Simpson, Tr. 3704-05).

275. In the LIN/LOX market, Dr. Simpson admitted that CB&I's spin off from Praxair, Incorporated, in 1997 was a significant competitive change, a fact which would justify beginning the HHI calculation in 1997 after the date of the sale. (Simpson, Tr. 3753).

276. Use of data from 1990 to Acquisition does not accurately depict market concentration because it fails to predict forward from the time of acquisition, fails to consider Praxair's sale of CB&I, and fails to account for recent entry. (Harris, Tr. 7311-12).

3. Respondents were each others' closest competitors in the LIN/LOX market

a. Respondents' views

277. In a July 1997 competitor report to Luke Scorsone, PDM's Bill Weber noted that "since last fall, CB&I has been the most aggressive competitor in increasing market share." (CX 108 at PDM-HOU005018).

278. In May 2000, Luke Scorsone warned the Board of PDM that "CB&I has been extremely aggressive on pricing work in North and South America. They have taken certain projects at levels which would be slightly over PDM EC's flat cost." (CX 64

at PDM-C 1002562).

279. According to an October 2000 e-mail from Bob Lewis, then CB&I's Vice President of Corporate Business Development, PDM had "[a] tendency to bid much lower than the market leaving a lot of money on the table." (CX 632 at CBI-PL 4000160). In April 1997, Rich Kooy compared CB&I and PDM's LIN/LOX prices and recognized that "in North America we [CB&I] could still be very handily undercut (by as much as 10%) by PDM if they wanted to work at a lower price level." (CX 178 at CBI-PL011835).

280. In competing for LIN/LOX jobs, CB&I and PDM would in some instances, set prices that would generate "negative margins." (CX 183). In fact, CB&I lost some projects to PDM because of PDM's "very low" pricing levels. (Crain, Tr. 2592; CX 624).

281. A CB&I document states that "PDM is the driver on negative margins on these LIN/LOX tanks. We understand that PDM can readily price the LIN/LOX work at -6% margin in the Gulf Coast and Southeast . . . . Unless there is a reason why PDM would be less aggressive or economical in NV, then I agree with Ron that -2% or -3% should get us on the high side of the target range." (CX 193 at CBI-PL020339).

282. Other documents of Respondents reflect the competitive pressure that PDM regularly placed on CB&I. (See CX 614 at CBI-PL039367 (for LOX tank project for Air Products in Eureka, Nevada, PDM's quoted price was "$ 100,000 lower than CB&I's and Matrix's price, and almost $ 200,000 lower than Graver's price"); CX 222 at CBI-PL037594 (PDM won a bid from CB&I for a pair of LIN/LOX tanks by dropping their bid on their best and final offer by $ 40,000); CX 191 at CBI-PL018948 (Air Products had awarded a LOX tank to PDM, which "was the very low bidder and met all of the technical requirements.")).

b. Industry views

283. William Cutts, Vice President of American Tank & Vessel ("AT&V") agreed that, prior to the merger of CB&I and PDM, customers preferred PDM or CB&I for their LIN/LOX tank projects, "almost exclusively [desiring] one or the other or pitting the two against the other." (Cutts, Tr. 2390).

284. Cleveland Fontenot, Jr., former Vice President of Procurement for Air Liquide Process and Construction ("Air Liquide"), testified that prior to the Acquisition, CB&I and PDM were the two most qualified LIN/LOX/LAR tank suppliers. Air Liquide's bid slate included, "CB&I, PDM and a little bit lower would be Matrix." (Fontenot, Tr. 2021-22). However, Air Liquide "didn't feel as comfortable" with Matrix because the "number of references they had weren't nearly what the other two suppliers [CB&I and PDM] had." (Fontenot, Tr. 2022).

285. David Kamrath, CEO of Air Liquide Process and Construction and a 30-year participant in the industrial gas business, believes that prior to the merger Air Liquide only "had PDM and CB&I" for the construction of LIN/LOX tanks. (Kamrath, Tr. 1988).

c. Competition between Respondents lead to lower prices

286. Prior to the Acquisition, Linde used PDM's prices as its "benchmark" to compare other firms' prices. (Fan, Tr. 967). Linde was able to leverage two manufacturers against each other to negotiate pricing and other concessions. (Kistenmacher, Tr. 867-8).

287. MG Industries, a producer of industrial gas products, purchased 16 LIN/LOX tanks in the last nine years. (Patterson, Tr. 338, 341). Before the merger, the same three firms bid on most of MG Industries' LIN/LOX projects: CB&I, PDM and Graver. (Patterson, Tr. 351, 355, 363, 365). On each of MG Industries' LIN/LOX projects after 1997, Mr. Michael Patterson, Director of Engineering, MG Industries, used each of the other

firms as bargaining chips to obtain lower prices on LIN/LOX tanks. (Patterson, Tr. 351-365).

288. There was vigorous competition between CB&I, PDM and Graver. CB&I and PDM would vigorously undercut each other's prices, to the extent that the firms sold LIN/LOX tanks at negative margins, e.g., -23%, -12%, and -2 to -3%. (CX 136 at CBI 014195-HOU; CX 193 at CBI-PL020339; CX 600 at CBI-PL012354). (See CX 455 at CBI-E 007334, in camera ([redacted]); id. at CBI-E 007335, in camera ([redacted]); id. at CBI-E 007335, in camera ([redacted]

289. In 1997, CB&I, PDM and Graver were competitors for the Rockport, Indiana project. According to Patterson, MG Industries' negotiating tactics "lowered the price." (Patterson, Tr. 351-52). Graver was the lowest bidder for the Rockport project, but after "verbal negotiations" using PDM's and CB&I's bids as leverage, Graver "knocked a few percent off [its] price." (Patterson, Tr. 351-53).

290. CB&I, PDM, and Graver also competed for the contract to the combined Chattanooga and Johnsonville, Tennessee projects in 1997. (Patterson, Tr. 355). PDM was the lowest bidder, with both Graver and CB&I bidding 15 percent higher than PDM. (Patterson, Tr. 356-57; see CX 194 at CBI-PL023449). Patterson informed the bidders that "they were way higher than what it would take to be awarded any of those type projects," and that "if they expected to receive any orders, they would have to significantly lower their price." (Patterson, Tr. 357-58). As a result of Patterson's negotiating, the firms "lowered their price." (Patterson, Tr. 358). The Johnsonville project was later postponed, while the Chattanooga tanks were built. (Patterson, Tr. 356).

291. MG Industries combined the LIN/LOX tanks for the Albany, New York; Delisle, Mississippi; and Johnsonville, Tennessee projects for one bidding process. (Patterson, Tr. 361-62, 355-56). PDM was the lowest bidder, Graver's bid was 4% above PDM's, and CB&I's bid was 7% above PDM's bid.

(Patterson, Tr. 362). Once again, Patterson used PDM as leverage, informing Graver that "somebody has a better price than they do." (Patterson, Tr. 363). The customer was again successful in promoting the most competitive environment he could, as "Graver dropped the price substantially." (Patterson, Tr. 364).

4. Competition in the LIN/LOX market from Acquisition to time of trial

292. Since CB&I's acquisition of PDM in 2001, five LIN/LOX projects have been awarded by LIN/LOX customers. (Scorsone, Tr. 5015-16). The five LIN/LOX projects that have been awarded since the Acquisition are: Midland, North Carolina (BOC Gases); Hillsboro, Oregon (BOC Edwards); Freeport, Texas (Air Liquide); New Johnsonville, Tennessee (MG Industries); and Kirkland, New Mexico (Praxair). (Scorsone, Tr. 5017).

293. Since the Acquisition, of the five LIN/LOX tank projects awarded, AT&V has won three and CB&I has won two. (Harris, Tr. 7308; Scorsone, Tr. 5015-16).

294. Of the five post-Acquisition LIN/LOX projects, four were competitively bid. (Scorsone, Tr. 5017). Of the four competitively bid projects, AT&V bid on three and won all three. (Scorsone, Tr. 5018). CB&I has never won a LIN/LOX project when AT&V was a competitor bidding on the project. (Scorsone, Tr. 5018).

a. Midland, North Carolina (BOC Gases)

295. AT&V won both tank awards for the BOC Gases Midland, North Carolina project. (V. Kelley, Tr. 4599; Scorsone, Tr. 5024; RX 273, in camera). In 2000, BOC Gases solicited bids for the Midland LIN/LOX project from PDM, CB&I, AT&V and Chattanooga Boiler & Tank. (V. Kelley, Tr. 4598; Scorsone, Tr. 5024-25; RX 273, in camera).

296. BOC Gases awarded the Midland project to AT&V

because of low cost and was satisfied with the price because it was below BOC Gas' budget for the project. (V. Kelley, Tr. 4599-601, Tr. 5272, Tr. 5282).

297. Dr. Kistenmacher, Vice President of BOC's successor, Linde BOC Process Plants, was told by his direct partner at BOC ". . . that the price was low in the beginning, but they [AT&V] had many change orders, that in the end the price was higher than of the conventional vendors." (Kistenmacher, Tr. 931-32).

298. BOC Gases had to budget 500 man-hours of additional BOC Gases engineering time to ensure that AT&V delivered the LIN/LOX tanks "on time, on schedule, on budget"; this was AT&V's first experience building LIN/LOX tanks. (JX 28 at 43-46 (V. Kelley, Dep.); RX 290 at CBI 046596-NEW).

b. Hillsboro, Oregon (BOC Edwards)

299. AT&V was awarded a LIN/LOX project for BOC Edwards in Hillsboro, Oregon. (Cutts, Tr. 2504-06; V. Kelley, Tr. 5291-92; RX 813).

300. CB&I submitted budget pricing for the LIN/LOX project in Hillsboro, Oregon. (Scorsone, Tr. 5018, 5031). BOC Edwards reviewed the budget prices submitted for the project and determined that AT&V had the low bid. (V. Kelley, Tr. 5292). Based on these budget prices, BOC Edwards awarded the project to AT&V. (V. Kelley, Tr. 5292; Scorsone, Tr. 5031).

c. Freeport, Texas (Air Liquide)

301. In 2001, Air Liquide solicited bids for a LIN/LOX project in Freeport, Texas. AT&V, CB&I, Matrix and BSL bid on the project. (Cutts, Tr. 2569; Scorsone, Tr. 5032; RX 627 at 2, in camera).

302. AT&V was awarded the Air Liquide LIN/LOX project in Freeport, Texas. (Kamrath, Tr. 2006; Scorsone, Tr. 5017). [redacted] (Kamrath, Tr. 2235, in camera). [redacted]. (Scorsone,

Tr. 5023-5024; Kamrath, Tr. 2235, in camera; RX 627 at 2, in camera).

303. Matrix's bid on Air Liquide's Freeport LIN/LOX tank [redacted] (Kamrath, Tr. 2235, in camera).

304. [redacted] (Kamrath, Tr. 2254-55, in camera).

305. [redacted] (Kamrath, Tr. 2241, 2251, 2253, in camera). [redacted] (Kamrath, Tr. 2252, in camera). Air Liquide asked CB&I to complete the project, but CB&I refused. (Scorsone, Tr. 5036).

d. [redacted] (MG Industries)

306. In April 2002, MG Industries sought pricing for a LIN/LOX tank project in [redacted]. (Patterson, Tr. 456-57, in camera).

307. Requests for prices were sent to [redacted]. (Patterson, Tr. 456-57, in camera). While [redacted] submitted budget pricing, it did not submit a formal bid. (Stetzler, Tr. 6351). [redacted] (Patterson, Tr. 482, in camera).

308. [redacted] was the lowest bidder. (Patterson, Tr. 457, in camera). [redacted] price was [redacted] higher than [redacted]. (Patterson, Tr. 457, in camera). [redacted] budget price was [redacted] higher than [redacted]. (Patterson, Tr. 457, in camera).

309. [redacted] (Patterson, Tr. 460-62, 482-83, in camera).

310. [redacted] (Patterson, Tr. 460, in camera). [redacted] (Patterson, Tr. 486-87, in camera). [redacted] (Patterson, Tr. 461, in camera).

e. Kirkland, New Mexico (Praxair)

311. CB&I was awarded a LIN/LOX project by Praxair in Kirkland, New Mexico pursuant to a partnering agreement.

(Scorsone, Tr. 5019-20). PDM had entered into an alliance agreement with Praxair which obligated Praxair to award non-union LIN/LOX tank projects to PDM, and PDM was obligated to construct the projects at a 4 percent margin level. (Scorsone, Tr. 5018-19; RX 87 at 4). In 2001, PDM and Praxair agreed to renew the agreement for another three years. (RX 87 at 2). The partnering agreement between Praxair and PDM was transferred to CB&I after the Acquisition. (Scorsone, Tr. 5019).

5. Recent entry in the LIN/LOX market

312. No foreign company has ever built a LIN/LOX tank in the United States. (Hilgar, Tr. 1385).

a. AT&V

313. AT&V is a recent entrant to the LIN/LOX market. AT&V has won all three LIN/LOX projects that it has bid on. (Scorsone, Tr. 5018). AT&V is committed to pursuing LIN/LOX projects in the United States. (Cutts, Tr. 2332). AT&V has submitted budget pricing for approximately six customers and has formally been pre-qualified as a bidder by one customer and informally pre-qualified by several others. (Cutts, Tr. 2452-53).

314. Reviews of AT&V's price and performance for BOC's Midland project are mixed. One BOC witness testified that he "was satisfied with the price" it received and "satisfied with the work that AT&V did at Midland." (V. Kelley, Tr. 5285). Another testified that, although the price was low in the beginning, because of the many change orders the price ended up higher. (Kistenmacher, Tr. 931-32). In addition, "there was a design run of pipe [on the BOC project] that could have caused liquid oxygen to settle and then dissipate, creating a hazardous atmosphere in that location." and a "welding error" during construction that caused the steel plate that comprises the tank to buckle at a weld joint. (V. Kelley, Tr. 5269, 5273-74).

315. AT&V does not compete on an equal footing with CB&I in the LIN/LOX market. AT&V is much smaller than CB&I. (CX

460 at CBI-E 007235; JX 23 at Ex. 1 (Cutts, Dep.), in camera; Simpson, Tr. 3292-3315). AT&V's annual revenues are only 2-3 percent of CB&I's revenue. (CX 460 at CBI-E 007235; JX 23 at Ex. 1 (Cutts, Dep.), in camera; CX 1033 at 28). AT&V is capacity constrained. (Simpson, Tr. 3315 (citing JX 23a at 44, (Cutts, Dep.)). AT&V lacks the field capacity to handle more than four LIN tanks at a time or one small LNG project at a time. (Cutts, Tr. 2376). Recently, AT&V had to refuse to bid on two cryogenic tank projects in the United States because of its limited field capacity. (Cutts, Tr. 2375).

316. Cutts admitted that CB&I will outperform AT&V on future projects for years to come. "There would still probably be a few years to catch up... [CB&I] would still probably be able to outperform us a little bit until we had a few years under our belt." (Cutts, Tr. 2380). Cutts stated that AT&V could compete with CB&I only "on certain fronts, on certain scale projects, okay, with certain assistance, if the customers are willing." (Cutts, Tr. 2374).

317. Customers that have done business with AT&V have found that any initial savings are often offset or exceeded by oversight costs and costs related to change orders. (Kistenmacher, Tr. 931-32; Kamrath, Tr. 2254-55, in camera). F. 297-98, 304, 314.

318. Air Products has not qualified AT&V as a LIN/LOX tank supplier, due to its concern over AT&V's performance and poor reputation. (Cutts, Tr. 2355-56; Hilgar, Tr. 1369). Another LIN/LOX customer, [redacted], thinks that [redacted] was "insane for buying a tank from an inexperienced tankee," and testified that it is concerned about working with AT&V, based on word of mouth reports of AT&V's performance on its LIN/LOX projects for [redacted]. (CX 41 at CBI-E 007336; Patterson, Tr. 472, in camera). [redacted] F. 305.

319. In Respondents' competitive profile of AT&V, Respondents state that AT&V's "quality" and "safety" are "poor." (CX 86 at PDM-CH 002617). The document notes that on past projects, AT&V performed poorly in terms of supplying a quality

tank or sphere and has not met customer safety standards. Kellogg and Bechtel threw AT&V off projects due to poor quality or poor safety practices. Moreover, in the past, Dupont, Shell-Norco and Exxon (Baton Rouge) would not let AT&V bid on their projects. (CX 86 at PDM-CH 002617). Respondents describe AT&V's safety practices as "severely lacking ... and are being labeled as an undesirable risk by many." (CX 263 at CBI-HOO-004606).

b. Matrix

320. Matrix is a recent entrant. Although Matrix won only 4 of the 83 awards prior to Acquisition, all 4 of these are recent LIN/LOX construction. In 1997, Praxair awarded Matrix a liquid oxygen and liquid nitrogen "cluster tank" project in Rossford, Ohio over CB&I. Matrix finished the work on time and to the satisfaction of Praxair. (Newmeister, Tr. 2174-75). Matrix built two LIN/LOX tanks for Praxair in Delaware City, Delaware, in 1998. (Newmeister, Tr. 2173; 2176-77). Matrix was awarded the Delaware City LIN/LOX project in 1998 over CB&I and it completed the project on time. (Newmeister, Tr. 2176-77). In 2000, Matrix was awarded a LAR tank for Praxair in East Chicago. Praxair was satisfied with the construction and the project was erected on schedule. (Newmeister, Tr. 2173; 2176-77). Also in 2000, Matrix was awarded a LIN tank by Air Products for a project in Kingsport, Tennessee. Air Products awarded the tank to Matrix over CB&I and PDM, despite the fact that Matrix had never built a tank for Air Products before. (Newmeister, Tr. 2173-74).

321. Matrix has been a high bidder, and consequently non-competitive, on recent LIN/LOX tank projects for several customers, including Air Liquide and Linde. (Newmeister, Tr. 2156-58). (See Fan, Tr. 960-62 (on 2002 project, Matrix bid over [redacted], while CB&I bid [redacted]); Kistenmacher, Tr. 860 (on preliminary bids, Matrix was eliminated from consideration because its pricing was high); Fontenot, Tr. 2029 (CB&I was at least [redacted] Matrix on Air Liquide's recent Longview, Texas project).

322. Matrix has been told that Matrix has not won these projects either because its pricing has been too high or because the customer did not believe that Matrix was sufficiently qualified. (Newmeister, Tr. 2155-58; Kamrath, Tr. 2000-01 (Matrix's prices have "never been below what we'd seen from any of the other competitors"); Fontenot, Tr. 2022 ("didn't feel comfortable with Matrix"); Hilgar, Tr. 1354, 1382-83 (Matrix has "more limited capacity to produce field-erected cryogenic storage tanks," as compared to CB&I or PDM)).

323. Air Product's supply manager, with responsibility for bidding out LIN/LOX tanks, testified that Matrix cannot replace PDM in the LIN/LOX marketplace from Air Products' perspective. (Hilgar, Tr. 1354).

324. Matrix is a diminished competitor in the LIN/LOX tank market as a result of the sale in August 2000 of its Brown Steel subsidiary, which owned the fabrication facility where Matrix fabricated LIN/LOX tanks. (Newmeister, Tr. 1590-91, 1595). Matrix determined that "once we sold Brown Steel Company, we lost some competitive advantage in the two primary areas, one of which - one of being able to do internal blasting and priming, and the other, impressing." (Newmeister, Tr. 2158-59). By losing its fabrication capability, Matrix is required to subcontract the fabrication work for these tanks, and subcontracting increases Matrix's costs. (Newmeister, Tr. 1569-70, 1590 (As a result of subcontracting its fabrication work, Matrix's "costs will be higher. They won't be as competitive.")).

c. Chattanooga Boiler & Tank

325. Chattanooga Boiler & Tank ("Chattanooga") does not effectively compete in the LIN/LOX market. Chattanooga has never built a LIN/LOX tank. (JX 2 at 2 (Respondents stipulate that Chattanooga has never built a LIN/LOX tank); CX 623 at FTC0000399; Stetzler, Tr. 6413-15). Chattanooga has never created any strategic plans or pricing strategy for designing, engineering, fabricating, or erecting LIN/LOX tanks. (Stetzler, Tr. 6421-22, 6426). Mr. Jerry Stetzler, Chattanooga's President,

testified that the supply of LIN/LOX tanks is "not really a business that we've been participating in." (Stetzler, Tr. 6422).

326. On one occasion when it recently bid on a LIN/LOX project, Chattanooga's price was higher than any other competitor. (CX 189 at CBI-PL015105; [redacted], Tr. 457, in camera) (Chattanooga's price was [redacted] higher than CB&I's).

327. LIN/LOX industry participants question Chattanooga's ability to build a LIN/LOX tank. MG Industries "has doubts" of Chattanooga's "abilities." (CX 41 at CBI-E007336). Cutts testified that AT&V does not consider Chattanooga for LIN/LOX tanks in the United States. (Cutts, Tr. 2333). Scorsone admitted that Chattanooga was never "on the radar screen for competing for LOX/LIN projects." (Scorsone, Tr. 4877).

6. Barriers to entry in the LIN/LOX market

328. It is very important to MG Industries that its suppliers have prior experience. (Patterson, Tr. 467, in camera).

329. To build a LIN/LOX tank takes very specialized know-how, including knowledge about the material shrinking process and how to avoid cracks. (Kistenmacher, Tr. 852).

330. If a LIN/LOX tank is not constructed properly, severe harm and destruction could occur. (Kistenmacher, Tr. 848).

331. Track record and experience of the vendor are important factors in selecting a manufacturer of LIN/LOX tanks. (Kistenmacher, Tr. 849).

332. A new entrant will need to establish the capability to perform specialized metal fabrication. (Hilgar, Tr. 1343-44 (fabrication of the pieces for a LIN/LOX tank is complex due to "the tolerances and the manufacturing processes. . . . [if the] pieces get to the field and don't fit, you have a major problem"); Kamrath, Tr. 1995 (customer "would be very concerned about how he manages that, the supervision he provides, the standards

and guidance he provides. It's not something that eliminates a supplier, but certainly it raises a concern.")).

333. A new entrant will need large amounts of cash to conduct physical tests of materials and tank prototypes or components. For example, Matrix spent [redacted] testing cellular glass and rigid insulation systems that form the ground insulation between the inner and outer tanks for a LIN/LOX tank. (Newmeister, Tr. 1584-85; Kamrath, Tr. 2235-36, in camera [redacted]

334. Air Liquide would not buy a LIN/LOX tank from someone who had not built a tank before, because of the risks, including technical and safety risks, and project execution risk. (Kamrath, Tr. 1995-96, 2236-37, in camera; see also Knight, Tr. 2628 (experience building LIN/LOX tanks provides customers with confidence that the product will be designed and built the way it was requested); JX 25 at 83-4 (Hilgar, Dep.) (describing safety hazards associated with LIN/LOX tanks).

7. Alleged post-acquisition price increases

335. In 2002, Linde and Praxair were competing against each other for the same air separation facility. (Scorsone, Tr. 5020). Linde lost the air separation facility to Praxair, therefore Linde did not pursue the pricing for its proposed project any further than the budget pricing stage. (Scorsone, Tr. 5020-21). Praxair won the contract for air separation facility and awarded the LIN/LOX project to CB&I. (Scorsone, Tr. 5019).

a. Linde-New Mexico Project

336. In 2002, Linde BOC Process Plant LLC ("Linde") requested budget pricing for a proposed 344,000 gallon LIN/LOX tank to be located in New Mexico ("Linde-New Mexico"). (Fan, Tr. 1002, 1064; CX 1344 at LPPI 0000259, LPPI 0000261).

337. Mr. Chung Fan is a proposal manager at Linde BOC Process Plants. (Fan, Tr. 947). In his request for proposal, Fan did not provide the following information: a construction schedule

(Fan Tr., 1073), where in the state of New Mexico the project would be located (Fan, Tr. 1075), the time of year that the tank would be constructed (Fan, Tr. 1076), the conditions of the project site (Fan, Tr. 1077), or the identity of the end-user (Fan, Tr. 1078; see also RX 860 at CBI 071847). Fan provided only a preliminary nozzle list (Fan, Tr. 1060) and requested that the pricing for the New Mexico project be submitted within two weeks time. (Fan, Tr. 1062). Fan admitted that he did not provide sufficient information to produce a firm-fixed price. (Fan, Tr. 1078).

338. AT&V quoted a price of approximately $ 600,000. (Fan, Tr. 960-961). Matrix responded with a price of over $ 900,000. (Fan, Tr. 962). CB&I responded with a budget price of $ 814,000. (CX 1344 at LPPI 0000261).

339. Fan stated that he did not consider AT&V's price "reliable" because it diverged so widely from CB&I and Matrix. (Fan, Tr. 963). Fan could not see how AT&V could do it so cheaply compared to CB&I. (Fan, Tr. 963). While AT&V's low price has caused some concerns for Linde, there has been pressure within Linde to use AT&V because of their low price. (Fan, Tr. 1016-18).

340. Fan dismissed Matrix because he believed its price was always high. (Fan, Tr. 1019).

341. Fan compared CB&I's budget price on the New Mexico project, which was based on incomplete information and was not the result of any negotiation, to a 3 year old PDM firm fixed price which was the result of significant negotiation, and believed that CB&I's price had gone up. (Fan, Tr. 1019, 1069-70).

342. Fan also compared CB&I's price with a pricing model that Linde routinely uses to distinguish between reasonable and unreasonable price quotes from vendors. (CX 1584; Fan, Tr. 966, 1024). Using his pricing model and the past price information from PDM, Fan concluded that the quote he received from CB&I

was higher than Linde would have paid to PDM. (Fan, Tr. 1009-10).

343. Prior to April 2002, the time of the New Mexico estimate, Fan had not updated his estimating spreadsheet for approximately two years. (Fan, Tr. 973). Fan stated that he uses the year 1998 as a baseline for his spreadsheet. Fan agreed that the further away from his baseline year of 1998 he gets, the less accurate his estimating attempts become. (Fan, Tr. 1069). Fan stated that his calculations do not account for price changes between the time the project is bid and the time it is awarded because that is not the purpose of his spreadsheet. (Fan, Tr. 1055-56).

344. Fan stated that his method was not accurate enough to determine if CB&I's prices went up because he did not have CB&I's metal pricing. (Fan, Tr. 1056). Fan does not know the quantity of perlite used for any of the tanks in his spreadsheet. (Fan, Tr. 1045). Fan stated that it is very difficult to calculate the amount of perlite and the thickness of the perlite required for a project because it shrinks when the tank is filled with cryogenic fluid. (Fan, Tr. 1045). Fan did not call up perlite suppliers to determine the current rate for perlite. (Fan, Tr. 1049). Fan did not call the foamglass supplier to determine the current rate for foamglass. (Fan, Tr. 1050). Fan did not call the concrete supplier to determine the current rate for concrete. (Fan, Tr. 1050). Fan did not know the thickness of the metal CB&I intended to use for the New Mexico project and attempted to calculate the metal thickness based upon drawings from other non-CB&I tanks. (Fan, Tr. 1047).

b. Praxair-New Mexico Project 1

345. On June 15, 2002, CB&I submitted a pricing proposal to Praxair for a [redacted] gallon LIN/LOX tank to be built in Farmington, New Mexico. (CX 1508 at CBI 059657, in camera). Pursuant to the sole-source exclusive partnership agreement Praxair negotiated with CB&I shortly prior to the Acquisition, Praxair is obligated to contract with CB&I for its domestic non-

union LIN/LOX tanks, and CB&I is required to provide open book pricing with a four percent margin. (Scorsone, Tr. 5019-20).

346. CB&I's quote to Praxair was [redacted]. (CX 1508 at CBI 059657, in camera).

347. CB&I provided a firm fixed price to Praxair pursuant to its partnering agreement; Praxair provided CB&I with all of the detail necessary to arrive at a firm price. (Scorsone, Tr. 5020-21). By contrast, CB&I had submitted a budget price to Linde because Linde had provided minimal detail and omitted the location of the project. (Scorsone, Tr. 5020-22; F.337).

348. The tanks proposed by Linde and Praxair for the same location were drastically different in scope and design. In contrast to the Linde tank, Praxair designed a more slender tank which resulted in an additional horizontal weld seam as well as required thicker steel throughout the tank. (Scorsone, Tr. 5021). The Praxair project scope also included a full-time welding supervisor, an increased 50 hour work week, additional subsistence in order to attract field labor to the remote site, and a more complex nozzle structure. (Scorsone, Tr. 5021-22). Praxair specifically defined the complex nozzle structure they wanted for their tank, while Linde provided only basic information concerning its anticipated nozzle configuration. (Scorsone, Tr. 5022). There are approximately $ 60,000 worth of additional cost items included in the-Praxair pricing that were not included in the Linde budget price. (Scorsone, Tr. 5022).

c. Praxair-New Mexico Project 2

349. On November 6, 2001, after the merger, Praxair asked CB&I to provide a budget price for an LR-60 LIN tank in Farmington, New Mexico. (CX 448 at CBI-E 007391).

350. CB&I estimating staff was instructed to use a 4% profit margin. (CX 448 at CBI-E 007391). CB&I estimating staff was also instructed to use PDM's price on the Colorado Springs tank as a basis for determining the price for the New Mexico project, if

necessary. (CX 448 at CBI-E 007393). PDM had provided a rough budget price of [redacted] for a 500,000 gallon LOX tank in Colorado Springs, Colorado for Praxair in November 2000. (CX 448 at CBI-E 007391; CX 449 at CBI-E 007401, in camera; see RX 90 at PDM-CH 002717).

351. CB&I submitted "tight budget pricing" of [redacted] for the New Mexico tank on April 30, 2002. (CX 449 at CBI-E 007411, 007403, in camera).

352. CB&I explained to Praxair that the increased price was a result of [redacted] (RX 92 at CBI-E 007401, in camera).

8. Sophistication of customers

353. BOC is an experienced purchaser of LIN/LOX tanks. BOC hired engineering consultants to assist it and AT&V in working through the Midland project. (V. Kelley, Tr. 4619-20).

354. MG Industries has experience purchasing LIN/LOX tanks in the past; it purchased [redacted] such tanks during the 1990s. (Patterson, Tr. 478-79, in camera). During the 1990s, MG Industries would often drive tank costs down by informing vendors that they were higher-priced than other vendors. (Patterson, Tr. 350).

355. Air Liquide Process is experienced at purchasing LIN/LOX tanks both domestically and overseas. (See Kamrath, Tr. 1979-80, 1983-85). [redacted] (Kamrath, Tr. 2235-36, in camera).

H. Effects on Competition in the TVC Market

1. Overview of the TVC market

356. A Thermal Vacuum Chamber ("TVC") is a large metal enclosure used to simulate the vacuum of space for the purpose of testing satellites and satellite components prior-to launch. (Gill, Tr. 179-83; Neary, Tr. 1423-24). A TVC simulates the

atmospheric and thermal conditions found in space. (Gill, Tr. 183; Proulx, Tr. 1722-23; Thompson, Tr. 2039-40; Higgins, Tr. 1264).

357. A TVC is composed of a large vacuum envelope (or chamber) constructed of stainless steel shaped roughly like a horizontal cylinder with a front door that may swing on a hinge or slide laterally on a rail. (Scully, Tr. 1098-99).

358. A "thermal vacuum system" is the process equipment that goes inside a TVC to simulate extreme heat and cold. (Higgins, Tr. 1263). The thermal vacuum system is comprised of one or more shrouds, vacuum insulated pipe, and cryo pumps or other pumping equipment, which are all controlled by a thermal control unit. (Higgins, Tr. 1263).

359. A TVC is outfitted with two or three different types of vacuum pumps that are used collectively to achieve the vacuum conditions found in space. (Scully, Tr. 1099).

360. The thermal shroud turns the vacuum chamber into a TVC. (Scully, Tr. 1099). This thermal shroud is a black wall found inside the vacuum envelope that cools or heats the contents of the chamber through radiation. (Scully, Tr. 1099-1101).

361. The extreme temperatures required inside a TVC are created by blowing nitrogen through tubes connected to the thermal radiator. (Scully, Tr. 1100; Thompson, Tr. 2039-40).

362. TVCs require field-erection at the facility site. Field-erection is required when the chamber or its pieces become too large to transport to the site. (See Gill, Tr. 187). This field-erection includes transporting the fabricated pieces of the stainless steel chamber to the site, using cranes and riggers to align the pieces, and using welders to weld the chamber pieces together. (Gill, Tr. 186, 268-69; Hart, Tr. 407; see also Newmeister, Tr. 2188-89).

2. Market shares and concentration in the TVC market prior to Acquisition

363. CB&I's acquisition of PDM combined the only two competitors in the market for large field-erected TVCs in the U.S. (Simpson, Tr. 3489 (citing CX 272; CX 857, in camera; CX 264; CX 1040 at PDM-HOU 010889; CX 94 at PDM-HOU 017583)). Since 1960, the only companies that have built TVCs are PDM and CB&I. (Scully, Tr. 1110, 1115 (referencing RX 178); Higgins, Tr. 1267; Newmeister, Tr. 1564).

a. Tank projects

364. Only one field-erected TVC has been built since 1990. This was built by PDM in 1996. (Glenn, Tr. 4089, 4160; Scully, Tr. 1165, 1189, 1193).

365. CB&I has not built a field-erected TVC since 1984. (Scorsone, Tr. 5055-56; Glenn, Tr. 4089, 4160; Scully, Tr. 1187-89, 1193; Higgins, Tr. 1276-77). CB&I has never built a mailbox-shaped field-erected TVC. (Scully, Tr. 1193; Neary, Tr. 1467; Scorsone, Tr. 5056).

366. Both CB&I and PDM provided final pricing offers for [redacted] large, field-erected mailbox shaped TVC in 1997 that [redacted] now calls the [redacted]. ([redacted], Tr. 1740, 1901, in camera). In addition, two other companies, [redacted] responded to [redacted] request for proposals. ([redacted], Tr. 1890-91, in camera). [redacted] eliminated these companies from the bidding process because they were not qualified. ([redacted], Tr. 1890-91, in camera).

367. PDM provided a firm fixed price proposal for a large, field-erected TVC for [redacted] Seal Beach facility in 1999. (CX 1573 at 5, in camera; [redacted], Tr. 1925-27, in camera). [redacted] sought a sole-source procurement with PDM without even considering CB&I. ([redacted], Tr. 1927, in camera; Scorsone, Tr. 5081-82, in camera).

368. Both CB&I and PDM developed specifications for a large field-erected TVC for Spectrum Astro in 1999. (CX 969 at CBI-PL014693; CX 1162 at CBI-ATL000941, in camera; Thompson, Tr. 2047-2048). In November 2000, both CB&I and PDM submitted best and final offers for the Spectrum Astro project. (Thompson, Tr. 2051; Scorsone, Tr. 5115-16). CB&I was selected. CB&I's price was lower than PDM's. (Thompson, Tr. 2051). Spectrum Astro subsequently decided not to proceed with the field-erected TVC project. (Thompson, Tr. 2097, 2103-04). CB&I and PDM were the only companies competing for this project. (Scully, Tr. 1169; Higgins, Tr. 1270).

369. Both CB&I and PDM were asked to provide rough order of magnitude ("ROM") pricing for a large field-erected TVC to TRW in 1999. (Neary, Tr. 1430-31). TRW has not asked for bids. (Gill, Tr. 253). After the Acquisition, TRW requested TVC pricing from Howard Fabrication, a small producer of shop-built TVCs. (Neary, Tr. 1442-43). TRW plans to award the contract for this TVC in late 2003 and begin building it in 2004. (Neary, Tr. 1431, 1471-73, 1501). CB&I, PDM and Howard were the only companies asked to provide ROM pricing. (Neary, 1431-32, 1444).

b. HHI calculations

370. Dr. Simpson testified that he would assign a 50-percent market share to CB&I and a 50-percent market share to PDM based on the opinions of market participants, documents, and the history of awarded projects. (Simpson, Tr. 3492-93, 3495-96). Dr. Simpson includes in his HHI analysis the value of the Spectrum Astro project which was awarded to CB&I, but was not built. (Simpson, Tr. 3495). On these bases, Dr. Simpson testified that the Acquisition increased market concentration, as measured by the HHI, by 5000 points to a level of 10,000. (Simpson, Tr. 3494).

371. If CB&I and PDM are assigned market shares based on the dollar value of awarded sales since 1990, CB&I has a 49.3 percent market share, and PDM has a 50.7 percent market share. (Simpson, Tr. 3493-94). Based on the dollar value of TVC awards

since 1990, CB&I and PDM have a combined share of 100%, and the Acquisition increases market concentration, as measured by the HHI, by 4,999 points to a level of 10,000. (Simpson, Tr. 3494; CX 1210 at 7, in camera; CX 567 at CBI 007139-HOU).

372. While CB&I was awarded a bid in 2000 for Spectrum Astro, a contract was never signed and the project was canceled. (Thompson, Tr. 2097, 2103-04; Scorsone, Tr. 5336-37). Without the proposed Spectrum Astro project included, PDM would have 100% market share and an HHI of 10,000 since 1984. The increase in the HHI would be zero.

373. Demand in the TVC market is extraordinarily thin. (Harris, Tr. 7325).

374. Already thin demand is decreasing for large, field-erected TVCs as the result of consolidation in the aerospace business, the miniaturization of electronic components in satellites, and the change in the economy since the 1990's. (Scully, Tr. 1199-1204).

375. Use of data from 1990 to Acquisition does not accurately predict harm to competition because the market for TVCs is extraordinarily thin. (Harris, Tr. 7325-27).

3. Respondents were each others' closest competitors in the TVC market

a. CB&I's views

376. CB&I's business and strategic documents refer to PDM as CB&I's "only competitor" for TVC projects in the United States. (CX 212 at CBI-PL031721; see also CX 264 at CBI-H006780 ("only real competitor"); CX 265 at CBI-H007057 ("single USA competitor").

377. CB&I considered PDM to be a "formidable" competitor in the TVC market (CX 216 at CB&I-PL033886, see also CX 212 at CBI-PL031721 (PDM's strategic alliance was "the only

competition for the thermal vacuum systems market")), and "our major competition if new work emerges" in TVCs. (CX 1040 at PDM-HOU 010889).

378. CB&I purchased XL Technology Systems ("XL") on September 30, 1999 with the hope that XL's technology would help CB&I compete in the field-erected TVC market. (Scully, Tr. 1123-30, 1178, 1189; see also Glenn, Tr. 4161).

379. The purchase of XL in 1999 improved CB&I's competitiveness in the TVC market. (Gill, Tr. 257). CB&I's partnership with XL was a significant factor in CB&I's winning the source selection for the Spectrum Astro project. (Thompson, Tr. 2103; Scully Tr. 1226).

b. Industry views

380. John Gill, owner of Howard Fabrication, testified that prior to the Acquisition, "PDM was either number one or number two," and CB&I was, "either number one or number two." (Gill, Tr. 204-205).

381. Kent Higgins, President of Process Systems International, testified that "PDM and CB&I" were the only firms that had the capability to construct TVCs. (Higgins, Tr. 1267).

382. Patrick Neary, Manager of the Environmental Test Organization, testified that Respondents were "the two large field-erected manufacturers" of TVCs. (Neary, Tr. 1430).

383. John Newmeister of Matrix testified that Respondents were the only two firms who have competed in the TVC market. (Newmeister, Tr. 1564).

384. [redacted], Product Manufacturing Factory Planning Manager for [redacted], testified that Respondents were "the lowest risk and best candidates for success." ([redacted], Tr. 1899, 1900, in camera). Other firms lack the expertise to be as cost-

effective and of equal quality as Respondents. ([redacted], Tr. 1900-01, in camera).

385. David Thompson, CEO of Spectrum Astro, who has "seen most of the TVCs in the industrial base in the [United States]," testified that Spectrum Astro "tried to do a survey of everybody in the country that we thought would be a qualified bidder, and the two bidders that we found at the time were Chicago Bridge and Iron and PDM." (Thompson, Tr. 2039-41). Spectrum Astro saw CB&I and PDM "fighting against each other pretty hard to get our business." (Thompson, Tr. 2115).

386. XL Technologies viewed the competition between Respondents as "always relatively intense." (Scully, Tr. 1175). CB&I's desire to win TVC projects caused the "pricing [of TVCs] to go down." (Scully, Tr. 1175-6). The competition was so "intense" that XL Technologies and its partner CB&I worried that the prices to customers would not return a profit: "the costs incurred to get" a project were so high that "if the price of the system isn't high enough, you've lost your profit before you ever begin the job." (Scully, Tr. 1179-81). Ronald Scully, President of XL Systems, testified that turnkey suppliers for TVCs were limited to Respondents. (Scully, Tr. 1115, 1237).

387. Scully made sales calls to Lockheed on behalf of CB&I and XL Systems ("XL Systems") in 1997 in an attempt to solicit TVC business. (Scully, Tr. 1190). Lockheed employees refused to work with CB&I, because Lockheed believed PDM to be dominant in the industry and the technological leader. (Scully, Tr. 1190-91).

c. Competition between Respondents lead to lower prices

388. In [redacted], which is now owned by [redacted], procured a large, field-erected, mailbox-shaped TVC that [redacted] now calls the [redacted]. ([redacted], Tr. 1740, 1901, in camera).

389. PDM and CB&I each attempted to preempt the competitive bidding process and win the project on a sole-source basis. Bob Swinderman, PDM sales representative, told [redacted] that sole-sourcing the chamber with PDM "would be the cheapest and fastest way" to get the chamber built. ([redacted], Tr. 1889-90, in camera). CB&I echoed the same sentiment, giving similar assurances to [redacted] if it sole-sourced the chamber with CB&I. ([redacted], Tr. 1889-90, in camera)

390. [redacted] testified that he did not want to sole-source the project, as a sole-source arrangement generally resulted in higher costs. ([redacted], Tr. 1890, in camera).

391. Rather than sole-source the project, [redacted] made the specifications for the project available to "all the interested bidders." ([redacted], Tr. 1892, in camera). [redacted]." ([redacted], Tr. 1890-91, in camera).

392. Four companies responded to [redacted] request for proposals: CB&I, PDM, [redacted]. ([redacted], Tr. 1899, in camera). These bidders presented "their conceptual design," cost estimate material, and other information required by [redacted]. ([redacted], Tr. 1892, in camera).

393. [redacted] submitted the lowest bid in response to [redacted] performance specifications. However, [redacted] did not meet [redacted] standards. [redacted] eliminated [redacted] from the bidding because "they did not show that they had a complete wherewithal as to the scope of the project in order to come in at cost," they "did not have clear solutions on some of the items delineated in . . . [redacted] preliminary proposal review," and ". . . they lacked the demonstrated experience of building something of that size." ([redacted], Tr. 1900, in camera).

394. [redacted] also eliminated [redacted] as a possible competitor because ". . . their proposal couldn't meet the spec. . . they took exception to some of our specs." ([redacted], Tr. 1901, in camera).

395. In addition to the four original bidders, [redacted] also contacted two other suppliers, "[redacted], and requested that they submit proposals for the project. ([redacted], Tr. 1902-1903, in camera). [redacted] refused to submit a bid because "they felt the size of the project was beyond their company's means." ([redacted], Tr. 1903, in camera).

396. The elimination of [redacted] and [redacted] from the competition, and the refusal of [redacted] to submit a bid, left PDM and CB&I as the two down-selected bidders for the [redacted]. ([redacted], Tr. 1892, in camera).

397. [redacted] told CB&I and PDM that they were competing against each other for the [redacted]. ([redacted], Tr. 1909, in camera). [redacted] project manager testified that he wanted CB&I and PDM to know that they were competing against each other because "when you have competitors bidding best and final, one number takes all, [that] is when we would receive the lowest price. . . ." ([redacted], Tr. 1909, in camera).

398. [redacted] asked each company for "cost-saving initiatives, what could be done to reduce costs." ([redacted], Tr. 1907, in camera). As both companies developed their final designs, incorporating their own cost-saving innovations, they used "their expertise as designers and builders to suggest anything that might lower the bottom line cost for the chamber." ([redacted], Tr. 1907-08, in camera).

399. After receiving the final pricing offers for the [redacted] added some items to the TVC specifications. ([redacted], Tr. 1911, in camera). Even though [redacted] believed these additional items "would have increased the price," [redacted] asked CB&I and PDM to "sharpen their pencils and give me their lowest price." ([redacted], Tr. 1911-12, in camera).

400. In response to this last request, CB&I increased its final pricing "a little bit." ([redacted], Tr. 1911, in camera).

401. Despite the increase in cost from the additional items, "PDM actually lowered their price by . . . over a million dollars." ([redacted], Tr. 1910-11, in camera; see Scully, Tr. 1166 (after the bid was awarded, CB&I learned that, at the last opportunity in the bidding process, PDM had further lowered its price by "something in the order of as much as $ 2 million")).

402. PDM bid the [redacted] in 1997 at below cost with the intention of keeping CB&I completely out of the market. (Scully, Tr. 1193-94, 1166).

403. [redacted] perceived, based on comments, that PDM lowered its pricing to demonstrate "technical prowess, boasting rights, so to speak, of having won or the desire to win for future business prospectives that [redacted] contract. . . ." ([redacted], Tr. 1916, in camera).

404. Sometime after [redacted] awarded the contract to PDM, [redacted] talked with Bob Swinderman, the PDM sales representative, about the competition for the [redacted] project:

> . . . PDM had felt that CB&I had been out of the market for several years and that if they allowed them to win that particular project, which was a very significant project, that they would be back in and become a significant competitor, and it was important to PDM management that they not win that, and so through telephone calls they developed a price, lowered the price and offered it to [redacted] at the last minute. . . .

(Scully, Tr. 1166).

405. The lowest price was the deciding factor in who won the project. [redacted] awarded the [redacted] contract to PDM and its subcontractor, Chart Industries, primarily because they offered a lower price than the CB&I/XL team. ([redacted], Tr. 1891-93, in camera).

406. [redacted] testified that his procurement strategy had saved [redacted] below what he had originally estimated as the likely cost of the [redacted]. ([redacted], Tr. 1910, in camera).

4. Competition in the TVC market from Acquisition to time of trial

407. [redacted] ([redacted], Tr. 1957, in camera).

408. TRW began its procurement process for its TVC in 1999 by obtaining ROM pricing from CB&I and PDM. TRW plans to award the contract for its TVC in late 2003 and begin building it in 2004. (Neary, Tr. 1431, 1501).

409. Spectrum Astro will likely procure a new TVC in the next 3-4 years. (Thompson, Tr. 2104).

5. No other companies provide competition in the TVC market

410. Howard Fabrication is a domestic company that supplies shop-fabricated TVCs and thermal vacuum systems. Howard Fabrication has never supplied, and does not have the capability necessary to supply, a TVC with a diameter greater than 20 feet. (Gill, Tr. 182, 192-93). Gill testified that his company, Howard Fabrication, with $ 2.5 million in annual revenues, could not effectively compete in the market for TVCs because it was not large enough to purchase the bonds for TVC projects. (Gill, Tr. 200-01, 234).

411. CB&I does not consider Howard capable of fabricating a TVC, let alone having the capability to design, engineer, and field-erect a TVC. (Scorsone, Tr. 5061 ("I think that would be a real stretch for Howard, very much so.").

412. Mr. Higgins, the President of the Chart division that supplies the systems and equipment attached to TVCs, testified that Chart is not "capable" of field-erecting a TVC by itself. (Higgins, Tr. 1266-67).

413. Matrix has not expended any significant resources on developing its capability to engineer and design TVCs. (JX 37 at 89-90 (Newmeister, Dep.)).

414. XL Technologies admits that it is not capable of supplying a TVC without partnering with an experienced chamber supplier such as CB&I. (Scully, Tr. 1118, 1134, 1252; see CX 262 at CBI-H004037-38). On February 28, 2002, CB&I sold its XL Technologies subsidiary to Scully. (Scully, Tr. 1130). CB&I did not transfer to XL Technologies the assets, engineering know-how, equipment or personnel necessary to the field-erection of large TVCs. (Scully, Tr. 1132-33).

6. Barriers to entry in the TVC market

415. Mr. Scully, President of XL Technology Systems, testified that TVC customers want experienced suppliers with "knowledge as to how to deal with the architects and the construction people . . . and ability to manage a project." (Scully, Tr. 1147; see also Higgins, Tr. 1272; Proulx, Tr. 1756; Neary, Tr. 1455).

416. New entrants would need to obtain "the ability to fabricate in the field a stainless steel vessel" and satisfy "the quality requirements of leak testing and cleanliness" for a TVC. (Higgins, Tr. 1272-3). A new entrant would need to hire engineers with previous experience in designing TVCs, which are "truly one-of-a-kind designs for very specific applications on very technical products." (Newmeister, Tr. 1612-13).

417. Leaks in a TVC can prevent the user from meeting the vacuum specifications required for satellite testing. ([redacted], Tr. 1904-05, in camera). In addition, defects in the welding of the chamber can lead to the leakage of contaminants into the chamber, which can interfere with the accuracy of the test results. (Scully, Tr. 1143-44). If a TVC fails during a satellite test, the satellite within the chamber can be damaged. (Neary, Tr. 1454; Scully, Tr. 1144). Operational problems with a TVC can have a "bad effect" on the satellite's program schedule, because the test

may have to be restarted from the beginning after the problem is resolved. (Scully, Tr. 1145-46).

418. A new entrant would need to expend significant resources in developing proposals and price quotations for TVCs. One CB&I document reports that CB&I expended $ 300,000 in design resources and $ 190,000 in other resources to prepare its TVC proposal for Orbital Sciences' planned chamber. (CX 235 at CBI-PL060198).

7. Alleged post-acquisition anticompetitive behavior

a. Spectrum Astro

419. In the fall of 1999, Spectrum Astro required a TVC in order to be considered for the Space Based Infrared System (SBIRS) Low Phase 2 Program, sponsored by the United States Air Force. (CX 969 at CBI-PL014693).

420. Mr. William Thompson, Spectrum Astro's president, testified that he competitively bid the project, because "we wanted obviously to get the best price we could get." (Thompson, Tr. 2051). Additionally, Spectrum Astro used a competitive bidding process because "we were looking for technical innovation. We generally find that when we have contractors in competition, they will - it will tend to drive innovation into the system." (Thompson, Tr. 2051).

421. Spectrum Astro retained both CB&I and PDM to develop specifications for a large field-erected TVC; Spectrum Astro also entered into an engineering and design contract with each company in which Spectrum Astro paid each company [redacted] (CX 969 at CBI-PL014693; CX 1162 at CBI-ATL000941, in camera; Thompson, Tr. 2047-2048).

422. The contract was to be awarded according to a "rolling down-select between CB&I and PDM/PSI team." (CX 969 at CBI-PL014693).

423. Spectrum Astro received initial cost proposals from both CB&I and PDM in May 2000. CB&I and PDM's total cost amounts were $ 9,929,990 and $ 10,825,853 respectively. (CX 1570 at 22).

424. In November 2000, both CB&I and PDM submitted best and final offers for the Spectrum Astro project. (Thompson, Tr. 2051; Scorsone, Tr. 5115-16). Of the two offers that were submitted, CB&I's price was lower than PDM's. (Thompson, Tr. 2051). CB&I bid $ 10,760,880, an increase of 8.4% above its previous cost proposal. (CX 1570 at 9). PDM bid $ 11,528,900, an increase of 6.5% above its previous cost proposal. (CX 1570 at 5, 37).

425. CB&I's November 2000 offer included a profit margin of 7.77%. (CX 1489 at CBI 060015).

426. After evaluating the proposals submitted by PDM and CB&I, Spectrum Astro elected to proceed with CB&I, in December 2000. (Thompson, Tr. 2061; CX 926 at CBI 007212-HOU).

427. After selecting CB&I for the project, Spectrum Astro proceeded "based upon the price we had in our hands," that is the firm fixed price of approximately $ 10.7 million. (Thompson, Tr. 2065; CX 1489 at CBI 060015).

428. The price provided to Spectrum Astro in December 2000 expired after 90 days, as is typical in this industry, because costs are expected to escalate or fluctuate beyond the 90 day period. (Scorsone, Tr. 5047-48; Thompson, Tr. 2609).

429. Following the selection of CB&I in December 2000, Spectrum Astro did not immediately award the project because it was working to get financing complete. (Thompson, Tr. 2066).

430. CB&I's price expired 90 days after the source selection, in February, 2001, and Spectrum Astro did not request updated pricing until 10 months later in November, 2001. (Scorsone, Tr.

5047; see also Thompson, Tr. 2069). For almost one year, the project remained dormant. (Scorsone, Tr. 5048).

431. In November 2001, CB&I provided Spectrum Astro with updated pricing for the Spectrum Astro chamber. (Thompson, Tr. 2069-2070). CB&I's updated price for the Spectrum Astro TVC was $ 12,019,000 -- almost $ 1.2 million greater than its price 12 months prior. (Thompson, Tr. 2074; CX 567 at CBI 007139-HOU; Glenn, Tr. 4356-57).

432. CB&I's updated price of $ 12,019,000 resulted in an 11.7% increase in the price of the chamber from the November 2000 price. (CX 1489 at CBI 060015; CX 1570 at 5).

433. According to a pricing analysis written by Scott O'Leary, Spectrum Astro's chief of facilities, Spectrum Astro was "expecting a decrease in cost due to the decrease in requirements." (CX 1570 at 5; Thompson, Tr. 2095). During the engineering study, "there were some items that were taken out of the design which should have caused the price to go down." (Thompson, Tr. 2071, 2073). Due to other "offsetting kinds of things" in the design, Thompson testified that on balance, he believed the price of the chamber "would have stayed about the same." (Thompson, Tr. 2073).

434. The November 2001 price included an 11.97% profit margin. (CX 1489 at CBI-060015).

435. Scorsone testified that the extra profit included in the November 2001 re-pricing was a means of recovering some of the pre-contract costs, which was consistent with CB&I's policy at the time. (Scorsone, Tr. 5049). Scorsone told CB&I staff to "to insert the precontract costs incurred previously on the bid effort for this project even though those costs had been incurred in the previous year and had been written off." (CX 1492 at CBI 060000; see Scorsone, Tr. 5118, 5120-21; Scully, Tr. 1173-74). Scorsone further testified that another reason for the extra profit was the perceived need to mitigate some of the risks of moving forward with the project. (Scorsone, Tr. 5049). Satellite programs awarded

by the Government are sometimes delayed. (Thompson, Tr. 2129). As a result, vendors of satellites must take account of the risk that these programs might be cancelled or delayed. (Thompson, Tr. 2129-30). Some of the extra profit was also the result of posturing in the negotiation with Spectrum Astro, because the final terms of the contract were never set. (Scorsone, Tr. 5049-51).

436. Scorsone also testified that the margin was increased to account for the added risk of erecting the "vessel outside of the building and then moving it in [to the building]" with the containment vessel. (Scorsone, Tr. 5122). However, this alternate method of erecting the chamber did not come up until after the November 2001 price increase. (Thompson, Tr. 2078-2079; CX 566 at 2; CX 1570 at 63 (alternate method was discussed in May 2002)). CB&I's comparison of its November 2000 and November 2001 proposals specifically states that estimates did not include "the alternate plan of erecting the chamber outside and then moving it into position." (CX 1489 at CBI 060013).

437. In CB&I's November 13, 2001, updated price quote to Spectrum Astro, Jeff Steimer listed nine reasons for its increase in price. (CX 567 at CBI 007136-HOU, CBI 007137-HOU). On December 19, 2001, CB&I provided Spectrum Astro with a follow-up justification letter to explain the bases for CB&I's price increase. (CX 1570 at 57-59).

438. Neither the November 13th nor the December 19th letter provide as reasons for the price increase the recovery of pre-contract costs previously incurred or risks of having to erect the chamber from outside the building. (CX 1570 at 46-47, 57-59).

439. The November 2001 price expired again after 90 days without Spectrum Astro acting on the new price. (Scorsone, Tr. 5051). After the second price had expired, Spectrum Astro waited six or seven months before requesting an updated price from CB&I. (Scorsone, Tr. 5051). The companies did not have a contract or financing at that point. (Scorsone, Tr. 5051-53).

440. In May 2002, Spectrum Astro responded to the November 2001 price asking CB&I to try again. (Scorsone, Tr. 5051). On June 25, 2002, CB&I provided Thompson with an updated price in the amount of $ 11,553,790, a decrease of roughly $ 500,000 from the previous price update. (Thompson, Tr. 2091-92).

441. CB&I lowered its price in June 2002, because Scorsone was aware that the customer was having difficulty obtaining financing, and he wanted to assist them by making the project more viable with a lower price. (Scorsone, Tr. 5051-53). The June 2002 price lowers the profit margin to 8%. (CX 1489 at CBI 1060015).

442. Spectrum Astro does not plan to proceed with the field-erected TVC project. (Thompson, Tr. 2097, 2103-04). The decision is the result of "government action." (Thompson, Tr. 2097). The lack of financing also influenced the decision. (Thompson, Tr. 2105). It will be a long time before the Spectrum Astro job is actually built, if at all. (Scully, Tr. 1225-26).

443. Instead, Spectrum Astro intends to build a smaller shop-fabricated chamber, a product which CB&I does not build. (Thompson, Tr. 2104-2105).

b. TRW

444. In 1999, TRW Space & Electronics ("TRW") decided to procure a TVC, and requested rough order of magnitude ("ROM") pricing from CB&I and PDM. (Neary, Tr. 1430-31).

445. TRW considers Howard Fabrication to be unqualified to compete in the TVC market. Neary testified that Howard Fabrication does not have "the technical competence nor the financial backing" necessary for TRW to award it a TVC project. (Neary, Tr. 1443). After the Acquisition, TRW nevertheless requested pricing from Howard Fabrication because it wanted to maximize competition for the TVC project. (Neary, Tr. 1444).

446. A CB&I salesman, Mike Miles, called John Gill of Howard Fabrication in mid-October 2002 to set up a meeting to discuss a new opportunity to work together. (Gill, Tr. 242-44). Miles did not indicate the nature of the opportunity during the initial phone call. (Gill, Tr. 242-44, 251-52).

447. Neither Miles nor Gill knew at the beginning of their October 2002 meeting that they had each separately provided very rough order of magnitude pricing on the TRW project. (Gill, Tr. 252-53, 274; Scorsone, Tr. 5059-60).

448. During the October 2002 meeting, Miles mentioned the possibility of Howard serving as a partner or subcontractor with CB&I for purposes of an unnamed proposed TVC project, since Howard Fabrication has worked with PDM as a subcontractor in the past. (Gill, Tr. 246-248, 251-56; Scorsone, Tr. 5059-60).

449. According to Gill, at the October 2002 meeting Miles gave him a copy of design specifications that he recognized as the same specifications that he was given by TRW for its TVC project. (Gill, Tr. 245). Gill told Miles that he knew the job was for TRW and that he had already presented a proposal to TRW for the job. (Gill, Tr. 245, 252-53, 274).

450. Gill testified that, nevertheless, during the October 2002 meeting, Miles asked him whether Howard "could coordinate on making a bid or a price quote to TRW." (Gill, Tr. 247). Gill confirmed that Miles proposed coordinating on the TRW bid after Gill had told him that Howard was bidding on the project. (Gill, Tr. 274).

451. Miles did not make this offer to coordinate on a bid to TRW with the consent or knowledge of management at CB&I. (Scorsone, Tr. 5059-62). Miles is an entry-level salesperson, and not a CB&I executive. (Scorsone, Tr. 5061-62). CB&I was unaware that Howard Fabrication had submitted budget pricing on the TRW project prior to Miles' meeting. (Scorsone, Tr. 5060).

452. TRW believes that CB&I's proposal to Howard to coordinate on the price and bid to TRW deprives TRW of any chance for relief from CB&I's monopoly price. At trial, Neary of TRW testified that "it's not right" for a bidder to ask a competing bidder to coordinate on making a bid or price quote to TRW. (Neary, Tr. 1451). Neary further testified that "we're not going to get a fair and equitable price. It goes back to why do we even have two competitors. We're at a disadvantage. We're going to get - we're basically hosed, as I would say." (Neary, Tr. 1451).

453. CB&I is still considering using Howard Fabrication as a subcontractor, but would seek the prior approval of the customer before doing so. (Scorsone, Tr. 5060).

c. [redacted]

454. On June 30, 1999, PDM provided [redacted] with a firm fixed price proposal for a large, field-erected TVC for [redacted]. (CX 1573 at 5, in camera; [redacted], Tr. 1925-27, in camera).

455. This firm fixed bid price was [redacted]. ([redacted], Tr. 1927; Scorsone, Tr. 5081-82, in camera).

456. Pre-acquisition, PDM quoted a price of [redacted] in its proposal to [redacted], but the customer chose to postpone the project. (CX 1573 at 5, in camera; [redacted], Tr. 1926, in camera).

457. [redacted] ([redacted], Tr. 1943, in camera). Prices expire because costs change over time. ([redacted], Tr. 1944, in camera). The price of steel and labor costs increased in the interim. ([redacted], Tr. 1952, in camera).

458. In May 2001, [redacted] undertook a study to determine whether it should [redacted]. ([redacted], Tr. 1927-28, in camera).

459. In order to analyze the costs of the two alternatives, [redacted] requested "cost verification from CB&I . . . of the price . . . [redacted] based on PDM's earlier proposal." ([redacted], Tr.

1929, in camera). [redacted] contacted Dave Lacey of CB&I, asked him to review PDM's prior proposal and submit a renewed price based on the specifications and schedule of the prior bid. ([redacted], Tr. 1930, in camera).

460. [redacted]'s official request was for a firm fixed price renewal of PDM's earlier bid for the TVC. ([redacted], Tr. 1933, 1935, in camera).

461. [redacted] expected the price for the [redacted] TVC project to increase marginally to cover "reasonable inflation." He anticipated the new pricing information to be [redacted] ([redacted], Tr. 1934, in camera).

462. CB&I did not have the information necessary to provide the firm fixed price to [redacted], nor did CB&I want to expend the money necessary to provide a new firm fixed bid price. (Scorsone, Tr. 5084, in camera). [redacted] did not give CB&I a date for the start of construction, the construction schedule, or information required to assess how the chamber would be inserted into the building. ([redacted], Tr. 1945, in camera). Such information would have been necessary for producing a firm fixed bid price. (See Scorsone, Tr. 5000-02).

463. On May 16, 2001, instead of providing a "firm fixed price renewal," CB&I submitted Rough Order of Magnitude "ROM price of [redacted] for a fully commissioned TVC." ([redacted], Tr. 1930-33, 1935-36, in camera; CX 1573 at 3, in camera).

464. The May 16, 2001 letter from CB&I states that "the ROM pricing accuracy can be improved with a more detailed assessment of your needs and resulting work scope. Sometime in the upcoming weeks we would like to discuss more fully your needs and emerging plans for providing services." ([redacted], Tr. 1950, in camera; CX 1573 at 3, in camera).

465. The May 16, 2001 ROM price has a stated accuracy of [redacted]. ([redacted], Tr. 1950-51, in camera).

466. CB&I's ROM pricing in 2001 represented an increase of [redacted] or over [redacted] from PDM's firm fixed price in 1997. (CX 1573 at 2, in camera; [redacted], Tr. 1935, in camera).

467. [redacted] of [redacted] accepted that the [redacted] price quoted in the May 16, 2001 letter as "the price [redacted] would now have to pay to have that chamber built." ([redacted], Tr. 1933, in camera).

468. [redacted] was "disappointed that the cost had gone up" and that CB&I had not presented the updated price quote as a firm fixed price in its letter. ([redacted], Tr. 1936, in camera).

469. The price quoted by CB&I [redacted]." ([redacted], Tr. 1936, in camera).

470. [redacted] never asked CB&I for a follow-up firm price. ([redacted], Tr. 1947, 1951, in camera).

8. Sophistication of customers in the TVC market

471. [redacted] is a large aerospace company. (Scully, Tr. 1092). [redacted] has five field-erected TVCs and 30 shop-fabricated TVCs. ([redacted], Tr. 1725-26).

472. TRW has five field-erected TVCs and approximately 15 shop-fabricated TVCs. (Neary, Tr. 1422).

473. Spectrum Astro is a satellite manufacturer that competes with large defense contractors. (Thompson, Tr. 2036).

I. Factors Across All Product Markets

1. Budget prices versus firm bid prices

474. A budget price is an initial price quote that can provide the initial basis for selecting a supplier and negotiating a final price. (Neary, Tr.1440 ("We first receive their initial price. Then we select the vendor")).

475. Budget prices are prepared with less detailed information provided by the customer. (Hall, Tr. 1866; Carling, Tr. 4472; Fan, Tr. 1078). By contrast, a firm fixed bid price is based on very detailed designs. (Carling, Tr. 4472; Scorsone, Tr. 5003). The company providing the firm price is expected to "stand up to their price and do the work for that price." (Carling, Tr. 4472).

476. Bids can be awarded solely on the budget prices. (JX 23 at 27-28 (Cutts Tr.)). For example, Atlanta Gas Light Company selected PDM over CB&I, for an LNG project in 1998, based on budget price bids submitted by CB&I and PDM. (CX 161 at CBI-PL006113-114). PDM outscored CB&I in the bidding competition "on the basis of their lower budget price." (CX 161 at CBI-PL006113). In another example, Linde BOC used budget prices to compare CB&I's and AT&V's pricing for the Hillsboro LPG project. (V. Kelley, Tr. 5292; Scorsone, Tr. 5031).

477. Budget prices can be close to firm bid prices. See Stetzler, Tr. 6352 ("Budgetary to me means plus or minus 10 percent type of a bid."). When CB&I and PDM competed for a TRW TVC project, CB&I's final price to TRW was within 5 to 10% of the original budgetary price. (Neary, Tr. 1440-41).

478. Generally, budget prices are more imprecise than firm fixed bid prices. (Carling, Tr. 4472; Scorsone, Tr. 4999). When creating budget pricing, estimators use off-the-shelf tank designs of a similar size volume to develop a budget price. (Scorsone, Tr. 4999). Subcontractors are not consulted when developing a budget price. (Scorsone, Tr. 4999-00). Amount of engineering labor required to design a tank are estimated when developing a budget price. (Scorsone, Tr. 5000). Those hours are not calibrated as part of the budget price. (Scorsone, Tr. 5000). These practices reduce the accuracy of the final number in a budget price. (See Scorsone, Tr. 4999-5000).

479. Budget prices include assessments of risk and contingency. (Price, Tr. 608-09; Scorsone, Tr. 5252; Simpson, Tr. 5366). Projects that involve an excessive amount of risk or

unknown contingencies will receive higher budget prices. (Scorsone, Tr. 5003).

480. Years sometimes elapse between the time when a budget price is submitted and the time when a firm fixed bid price is actually requested. (Scorsone, Tr. 5004).

481. When creating a firm fixed price, estimators use an actual tank design. (Scorsone, Tr. 4999).

482. Firm fixed bid prices require that a customer give the supplier information about the site conditions, as well as allowing someone from the bidding company to tour the job site to examine the access to the site and soil conditions. (Stetzler, Tr. 6353; Glenn, Tr. 4126).

2. CB&I and PDM recognized each other as each's greatest competitor

483. PDM was the "single largest" reason CB&I lost business in the United States; competition from PDM accounted for 33% of CB&I's lost business. (Glenn, Tr. 4331; CX 227 at CBI-PL045101; see also CX 23 at PDM-C1002566 (PDM has made "significant market share increases against CB&I in both domestic and international markets")). In March 2000, CB&I reported that "in the last three months our business lost report is showing PDM taking some 13 jobs from [CB&I] at a value of $ 25 million." (CX 243 at CBI-PL 4004707; see CX 660 at PDM-HOU005014 ("Since the fall of 1996, CB&I has been the most aggressive competitor in increasing market share")).

484. In March 2000, Steve Knott, CB&I's sales manager for the United States, e-mailed CB&I's sales team to lament that PDM is "'eating our lunch' and we know much of it is because of a CB&I cost problem." (CX 243 at CBI-PL 4004707).

485. Knott asked, "What is PDM doing that gives them the ability to be this low, this often? I am not 'coming down' on our group for losing to PDM. We all recognize that we can only sell

to the market what the market will pay. Given our current system, we are bumping against pricing levels that are dangerously close to our direct cost." (CX 243 at CBI-PL 4004707).

486. Knott concluded that "We need to come up with a strategy to combat the effort PDM is making to erode our market share." (CX 243 at CBI-PL 4004707).

487. In October 2000, CB&I's Bob Lewis wrote to Steve Crain, President of CB&I's Western Hemisphere Operations that PDM was bidding "much lower than the market, leaving a lot of money on the table." (CX 278 at CBI-H 4004204).

488. Handwritten notes from the files of PDM's President note the following: (1) 1996-1997 "focused on more profitable assignments;" (2) 1997-1998 accept "lower gross profit in pursuit of higher revenues;" and (3) 1998-1999 PDM "forced to bid at lower margins" due to "competition w/CB&I" and "seeking more revenues." (CX 76 at PDM-C1006141-3; see also CX 390 at PDM-C 1006145 ("97-98 -> aggressive growth market share - sacrifice margins")).

489. In May 2000, PDM warned its Board of Directors that "CB&I has been extremely aggressive on pricing work in North and South America. They have taken certain projects at levels which would be slightly over PDM EC's flat cost." (CX 64 at PDM-C 1002562).

490. Scorsone confirmed that he told PDM's investment firm, Tanner & Company, about the competition between PDM and CB&I and how the companies were "forced to bid at lower margins" because of this competition. (Scorsone, Tr. 5152).

3. CB&I and PDM recognized that the Acquisition would reduce competition and lead to higher margins

491. [redacted] (CX 213 at CB&I-PL033037, in camera). [redacted] (CX 213 at CBI-PL033084, in camera).

492. In 1999, PDM had assessed the benefits of acquiring CB&I and determined that acquiring CB&I would give PDM "Market dominance in Western Hemisphere." (CX 74 at PDM-C 1005941). Scorsone admitted that when he wrote the document he believed PDM could achieve "market dominance" by acquiring CB&I. (Scorsone, Tr. 5169).

493. An August 2000 document, created by a PDM sales person, titled "Benefits of Combining PDM with CB&I," listed the following: (1) "Dominance of the cryogenic (LNG/LOX/LIN) markets;" and (2) "Allows CB&I to have a low cost USA tank producer." (CX 621 at PDM-HOU006702).

494. At the time of the Acquisition, Scorsone thought CB&I/PDM will be a "powerhouse." (CX 72 at PDM-C 1004409). Scorsone later added that CB&I/PDM "will truly be the world leader in storage tanks." (CX 1686 at CBI/PDM-H 4005550; Scorsone, Tr. 5203).

495. An October 2000 PDM document entitled, "PDM Merger Objectives Brainstorm Results." outlined the following objectives: (1) "Create barriers to entry as they can be built;" (2) "Defend an expanding market share;" (3) "Ensure that we do not allow smaller competitors to take share and pursue business in our attractive markets;" (4) "Put plans in place to command premiums for the services we provide;" and (5) "Improve pricing to achieve margin growth from 12.5% to 17%." (CX 101 at PDM-HOU002359-60).

496. On October 26, 2000, Scorsone and other members of the integration team held an "Integration Kick-off Meeting." The "kick-off meeting" agenda prioritized the objectives of the merger: (1) "Ensure that we do not allow smaller competitors to take share and pursue business in our attractive markets;" (2) "Defend an expanding market share;" (3) "Create barriers to entry;" and (4) "Use pricing advantage as necessary to not lose market share to competitors during the merger." (CX 1544 at CBI 057941).

4. Entry at prices above pre-merger prices does not restore competition

497. Both economic experts agree that entry by new firms would not restore the competition lost through an anticompetitive merger if this entry is at a price above the pre-merger price. (Simpson, Tr. 3151-52; Harris, Tr. 7438).

498. A merger of the two strongest suppliers would enable the merged firm to increase price up until the point where other less-strong suppliers begin to constrain it. (Simpson, Tr. 3451). A merger that reduces the number of sellers of LIN/LOX tanks from four to three or from three to two would be likely to result in an increase in price. (Simpson, Tr. 3451).

499. Entry will not keep prices from rising above the pre-acquisition level if entry is only profitable at higher prices. (Harris, Tr. 7451). The mere fact that entry has occurred following an acquisition does not mean that the entry is sufficient to restore the premerger competitive environment. (Harris, Tr. 7436). Entry by firms who can only profitably enter at prices above the competitive level would not restore competition. (Harris, Tr. 7438).

500. The observation that new firms submit bids in a market does not always imply that entry is sufficient. (Simpson, Tr. 3282-84; Harris Tr. 7790-91). The observation that new firms make some investments to sell into a market does not always imply that entry is sufficient. (Simpson, Tr. 3284-88; Harris, Tr. 7791).

J. Exiting Assets Defense

1. PDM background

501. PDM was founded in 1892 by the Jackson Family. PDM went public in 1965 on the American Stock Exchange. In 1999-2000, the Jackson Family was the primary stockholder of PDM, owning approximately 30 percent of the stock. (Byers, Tr. 6731-

32; Scorsone, Tr. 4791). PDM's Board consisted of a majority of the Jackson Family and its friends and acquaintances. (Byers, Tr. 6734).

502. PDM operated four lines of business with five divisions -- PDM Strocal, Water, Engineered Construction (EC), Bridge, and Steel Distribution. (Byers, Tr. 6731; Scorsone, Tr. 4778-79; G. Glenn, Tr. 4075-76).

503. PDM's EC and Water Divisions were "intertwined" and "meshed together." (Scheman, Tr. 2929-30). PDM's management believed separating EC and Water would be costly and difficult. (Scheman, Tr. 2929). The EC and Water Divisions shared human resource departments, fabrication plants, equipment and construction crews and it was considered impossible to split the two. (Scorsone, Tr. 4779; Byers, Tr. 6780-81, 6800-01). The EC and Water Presidents reported directly to the CEO Bill McKee, rather than exercising complete control over their organizations. (Byers, Tr. 6734).

2. PDM decision to sell the company

504. PDM's Board asked PDM management to consider potential options for the strategic direction of the company's future in Summer 1999. Scorsone, then President of PDM EC, prepared a presentation to the PDM Board in August 1999 about strategies for going forward with the PDM EC Division. (Scorsone, Tr. 4781-82).

505. At a strategic planning meeting, a list of options was devised to provide to the Board. This laundry list included making a major acquisition, buying something unrelated, taking the company private, and selling the company. (Byers, Tr. 6738-40; Scorsone, Tr. 4791).

506. This laundry list of options was presented to the PDM Board in Summer 1999, but no hard decisions were made at that time. (Byers, Tr. 6740). The various options presented to the PDM Board were to maintain the status quo, pursue acquisitions,

declare a special dividend, conduct a stock repurchase, split into two separate companies, and the sale of the company. (Scheman, Tr. 2917-19).

507. In November or December 1999, the PDM Board indicated to management that it wanted to pursue taking the company private. The Jackson Family would make a tender offer and buy back all shares of PDM except for management's ownership. This plan was never implemented. (Byers, Tr. 6740-41).

508. At the February 2000 Board meeting, the Jackson Family indicated that it wished to take the company private. It was decided that the Family should hire its own investment banker. Polly Townsend, Bill Jackson, Sr.'s daughter, contacted a partner at Tanner & Co. ("Tanner") for an interview. (Byers, Tr. 6741-42; Scheman, Tr. 2911, 6907).

509. In May 2000, PDM decided to sell the company. (Byers, Tr. 6742).

510. In June 2000, PDM interviewed investment firms Goldman Sachs and Tanner to advise on the sale. (Byers, Tr. 6742-6743).

511. Goldman Sachs recommended that PDM pursue "five to ten strategic buyers and 10 to 20 LBO [leveraged buy out] buyers." (Byers, Tr. 6838-39; see also CX 380 at PDM-C 1004026).

512. Tanner recommended that PDM sell off the divisions in pieces rather than in a single transaction to a single purchaser. (Byers, Tr. 6755). Tanner believed that breaking up the company and selling it in parts would result in a higher total value. (Byers, Tr. 6755).

513. Both Goldman Sachs and Tanner made presentations at the same Board meeting on June 1, 2000. Shortly after this

meeting, Tanner was retained by PDM. (Scheman, Tr. 2914-15, 6907-08; RX 25 at 2).

514. Tanner is no longer retained by PDM. Tanner's assignment concluded in the middle of March 2002 when PDM was acquired by Iron Bridge Holdings. (Scheman, Tr. 6909).

3. Steps resulting in acquisition

515. In 2000, Bill McKee, former CEO of PDM, offered to sell PDM EC and Water Divisions to CB&I in a telephone call to Glenn of CB&I. (Glenn, Tr. 4077-78).

516. Peter Scheman, Tanner's representative to PDM, had the responsibility to "coordinate and lead everything." (Scheman, Tr. 6908). Scheman first became involved with PDM at the end of February 2000 or beginning of March 2000 when Tanner was retained as an advisor to the Jackson Family in March 2000. (Scheman, Tr. 2911-12, 6907-08).

517. Tanner & Company prepared an offering memorandum for the sale of the PDM EC Division (Scheman, Tr. 2930-31). Scheman recalled sending the PDM EC offering memorandum to only one company -- CB&I. (Scheman, Tr. 2931).

518. PDM conducted discussions directly with CB&I. (Glenn, Tr. 4077-78). By the time the offering memorandum was completed, negotiations between CBI and PDM were at a point "that it didn't make sense to send it out to other people." (Scheman, Tr. 2931).

519. An e-mail from Scheman to Rich Goodrich, CB&I chief financial officer, dated August 4, 2000, states "We need to determine if there is a deal to be made between PDM and CBI or if we should be contacting other parties who have expressed similar interest." (CX 70 at PDM-C 1002706).

520. Scheman considered CB&I to be a "preemptive buyer" and this meant "that we never went out to other people. Their

status as a preemptive buyer made it so we didn't go down the route of calling other people." (Scheman, Tr. 2938-40 (Tanner did not believe it was "prudent" to "go out and contact people"); (Tanner and PDM had "reached a point with CB&I where we thought we had a good deal, and we ultimately, I believe, entered into a letter of intent and, therefore, did not show [the offering memorandum] to other people")).

521. On August 29, 2000, Respondents announced that they had signed a letter of intent for the acquisition of PDM's EC and Water Divisions by CB&I. (CX 285; CX 1565).

522. CB&I initially agreed to pay $ 93.5 million for PDM EC and Water, which was at the "high end" of Tanner's estimates of PDM's sales value. (CX 521 at TAN 1000328). Tanner believed "it is doubtful that PDM could achieve a value exceeding $ 93.5 million in an alternative transaction." (CX 521 at TAN 1000329). Rich Byers testified that the final price paid by CB&I for the PDM EC and Water Divisions was $ 76-77 million (Byers, Tr. 6794).

523. CB&I purchased PDM EC and Water Divisions for more than investment banker Goldman Sachs' valuation for the company and for an amount within the valuation range determined by Tanner. (Byers, Tr. 6843).

524. Alternative buyers would unlikely pay a premium price for PDM EC and Water Divisions because they would face continued tough competition from CB&I. (Scheman, Tr. 2966-67). Handwritten notes of PDM's investment banker state "Need informed buyer willing to fund war wCB&I - unlikely to pay premium." (CX 534 at TAN 1001619). PDM EC and Water Divisions were worth more to CB&I than they were to other firms because of CB&I's ability to utilize PDM's resources and compete on a global basis. (Glenn, Tr. 4261-62).

4. Alternatives to acquisition

525. In July of 2000, PDM announced that it would sell the company. (Scheman, Tr. 2918-20).

526. Financial buyers, who would have maintained PDM as an independent on-going entity, were available and had been recommended by Goldman Sachs and Tanner as alternative buyers. (Byers, Tr. 6744; see also CX 520 at TAN 1003258; CX 380 at PDM-C 1004025).

527. Tanner & Company was given the responsibility to contact potential purchasers. (Byers, Tr. 6758). PDM management was instructed to direct all inquiries to Tanner & Company. (Byers, Tr. 6758).

528. Tanner & Company assembled a preliminary list of potential buyers, in June 2000, including 18 steel companies, 15 engineering and construction companies, and 4 financial buyers. (CX 520 at TAN 1003258). This list was presented to the PDM Board on June 1, 2000. (CX 520 at TAN 1003256).

529. Among the companies identified by Tanner as potential acquirers of PDM EC and Water Divisions were Fluor, Jacobs Engineering, Foster Wheeler, Morrison Knudsen, but to Byers's knowledge, none of these companies were contacted about acquiring PDM EC and Water Divisions. (Byers, Tr. 6806-08). "I don't know of anybody that PDM contacted, anybody other than CB&I and Enron." (Byers, Tr. 6764, 6812).

530. Tanner never contacted any foreign firms in connection with purchasing PDM EC. (Scheman, Tr. 2938-39). Tanner did not contact Skanska/Whessoe, Technigaz, TKK, Tractebel, Mitsubishi, Entrepose, Nooter, or Wiley. (Scheman, Tr. 2938-39; Byers, Tr. 6811-12).

531. Matrix, then the third-largest United States tank constructor, made efforts to buy PDM EC. (Vetal, Tr. 418-19). Matrix's President, Brad Vetal, called PDM's President, William

McKee, and informed him of Matrix's interest in purchasing PDM EC. (Vetal, Tr. 422). McKee told Vetal that PDM could not talk with Vetal about a sale of the business because PDM already had a buyer, but McKee would call him if that deal fell through. (Vetal, Tr. 422-23; see also RX 168 at TAN 1000654 (handwritten notes of Peter Scheman indicating Vetal had contacted McKee)).

532. A fairness opinion prepared by Tanner, dated February 7, 2001, noted that if CB&I's acquisition of PDM EC and Water Divisions fell through, there were other potential buyers with the interest and adequate resources to purchase PDM EC and Water. (RX 29 at PDM-C 1006327). Other parties had in fact expressed an interest in purchasing PDM EC and Water. (CX 70 at PDM-C 1002706).

533. PDM actively sought buyers for its other divisions. As of August 18, 2000, "over ten parties had received the Confidential Memorandum for Steel Distribution and six groups had received Bridge Division books." (CX 521 at TAN 1000339).

534. On August 20, 2000, Tanner presented to PDM's president additional lists of prospective acquirers for the various PDM divisions, including fourteen parties who initiated contact expressing interest in possible acquisition of the various divisions and 32 prospective financial buyers. (CX 527 at TAN 1002453-2455)

5. PDM's financial condition

535. PDM was a "profitable" company. (Scheman, Tr. 2923; CX 520 at TAN 1003317). The company's Earnings Before Interest, Taxes, Depreciation, and Amortization ("EBITDA") increased from $ 20.5 million in 1994 to $ 49.3 million in 1999. (CX 520 at TAN 1003317).

536. The EC and Water Divisions are intertwined, and together were profitable according to the Tanner fairness opinion of February 7, 2001. (RX 29 at PDM-C 1006326). Since the two

divisions were sold together, it is fair to look at the profitability of the two divisions on a combined basis.

537. PDM's EC Division was profitable, increasing its margin each year from 1996 through 1999 and increasing its EBITDA earnings at a 5-year Combined Annual Growth Rate ("CAGR") of 18.7% on 5-year sales CAGR of 9.5%. (CX 520 at TAN 1003317). The Division's Earnings Before Interest and Taxes ("EBIT") increased from $ 5.4 million in 1995 to $ 9.5 million in 1999, a CAGR of 15.3%. (CX 522 at TAN 1003373). Revenues increased from $ 121.7 million in 1995 to $ 185.7 million in 1999. (CX 522 at TAN 1003373).

538. PDM EC had its best year ever in 1999. (Scorsone, Tr. 4823-24). As of July 2000, the month before CB&I and PDM signed the acquisition letter of intent, PDM EC projected EBIT of $ 2 million in 2000. (CX 522 at TAN 1003373).

539. In 2000, the EC Division lost $ 9 million after making $ 9.5 million in 1999. (Scheman, Tr. 6920-21; RX 163 at TAN 1000385).

540. As of June 30, 2000, PDM EC had cash of $ 2.6 million, total assets of $ 79.2 million, no outstanding long-term debt, and shareholder' equity of $ 56.8 million. (CX 385 at 30).

541. In September of 2000, Scorsone made a presentation to CB&I and its advisors about PDM EC's future prospects, "assuming that the company was not acquired [by CB&I]." (Scorsone, Tr. 5201; CX 1695 at CB&I/PDM-H 4005659). Scorsone projected PDM EC's earned revenues to be $ 151 million for 2000, and $ 168 million for 2001. (CX 1695 at CB&I/PDM-H 4005701; CX 529 at TAN 1000596; see also CX 1713 at CB&I/PDM-H 4015086-89 (projected income from operations increase each year from $ 6.4 million to $ 9.1 million, between the years 2001 and 2004)).

542. After Respondents announced the acquisition, PDM EC's earnings for 2000 declined, resulting in a loss for the year of

about $ 8 million. (Scorsone, Tr. 4825). After the date of closing, PDM and CB&I ultimately determined that PDM EC's losses approximated $ 30 million in fiscal year 2000. (Scheman, Tr. 6917, 6921, 6926; Byers, Tr. 6789).

543. A short-term reduction in capital expenditures in the petroleum and petrochemical industries in 1999 negatively impacted all tank suppliers in 2000, including CB&I. (CX 522 at TAN 1003372; CX 529 at TAN 1000596 ("1999 - Down - Mergers in Oil + Gas * Market Driver (Oil + Gas)")).

544. Scorsone, PDM EC's President, Byers, PDM's Vice President of Finance, and PDM's investment banker all believed that PDM EC's poor performance in 2000 would be short-lived, and if PDM EC had remained independent, PDM EC would have returned to profitability the very next year and continued to grow. (Scorsone, Tr. 4838; Byers, Tr. 6899; CX 529 at TAN 1000596 ("2001 - will be good year [for PDM] - the bookings are higher"); (CX 1713 at CBI/PDM-H 4015089) (EC Division predicted to earn gross profits of $ 20.0 million in 2002, $ 22.4 million in 2003, and $ 25.1 million in 2004); see also CX 522 at TAN 1003372 ("This decline is expected to be short lived" PDM EC projects 2001 revenue and EBIT of $ 168.0 million and $ 6.1 million, respectively)).

545. As late as February 7, 2001, the date CB&I consummated the acquisition, PDM's management projected that PDM EC would make a profit of $ 4.8 million in 2001. (Scheman, Tr. 2961-2962; RX 163 at TAN 1000385).

6. PDM was not facing liquidation

546. At the time PDM called CB&I to offer to sell, PDM's reputation in the two lines of business was very good -- they did good work and were recognized in the marketplace by being on everyone's bid lists. (G. Glenn, Tr. 4078).

547. The PDM EC Division was a successful and profitable business and was projected to sustain earnings growth. (CX 1695

at CB&I/PDM-H 4005701; CX 529 at TAN 1000596; see also CX 1713 at CB&I/PDM-H 4015086-89).

548. Scorsone testified that if the EC Division had not been sold, that it would not have gone out of business, and that it would be profitable in the future. (Scorsone, Tr. 4838).

549. Byers, former VP of Finance for PDM, testified that before making any recommendation to liquidate the PDM EC Division, his fiduciary duties would have required him to investigate to assure himself that there was no alternative purchaser for either PDM or for PDM EC willing to pay more than liquidation value of the business. (Byers, Tr. 6799-800, 6893, 6895). Byers never got to that point. (Byers, Tr. 6800). Byers never investigated whether there was a possibility of another purchaser. (Byers, Tr. 6895).

550. Tanner would have attempted to find alternative purchasers prior to recommending liquidation. (JX 34 at 83 (Scheman, IHT)).

551. PDM's Board of Directors meeting minutes illustrate that PDM had viable alternatives to liquidation. On November 28, 2000, PDM's President, William McKee stated that if the CB&I transaction fell through, PDM would continue its efforts to sell PDM EC and PDM Water Divisions by seeking other purchasers. (CX 1590 at PDM-C 1006065).

552. PDM's Board of Directors never took up the issue of liquidating the PDM EC Division. (Byers, Tr. 6891).

K. Remedy

1. Divestiture can restore competition

553. Divestiture to an appropriate acquirer of the reconstituted assets of PDM EC and PDM Water, as a viable business, would effectively restore competition and remedy any lessening of

competition that resulted from the acquisition of PDM EC and PDM Water Divisions. (Simpson, Tr. 3608-09).

2. Assets acquired in the acquisition

554. CB&I purchased "Tangible Personal Property" from PDM, which included "all design, manufacturing, construction, erection, maintenance, research and development, testing and other machinery and equipment, vehicles, tools, dies, molds, furniture, fixture, office equipment, field equipment, . . . supplies and other tangible personal property (together with all spare and maintenance parts, operating manuals, equipment specifications and diagrams)" used by PDM's EC and Water Divisions. (CX 328 at CBI 001264-CHI).

555. CB&I purchased real property or the leases to real property from PDM EC in the Acquisition in the following locations: Woodland, TX (leased headquarters), except for the subleased Third and Fourth floors; Provo, UT (owned); Fresno, CA (owned); Franklin, TN (owned); and Santa Fe, TX (leased). (CX 385 at 21-23; CX 328 at CBI 001320-CHI). All of the equipment located at these properties was also sold to CB&I in the Acquisition. (CX 328 at CBI 001264-CHI). Several other leases to offices used by the EC Division were transferred as well. (CX 328 at CBI 001265-CHI; CX 333).

556. As of July 2000, the Woodland, TX headquarters' significant equipment consisted of 157 desktop computers, 1 trailer, and 1 X-ray unit. (CX 385 at 21).

557. As of July 2000, the Provo, UT plant's significant equipment consisted of 2 bending machines, 4 blast machines, 2 bulldozers, 4 compressors, 20 cutting machines, 13 dist. box/PWR panels, 6 drill presses, 12 heaters/furnaces, 25 hoists, 3 lathes, 4 milling machines, 29 painting/planers/punchers, 16 positioners, 1 pump, 39 turning rolls, 14 saws, 2 trailers, 79 welders/wire feeders, and 16 X-ray units. (CX 385 at 21).

558. As of July 2000, the Fresno toolhouse's significant

equipment consisted of 1 bulldozer, 1 burning machine, 8 compressors, 29 dist. box / PWR panels, 4 forklifts, 5 generators, 5 hoists, 1 lathe, 2 milling machines, 1 piece of office equipment, 5 pumps, 1 tractor, 2 trailers, 2 vehicles, 141 welders / wire feeders, 1 welding accessory, and 8 X-ray units. (CX 385 at 22).

559. As of July 2000, the Franklin toolhouse's significant equipment consisted of 1 bulldozer, 31 compressors, 56 dist. box / PWR panels, 2 forklifts, 40 generators, 23 hoists, 5 pieces of office equipment, 1 pump, 10 support towers, 1 tractor, 11 trailers, 1 vehicle, 385 welders / wire feeders, 3 welding accessories, and 7 X-ray units. (CX 385 at 23).

560. As of July 2000, the Santa Fe toolhouse's significant equipment consisted of 18 compressors, 26 dist. box / PWR panels, 16 generators, 5 trailers, 2 vehicles, 273 welders / wire feeders, 5 welding accessories, and 1 X-ray unit. (CX 385 at 23).

561. CB&I purchased real property or the leases to real property from PDM Water in the Acquisition in the following locations: Clive, IA plate fabrication plant and office (owned); Pittsburgh, PA toolhouse (owned); HyCon Birmingham, AL office and toolhouse (owned); HyCon Conroe, TX office and toolhouse (leased); and three other leased office properties. (CX 328 at CBI 001264-CHI, CBI 001265-CHI; CX 332; CX 333). The equipment located at these facilities was also sold to CB&I in the Acquisition. (CX 328 at CBI 001264-CHI).

562. CB&I purchased "Inventories and Stores and Supplies from PDM, which included "all raw materials, components, work-in-progress, finished products, packaging and shipping materials and supplies and other inventories (on-site, off-site and consigned)" used by PDM's EC and Water Divisions. (CX 328 at CBI 001264-CH I- CBI 001265-CHI).

563. CB&I purchased all of PDM EC and Water Divisions' contract rights in the Acquisition, subject to non-assignability issues and exemptions, under Section 2.2.3 and Schedule 2.27 of the Asset Purchase Agreement. (CX 328 at CBI 001265-CHI, CBI

001319-CHI) The contractual rights transferred include: customer contracts, consulting agreements, alliance and partnering agreements, agency, representative and distribution agreements, licenses; purchase and sales orders, and backlog. Id.

564. CB&I purchased all of PDM's intellectual property rights listed in Schedule 5.1.10 of the PDM Disclosure Schedule and any intellectual property used by the acquired Divisions. (CX 328 at CBI 001265-CHI) The transferred intellectual property rights included all applications and registrations. Id. The "Pitt-DeMoines" and "PDM" names and all variations thereof were licensed to CB&I in the Acquisition. (CX 328 at CBI 001267-CHI).

565. CB&I purchased PDM's customer and contact lists; sales, product, and promotional data, brochures, forms, mailing lists, and advertising materials; vendor lists; project designs and specifications; and computer software. (CX 328 CBI 001266-CHI).

3. The EC and Water Divisions are inextricably intertwined

566. PDM EC and PDM Water were inextricably intertwined. (Byers, Tr. 6780 (it is "impossible to split [PDM EC and PDM Water]" in two because "they shared many services. They shared human resources, they shared physical plant."); JX 34 at 33-34 (Scheman, Dep.) ("there was not a bright line that separated the two businesses but in certain places they kind of meshed together.")).

567. PDM EC and PDM Water routinely shared field erection personnel, fabrication facilities, construction resources, and field erection equipment. (Scorsone, Tr. 2852, 4779-80; CX 552 at 43-48 (Braden, Dep.); see Rano, Tr. 5894, 5898 (same engineering processes are used for a flat-bottom tank as is used for an LNG tank)).

568. PDM's EC and Water Divisions shared skilled personnel.

(CX 552 at 45-47 (Braden, Dep.) (construction crews and project managers would seamlessly transfer from a PDM Water job to a PDM EC job with their tools and equipment); CX 442 at 210 (Knight, Dep.) (tank field-erection crews are switched from cryogenic tanks to flat-bottom tanks)).

569. Sharing resources benefitted both PDM EC and PDM Water because it "facilitated a more steady flow of work, a more consistent flow of work through . . . [the] warehouses [and] fabricating plants." (CX 552 at 52-53 (Braden, Dep.); Scorsone, Tr. 4779-80).

570. Separating the EC and Water Divisions might have cost between $ 5 and $ 10 million. (CX 525, TAN-1000406; Scheman, Tr. 6922-23).

571. PDM Water would have difficulty operating independently of PDM EC. (CX 552 at 44 (Braden, Dep.) (splitting PDM Water from PDM EC "would have lessened our ability to stand alone, and certainly would have diminished the profitability of the operation.")).

572. Due to the intermingling of resources, PDM decided to sell the two divisions together, because it was not practical to sell one without the other. (Byers, Tr. 6780-82).

4. Multiple fabrication facilities

573. Possessing multiple fabrication facilities is advantageous, because it allows a competitor to rationalize its freight costs. (Vetal, Tr. 432-33; see CX 615 at 45 (Knight, IHT) (in competitive situations, a tank supplier benefits from having a fabrication facility located close to a job so that its freight costs are minimal)).

574. Having multiple facilities not only promotes a geographic competitive advantage, but also allows flexibility in fabrication. (CX 442 at 152, 156 (Knight, Dep.) (Tank suppliers with multiple fabrication shops and many field crews can "be

more flexible in order to meet [changes in customers' schedules]," including needing "the project faster or at a different time period . . . .")).

575. Each of the former PDM facilities have different fabrication capabilities. (See CX 535 at 181-83 (Scorsone, Dep.); CX 615 at 46 (Knight, IHT) (some fabrication plants cannot fully fabricate storage tanks in the manner required by PDM, because they do not support "certain types of rolling and pressing operations" for thick steel plate)).

5. Intellectual property

576. A viable competitor in the relevant product markets would need intangible as well as tangible assets. (Simpson, Tr. 3608).

577. Intellectual Property rights can give competitors in the relevant markets cost advantages over their rivals. As of March 2000, CB&I possessed over 100 U.S. patents. (CX 230 at CBI-PL 055446). However, such intellectual property is not always necessary to be an effective competitor. (Cutts, Tr. 2563-64 (additional intellectual property was not necessary for AT&V to compete with CB&I for the LIN/LOX projects for BOC)).

6. Reputation

578. There is a great deal of goodwill in the PDM name. (Cutts, Tr. 2389 ("the PDM name, like the CB&I name, could obviously break down a lot of walls and barriers")). A large amount of capital would have to be spent in marketing for a smaller competitor in the relevant industry to build a reputation equivalent to that of PDM. (Cutts, Tr. 2382 (such marketing would cost AT&V a million dollars over the next three years)).

579. Currently, customers are more willing to purchase from CB&I than anyone else, because CB&I has successfully built most of the relevant products. (Cutts, Tr. 2385; CX 258 at CBI-H001816-H001832; CX 1731 at 44 (LNG tank owners do not

want to purchase from a second-rate company without a track record, because the work is "very specialized, very sophisticated.")). It takes time to build a track record from scratch. (Cutts, Tr. 2372, 2385).

7. Assignability of contracts

580. Many of the contracts presently held by CB&I contain non-assignability clauses and key employee provisions that require the customer to approve the assignment of the contract or the replacement of key employees on a project. (Glenn, Tr. 4168-69; Izzo, Tr. 6508).

581. Prior to the Acquisition, PDM received approvals from its customers to transfer its contracts to CB&I. (Byers, Tr. 6804).

8. Employees

582. Experienced employees are specially trained and therefore valuable in the relevant industry. Hiring people off the street for skilled PDM field crews is "not economical." (CX 615 at 25, 47 (Knight, IHT)). Skilled field crews and managers must be trained in equipment and procedures. Id. at 47, 50; CX 552 at 62 (Braden, Dep.) ("There's a fairly steep learning curve in our business, and to go out and try to fill experienced positions would require some effort . . . . People have to become familiar with our products and our processes. Processes more than anything.")).

583. CB&I hires less skilled field crew personnel on a job to job basis. Field crew workers are free to work for a number of companies (Rano, Tr. 5953), and tend to move from job to job depending on where work is available. (Rano, Tr. 5957). Because field crews are very migratory, CB&I hires its general field labor on a job to job basis. (Glenn, Tr. 4119-20; Rano, Tr. 5917-18, 5953). Using local labor is cheaper than employing traveling workers, because it reduces the need to pay increased expenses associated with room and board for out-of-town workers. (Rano, Tr. 5909-10). CB&I recruits local labor by advertising in the local

media, and making contacts with local labor leaders and local government officials. (Rano, Tr. 5908-10).

584. At CB&I, the engineering personnel are moved around to various projects depending upon the workload. (CX 497 at 365 (Leventry, Dep.)).

585. Sales representatives in the industry can service both the low temperature and cryogenic tank market and the industrial tank market. (CX 615 at 12, 14 (Knight, IHT)).

9. A large revenue base is necessary to be a viable competitor

a. Bonding

586. Howard Fabrication's annual revenues, of $ 2.5 to $ 3 million, are too small to enable it to compete against CB&I for larger thermal vacuum chamber projects. (Gill, Tr. 181, 199-201).

587. AT&V, which had annual revenues of [redacted], needs "a little more financial strength and bonding capacity" to compete for larger low temperature and cryogenic tank projects. (JX 23 at Ex. 1, in camera).

588. Matrix, which has annual revenues of approximately $ 190 million, but lacks a larger company to financially back its operations, has difficulty convincing LNG customers that they are a qualified supplier. (CX 460 at CBI-E 007235).

589. LNG customers testified that they would not purchase from a divested entity unless it was able to financially guarantee its work. (Izzo, Tr. 6508 ("The first thing I'd be concerned about with a NewCo is whether I'd put them on my bid list because of ability to bond."); Bryngelson, Tr. 6157 ("Q. . . . So is it beneficial to El Paso to have a company that has size, even if a lot of that size doesn't necessarily come from the revenue generated by building tanks? / A. Yes."); Carling, Tr. 4467-68 ("We expected the lead contractor to stand behind his work, so the

bonds and the guarantees would have to come from [a divested entity's] parent company.")).

590. As of June 30, 2000, PDM's 6-month revenues were approximately $ 355 million. (CX 1567 at 3). This base of revenues was sufficient to provide the financial guarantees necessary to compete for LNG and TVC projects. (Carling, Tr. 4529 (PDM was able to provide sufficient financial guarantees to Enron to be employed for an LNG tank built in Penuelas, Venezuela); [redacted], Tr. 1895-96, in camera (PDM had the financial ability to be considered for a TVC project)). However, there were some LNG projects, such as the one in Dabhol, India, that PDM was unwilling to guarantee to the level that the customer required. (Izzo, Tr. 6488-89; Carling Tr. 4529-30).

b. Equipment used to construct the relevant products

591. Soon after the Acquisition, CB&I auctioned off a substantial amount of the equipment that it purchased from PDM in an effort to reduce costs. (Scorsone, Tr. 2888).

592. A fully equipped crew requires a great deal of equipment, which costs approximately half a million dollars. (Cutts, Tr. 2388). It typically has a crane, air compressors, welding machines, general rigging equipment and other incidentals. (Cutts, Tr. 2388).

593. Costly automated welding equipment is necessary to be cost competitive in the construction of LNG tanks. (CX 706 at 98 (Newmeister, IHT); see CX 706 at 98-99 (Newmeister, IHT) (CB&I has patented welding equipment that is useful for welding large tanks); see also Cutts, Tr. 2379 (automated equipment is necessary to weld large tanks, but it is expensive to develop)).

594. Specific equipment is necessary for blasting, painting, and pressing capabilities. A large press and a large number of dyes for pressing the dome roofs used for LIN/LOX tanks costs roughly $ 2 million. See CX 706 at 64-66 (Newmeister, IHT). Additionally the automated blast and paint system used to paint

the outer tank on a LIN/LOX tank costs roughly $ 2-3 million. See CX 706 at 64-66 (Newmeister, IHT).

595. In constructing some projects, subcontracting may lower costs, because subcontractors with an expertise in a particular area are able to use a standardized approach and may be better at certain job functions than a general contractor. (Bryngelson, Tr. 6143-44; Cutts, Tr. 2472; Hilgar, Tr. 1537-38).

III. ANALYSIS AND CONCLUSIONS OF LAW

A. Jurisdiction

The Complaint charges Respondents with violations of Section 5 of the Federal Trade Commission Act ("FTC Act"), 15 U.S.C. § 45 and of Section 7 of the Clayton Act, 15 U.S.C. § 18.

Section 5(a)(2) of the FTC Act gives the Commission jurisdiction "to prevent persons, partnerships, or corporations . . . from using unfair methods of competition in or affecting commerce . . . ." 15 U.S.C. § 45(a)(2); Kaiser Aluminum & Chem. Corp. v. FTC, 652 F.2d 1324, 1327 n.1 (7th Cir. 1981). Respondents are corporations engaged in the interstate sale of large, field-erected cryogenic tanks and thermal vacuum chambers. F. 1-3, 6, 9. Respondents' challenged activities relating to the sale of large, field-erected cryogenic tanks and thermal vacuum chambers have an obvious nexus to interstate commerce. F. 3-5, 7-9. Thus, the Commission has jurisdiction over Respondents and the subject matter of this proceeding, pursuant to Section 5 of the FTC Act.

Section 7 of the Clayton Act prohibits acquisitions, the effect of which "may be substantially to lessen competition, or tend to create a monopoly." 15 U.S.C. § 18. "Section 11(b) of the Clayton Act, 15 U.S.C. § 21(b), expressly vests the Commission with jurisdiction to determine the legality of a corporate acquisition under Section 7 and, if warranted, to order divestiture." In re R.R. Donnelley & Sons Co., 120 F.T.C. 36, 140 (1995); see also Hospital Corp. of Am. v. FTC, 807 F.2d 1381,

1386 (7th Cir. 1986). The February 7, 2001 purchase by CB&I of PDM's Water Division and Engineered Construction Division was a corporate acquisition ("the Acquisition"). F. 10-12. The Commission's jurisdiction includes adjudicating the lawfulness of acquisitions that have already been completed. In re Coca-Cola Co., 117 F.T.C. 795, 911 (1994); see generally FTC v. Consolidated Foods Corp., 380 U.S. 592, 598 (1965). Thus, the Commission has jurisdiction over Respondents and the subject matter of this proceeding, pursuant to Sections 7 and 11 of the Clayton Act.

B. Burden of Proof and Statutory Framework

Under Commission Rule of Practice 3.51(c)(1), "an initial decision shall be based on a consideration of the whole record relevant to the issues decided, and shall be supported by reliable and probative evidence." 16 C.F.R. § 3.51(c)(1). n1 The Commission made amendments to its Rules of Practice, effective May 18, 2001. FTC Rules of Practice, Interim rules with request for comments, 66 Fed. Reg. 17,622 (April 3, 2001). Through these amendments, the Commission removed the requirement of Rule 3.51(c)(3) that the initial decision of an ALJ be supported by "substantial" evidence. 66 Fed. Reg. at 17,626. According to Black's Law Dictionary, "probative evidence" means having the effect of proof; tending to prove, or actually proving an issue. "Substantial evidence" is defined in Black's Law Dictionary as such evidence that a reasonable mind might accept as adequate to support a conclusion. At this level of the proceedings, the difference between probative evidence and substantial evidence is not dispositive. Therefore, all findings of fact in this Initial Decision are supported by reliable and probative evidence.

n1 Unlike In re Schering-Plough Corp., Docket 9297 (Initial Decision June 27, 2002, available at http://www.ftc.gov/os/adjpro/d9297/020627id.pdf), where the complaint was issued on March 30, 2001, prior to the effective date of these amendments, the Complaint in this matter was issued on October 25, 2001, after the effective

date of the amendments.

The parties' burdens of proof are governed by Commission Rule 3.43(a), Section 556(d) of the Administrative Procedure Act ("APA"), and case law. Pursuant to Commission Rule 3.43(a), "counsel representing the Commission . . . shall have the burden of proof, but the proponent of any factual proposition shall be required to sustain the burden of proof with respect thereto." 16 C.F.R. § 3.43(a). Under the APA, "except as otherwise provided by statute, the proponent of a rule or order has the burden of proof." 5 U.S.C. § 556(d). Further, under the APA, an Administrative Law Judge may not issue an order "except on consideration of the whole record or those parts thereof cited by a party and supported by and in accordance with the reliable, probative, and substantial evidence." 5 U.S.C. § 556(d). See also Steadman v. SEC, 450 U.S. 91, 102 (1981) (APA establishes preponderance of the evidence standard of proof for formal administrative adjudicatory proceedings).

The Complaint challenges the Acquisition under both Section 7 of the Clayton Act and Section 5 of the FTC Act. The analytical standards for assessing legality in this context are read coextensively. R.R. Donnelley & Sons, 120 F.T.C. at 150 n.32; FTC v. PPG Indus. Inc., 798 F.2d 1500, 1501 n.2 (D.C. Cir. 1986) (Section 5 of the FTC Act "may be assumed to be merely repetitive of [Section] 7 of the Clayton Act.").

Section 7 of the Clayton Act prohibits acquisitions, "where in any line of commerce or in any activity affecting commerce in any section of the country, the effect of such acquisition may be substantially to lessen competition, or tend to create a monopoly." 15 U.S.C. § 18. See United States v. Phila. Nat'l Bank, 374 U.S. 321, 355 (1963) ("The statutory test is whether the effect of the merger 'may be substantially to lessen competition' 'in any section of the country.'"). "Congress used the words 'may be substantially to lessen competition' to indicate that its concern was with probabilities, not certainties." Brown Shoe Co. v. United States, 370 U.S. 294, 323 (1962). Complaint Counsel need not prove that

an anticompetitive effect is a certainty. R.R. Donnelley & Sons, 120 F.T.C. at 150 (citing California v. American Stores Co., 495 U.S. 271, 284 (1990)).

The first step in analyzing a Section 7 case is to determine the "line of commerce" and the "section of the country." 15 U.S.C. § 18. In other words, the first step is to determine the relevant product and geographic markets. R.R. Donnelley & Sons, 120 F.T.C. at 151; United States v. General Dynamics Corp., 415 U.S. 486, 510 (1974) ("delineation of proper geographic and product markets is a necessary precondition to assessment of the probabilities of a substantial effect on competition within them"). "Complaint Counsel bears the burden of proving a relevant market within which anticompetitive effects are likely as a result of the acquisition." R.R. Donnelley & Sons, 120 F.T.C. at 152.

The second step in analyzing a Section 7 case is to determine whether the effect of the acquisition "may be substantially to lessen competition, or to tend to create a monopoly." 15 U.S.C. § 18. The analytical framework by which the government can establish probable effect has three parts, as summarized below.

First, the government has the burden of showing that the Acquisition would produce "a firm controlling an undue percentage share of the relevant market, and would result in a significant increase in the concentration of the firms in that market." FTC v. H.J. Heinz Co., 246 F.3d 708, 715 (D.C. Cir. 2001) (citing Phila. Nat'l Bank, 374 U.S. at 363); United States v. Baker Hughes, Inc., 908 F.2d 981, 982 (D.C. Cir. 1990). The government may establish a prima facie case of anticompetitive effect by presenting statistics showing that combining the market shares of CB&I and PDM would significantly increase concentration in the already highly concentrated United States large, field-erected LNG tank, LPG tank, LIN/LOX tank and TVC markets. See Baker Hughes, 908 F.2d at 983. Once this showing is made, the government establishes a presumption that the transaction will substantially lessen competition. Phila. Nat'l Bank, 374 U.S. at 363; Baker Hughes, 908 F.2d at 982 (citing United States v. Citizens & Southern Nat'l Bank, 422 U.S. 86,

120-22 (1975); Heinz, 246 F.3d at 715; In re B.F. Goodrich Co., 110 F.T.C. 207, 303-05 (1988).

Second, "finding a prima facie violation of Section 7 creates a rebuttable presumption of anticompetitive effects and shifts the burden of going forward with evidence to the respondent." B.F. Goodrich Co., 110 F.T.C. at 305; Citizens & Southern Nat'l Bank, 422 U.S. at 120; United States v. Marine Bancorporation, Inc., 418 U.S. 602, 631 (1974). A finding of prima facie illegality on the basis of concentration statistics can be rebutted by a showing that "'the merger is not likely to have such anticompetitive effects.'" In re Weyerhauser Co., 106 F.T.C. 172, 278 (1985) (quoting Phila. Nat'l Bank, 374 U.S. at 363).

This second step of the analysis requires that the merger be "functionally viewed, in the context of its particular industry." Brown Shoe, 370 U.S. at 321-22; Weyerhauser Co., 106 F.T.C. at 278 ("only a further examination of the particular market -- its structure, history and probable future -- can provide the appropriate setting for judging the probable anticompetitive effect of the merger"). Respondents may "demonstrate unique economic circumstances that undermine the predictive value of the government's statistics." FTC v. Univ. Health, Inc., 938 F.2d 1206, 1218 (11th Cir. 1991). "Nonstatistical evidence which casts doubt on the persuasive quality of the statistics to predict future anticompetitive consequences may be offered to rebut the prima facie case made out by the statistics." Kaiser Aluminum, 652 F.2d at 1341. Factors which may be considered include "ease of entry into the market, the trend of the market either toward or away from concentration, and the continuation of active price competition." Id.

Thus, while market share evidence is "an important starting point in merger analysis, it alone is not conclusive in determining the legality of a merger under Section 7." Weyerhauser Co., 106 F.T.C. at 278. See also General Dynamics Corp., 415 U.S. at 498; Baker Hughes, 908 F.2d at 992 ("The Herfindahl-Hirschman Index cannot guarantee litigation victories."); Hosp. Corp. of Am., 807 F.2d at 1386 (deciding that market share figures are not

always decisive in a Section 7 case and that the Commission was prudent in inquiring into the probability of harm to consumers).

Third, if Respondents successfully rebut the presumption of anticompetitive effects, "the burden of producing additional evidence of anticompetitive effect shifts to the government, and merges with the ultimate burden of persuasion, which remains with the government at all times." Heinz, 246 F.3d at 715; Baker Hughes, 908 F.2d at 983. Cf Citizens & Southern Nat'l Bank, 422 U.S. at 120; Marine Bancorporation, 418 U.S. at 631 (upon the government's establishment of a prima facie case under General Dynamics, the burden then shifts to the acquiring firm to show that the statistics do not accurately depict competitive conditions). These comparative cases do not indicate that the burden of persuasion shifts from the government, but only that a burden of going forward with the evidence shifts. Kaiser, 652 F.2d at 1340 and n.12.

C. Product Markets

The proper definition of the product market is a "necessary predicate" to an examination of the competition that may be affected by a merger or acquisition. Brown Shoe, 370 U.S. at 335; R.R. Donnelley & Sons, 120 F.T.C. at 151. The relevant market is the "area of effective competition" within which the defendant operates. Tampa Elec. Co. v. Nashville Coal Co., 365 U.S. 320, 327-28 (1961). Product markets may be defined either by "the reasonable interchangeability of use or the cross-elasticity of demand." Brown Shoe, 370 U.S. at 325; Coca Cola Co., 117 F.T.C. at 925. See also Kaiser Aluminum, 652 F.2d at 1330 ("the clearest indication that products should be included in the same market is if they are actually used by consumers in a readily interchangeable manner."). Complaint Counsel bears the burden of proving a relevant market, within which anticompetitive effects are likely, as a result of the acquisition. R.R. Donnelley & Sons, 120 F.T.C. at 152; see also 16 C.F.R. § 3.43(a); 5 U.S.C. § 556(d).

The parties agree that the relevant product markets are large, field-erected: (1) liquefied natural gas ("LNG") storage tanks (individually, or as a component of an import terminal or an LNG peak shaving plant); (2) refrigerated liquid petroleum gas ("LPG") storage tanks; (3) liquid nitrogen, oxygen and argon ("LIN/LOX") storage tanks; and (4) large (over 20 feet in diameter) thermal vacuum chambers ("TVCs"). F. 19. Therefore, the relevant product markets for assessing the probable effects of competition are large field-erected LNG storage tanks, LPG storage tanks, LIN/LOX storage tanks, and TVCs. F. 18-45.

D. Geographic Market

The statutory language of Section 7, "any section of the country," equates to the relevant geographic market. Marine Bancorporation, 418 U.S. at 620-21; In re Adventist Health Sys., 117 F.T.C. 224, 288 (1994). The relevant geographic market is the "area of effective competition . . . in which the seller operates, and to which the purchaser can practicably turn for supplies." Tampa Elec. Co., 365 U.S. at 327. The Government has the burden of proving the relevant geographic market. United States v. Connecticut Nat'l Bank, 418 U.S. 656, 669 (1974); Adventist, 117 F.T.C. at 289.

The parties agree that the relevant geographic market in which to analyze the merger is the United States. F. 15. By definition, field-erected LNG, LPG, and LIN/LOX storage tanks, as well as TVCs, must be built "in the field" at customers' sites in the United States. F. 16. It is economically infeasible to import a field-erected storage tank from anywhere outside the United States. F. 17. Therefore, the relevant geographic market for assessing the probable effects of competition is the United States. F. 14-17.

E. Effects on Competition

The Complaint alleges violations pertaining to four product markets. Before analyzing the effects on competition in each of these markets, the standards by which probable effects are evaluated are set forth with an analysis applicable to all four

product markets.

Section 7 is "designed to arrest in its incipiency . . . the substantial lessening of competition from the acquisition by one corporation of the whole or any part of the stock" or assets of a competing corporation. United States v. E.I. du Pont de Nemours & Co., 353 U.S. 589 (1957); Univ. Health, 938 F.2d at 1218. "Congress used the words 'may be substantially to lessen competition' to indicate that its concern was with probabilities, not certainties." Brown Shoe, 370 U.S. at 323. "But it is to be remembered that § 7 deals in 'probabilities,' not 'ephemeral possibilities.'" Marine Bancorporation, 418 U.S. at 623. "Thus, to satisfy section 7, the government must show a reasonable probability that the proposed transaction would substantially lessen competition in the future." Univ. Health, 938 F.2d at 1218; FTC v. Warner Communications Inc., 742 F.2d 1156, 1160 (9th Cir. 1984).

The essential question is whether "the probability of such future impact exists at the time of trial." General Dynamics, 415 U.S. at 505; E. I. du Pont, 353 U.S. at 607 (economic effects of an acquisition are to be measured at the time of suit rather than at the time of acquisition). Thus, although the Clayton Act is an "incipiency" statute, post-acquisition evidence, so long as it "is such that it could not reflect deliberate manipulation by the merged companies temporarily to avoid anticompetitive activity," will be given some consideration. Lektro-Vend Corp. v. Vendo Co., 660 F.2d 255, 276 (7th Cir. 1981); Consolidated Foods, 380 U.S. at 598. Complaint Counsel has not demonstrated that Respondents deliberately manipulated the post-acquisition evidence. Further, Complaint Counsel has relied extensively on post-acquisition evidence to argue that, since the Acquisition, CB&I has implemented price increases. Complaint Counsel's Proposed Findings of Fact ("CCPFF") at pp. 103-177. Accordingly, post-acquisition evidence is considered and evaluated.

1. Prima facie case

Assessing the likely competitive effects of the proposed transactions begins by determining the market shares of the merging firms and the level of concentration in the relevant market. FTC v. Cardinal Health Inc., 12 F. Supp. 2d 34, 52 (D.D.C. 1998). The most common method for Complaint Counsel to establish a prima facie case is to show that the acquisition "would produce 'a firm controlling an undue percentage share of the relevant market, and [would] result in a significant increase in the concentration of firms in that market.'" Univ. Health, 938 F.2d at 1218 (quoting Phila. Nat'l Bank, 374 U.S. at 363). "[A] merger which significantly increases the share and concentration of firms in the relevant market is 'so inherently likely to lessen competition' that it must be considered presumptively invalid and enjoined in the absence of clear evidence to the contrary." Cardinal Health, 12 F. Supp. 2d at 52 (quoting Phila. Nat'l Bank, 374 U.S. at 363).

Complaint Counsel has established its prima facie case by showing that CB&I's acquisition of PDM's EC and Water Divisions produces a firm controlling an undue percentage share in each of the four relevant markets. Although, as described below, Complaint Counsel's HHI statistics are not sufficiently reliable, Complaint Counsel has presented reliable and probative evidence demonstrating that CB&I and PDM were the number one and two competitors in all four product markets and that no other company provided or is likely to provide effective competition. This showing establishes Complaint Counsel's prima facie case.

a. The Herfindahl-Hirschman Index ("HHI")

Market concentration is often measured by the Herfindahl-Hirschman Index ("HHI"). Heinz, 246 F.3d at 716; PPG, 798 F.2d at 1503; Univ. Health, 938 F.2d at 1211 n.12. The Department of Justice and the FTC rely on the HHI in evaluating whether to challenge proposed horizontal mergers. United States Dep't of Justice & Federal Trade Comm'n, Horizontal Merger Guidelines §

§ 1.5, 1.51 (1992), as revised (1997) ("Merger Guidelines"). "The FTC and the Department of Justice, as well as most economists, consider the measure superior to such cruder measures as the four- or eight- firm concentration ratios which merely sum up the market shares of the largest four or eight firms. PPG, 798 F.2d at 1503. See also R.R. Donnelley & Sons, 120 F.T.C. at 182 n.147 (Commission uses HHI as the most economically relevant measure of concentration). The Merger Guidelines are not binding on courts or the Commission. PPG, 798 F.2d at 1503 n.4; R.R. Donnelley & Sons, 120 F.T.C. at 151 n.36. Instead, the Merger Guidelines serve to "describe the analytical process that the Agency will employ in determining whether to challenge a horizontal merger." Merger Guidelines § 0.2.

Although market concentration is often measured by the HHI, there is no requirement that it must be. United States v. Franklin Elec. Co., Inc., 130 F. Supp. 2d 1025, 1033-35 (W.D. Wisc. 2000), provides one example of a merger enjoined without a single reference to HHI. In PPG, the district court was unable to calculate an HHI for the high technology market since the market was growing rapidly, major portions of it lay in the immediate future, and market shares depended upon the success of future bids and the ultimate size of the projects for which they bid. 798 F.2d at 1505. Nevertheless, the court of appeals, without relying on the HHI for the "closest available approximation" market, concluded "the fact that there appear to be only three fully capable firms in that market indicates that the HHI will be very high." Id. "Even if one or two other firms were thought capable of expanding or entering, the HHI would still put the market in the highly concentrated range, and the acquisition would cause a great increase in the HHI." Id. Where, as in the instant case, the two largest competitors in thin product markets merge, the increase in market concentration and substantial lessening of competition are common sense conclusions.

When the HHI is utilized, the index is calculated by squaring the individual market shares of all the firms in the market and summing up the squares. Heinz, 246 F.3d at 716 n.9. Under the Merger Guidelines, a market with a post-merger HHI above 1800

is considered "highly concentrated" and mergers that increase the HHI in such a market by over 50 points "potentially raise significant competitive concerns." Merger Guidelines § 1.51. Acquisitions producing an increase in the HHI of more than 100 points in highly concentrated markets raise significant competitive concerns. Merger Guidelines § 1.51. The Merger Guidelines define as "unconcentrated" a market with an HHI below 1000, as "moderately concentrated" a market with an HHI between 1000 and 1800, and as "highly concentrated" a market with an HHI over 1800. Merger Guidelines § 1.51. See also PPG, 798 F.2d at 1503. Sufficiently large HHI figures establish a prima facie case that a merger is anticompetitive. Heinz, 246 F.3d at 716; Baker Hughes, 908 F.2d at 982-83.

Complaint Counsel's economic expert, Dr. John Simpson, examined market shares from 1990 to the time of the Acquisition in early 2001 and used this eleven year time period to calculate the HHI in each of the four relevant markets. F. 69, 216-18, 273-74, 370-71. Dr. Simpson provided no valid reason for using 1990 as a starting point, other than that was the starting point of the data that had been provided to him by Complaint Counsel. F. 69, 274.

Complaint Counsel cites to Merger Guidelines § 1.4 as authority for use of the eleven year time period for calculating the HHI. "Typically, annual data are used, but where individual sales are large and infrequent so that annual data may be unrepresentative, the Agency may measure market shares over a longer period of time." Merger Guidelines § 1.4. Nowhere do the Merger Guidelines suggest that using data spanning beyond a decade is an appropriate period of time. Despite this guideline, not a single case was cited to by Complaint Counsel where the government calculated the HHI in any manner other than based on annual sales. The only case found to have calculated HHI based on more than one year of sales is Baker Hughes, discussed infra. Instead, Complaint Counsel argues, "evidence that high market shares are sustained over several years is regularly used in antitrust cases to assess market power." Complaint Counsel's Post Trial Brief ("CCPTB") at 14-15 (citing Heinz, 246 F.3d at 712,

717 (in analyzing barriers to entry, the court noted that there had been no significant entries in decades, yet determined market shares based on annual sales of baby food); Borden, Inc. v. FTC, 674 F.2d 498, 511 (6th Cir. 1982) (determining market share over five year period to infer monopoly power; suit not brought under the Clayton Act); Greyhound Computer Corp. v. IBM Corp., 559 F.2d 488, 496-97 (9th Cir. 1977) (in a Sherman Section 2 case, defendant's share of the market in 3 years over a 7 year period was evidence from which the jury could reasonably infer market power)). None of these cases support the proposition that it is appropriate to calculate the HHI based on market data spanning more than a decade.

Sales in the field-erected LNG tank, LPG tank, LIN/LOX tank and TVC markets are sporadic, and a single sale can represent a large percent of market share in any given year. See F. 65, 68, 210, 213, 269, 364. Dr. Barry Harris, Respondents' economic expert, also presented numerous challenges to Dr. Simpson's use of 1990 as the starting point. F. 70, 71, 221, 276, 373, 375. In these unusual markets, mechanical application of the HHI provides misleading results. See Merger Guidelines § 0 ("Because the specific standards set forth in the Guidelines must be applied to a broad range of possible factual circumstances, mechanical application of those standards may provide misleading answers to the economic questions raised under the antitrust laws.").

The arbitrary nature of the HHI is underscored by the fact that choosing a different date achieves a completely different result. CB&I did not build an LNG tank, LPG tank, or TVC between 1996 and the date of the Acquisition, resulting in a change of zero in the HHI in three of the four markets. F. 70, 219, 372. An acquisition resulting in zero change in the HHI would not establish a prima facie case if only HHI were relied upon. See Merger Guidelines, § 1.5 ("Mergers producing an increase in the HHI of less than 50 points, even in highly concentrated markets post-merger, are unlikely to have adverse competitive consequences."); New York v. Kraft Gen. Foods, 926 F. Supp. 321, 362 (S.D.N.Y. 1995). This case illustrates the fact that the

HHI is subject to manipulation which weakens its reliability as an economic indicator.

Although Complaint Counsel places great emphasis on the HHI and the increases to the HHI, Complaint Counsel failed to demonstrate that a valid and credible HHI had been calculated in any of the relevant markets. For the reasons detailed in the following sections on each of the relevant markets, the HHI statistics alone do not conclusively establish Complaint Counsel's prima facie case.

(i) LNG market

Dr. Simpson testified that the post-acquisition HHI for LNG tanks is 10,000, with a change of 4,956. F. 68. Dr. Simpson's HHI calculations are of questionable value, because they are based on a period of time of over 10 years and there have been so few sales from 1990 to the Acquisition. F. 65, 69, 71. If data dating back to 1996 is used instead, CB&I had no sales over that time period and the change in the HHI based on sales in the LNG market would be zero. F. 70. Accordingly, the HHI statistics lack reliability and are insufficient to establish Complaint Counsel's prima facie case in the LNG market.

(ii) LPG market

Dr. Simpson testified that the post-acquisition HHI for LPG tanks is 8,380, with a change of 3,910. F. 218. Dr. Simpson's HHI calculations are suspect for two reasons. First, he included in his calculation the value of a project that was awarded to CB&I after the Acquisition. F. 216, 217. Second, because CB&I's last pre-acquisition LPG project was awarded in 1993, if data dating back to 1994 or 1996, instead of back to 1990, were used, the change in the HHI based on sales in the LPG market would be zero. F. 219. HHI calculations are not accurate in determining the concentration in the LPG market due to the extraordinarily thin market and almost nonexistent demand. F. 220. Accordingly, the HHI statistics lack reliability and are insufficient to establish Complaint Counsel's prima facie case in the LPG market.

(iii) LIN/LOX market

Dr. Simpson testified that the post-acquisition HHI for LIN/LOX tanks is 5,845, with a change of 2,635. F. 273. Dr. Simpson's HHI calculations in the LIN/LOX market were based on sales from 1990 to the date of the Acquisition. F. 274. There is no principled basis for reaching back to 1990 for calculating the HHI. Unlike the other three markets, where there were only a handful of sales over the eleven year period, in the LIN/LOX market 83 projects, comprising 109 tanks, were awarded during the period from 1990 to the Acquisition. F. 269. Further, Dr. Simpson admitted that CB&I's spin off from Praxair in 1997 was a significant competitive change, a fact which could justify beginning the HHI calculation for the LIN/LOX market in 1997, after the date of that sale. F. 275. Accordingly, the HHI statistics lack reliability and are insufficient to establish Complaint Counsel's prima facie case in the LIN/LOX market.

(iv) TVC market

Dr. Simpson testified that the post-acquisition HHI for TVCs is 10,000, with a change of 5,000. F. 370. He arrived at this conclusion by two approaches. First, he assigned a 50-percent market share to CB&I and a 50-percent market share to PDM, based on the opinions of market participants and documents. F. 370. Second, he assigned a 49.3 percent market share to CB&I for a project that was awarded to CB&I by Spectrum Astro, but was not built. F. 371. In actuality, only one TVC was built in the 1990s and this TVC was by PDM. F. 364. The last TVC built by CB&I was in 1984. F. 365. Without the proposed Spectrum Astro project included, PDM would have 100% market share and an HHI of 10,000. The increase in the HHI would be zero. F. 372. Applying different standards results in starkly different results in this extraordinarily thin market. Accordingly, the HHI statistics lack reliability and are insufficient to establish Complaint Counsel's prima facie case in the TVC market.

b. Market power in bid markets

The Supreme Court, in General Dynamics, held that evidence of annual sales is relevant as a prediction of future competitive strength in most markets, such as groceries or beer, since distribution systems and brand recognition are such significant factors that one may reasonably suppose that a company which has attracted a given number of sales will retain that competitive strength. 415 U.S. at 501 (referencing United States v. Von's Grocery, 384 U.S. 270 (1966); United States v. Pabst Brewing Co., 384 U.S. 546 (1966)). However, in some markets, statistical evidence of past production may not always be the best measure of a company's ability to compete. Id. (upholding district court's focus on reserves of coal rather than past production, because the bulk of the coal produced was delivered under long term requirement contracts, which could not be obtained without sufficient coal reserves).

The product markets here are not like groceries or beer. Rather, the four product markets are similar to the market for hardrock hydraulic underground drilling rigs examined in Baker Hughes. In Baker Hughes, the products were assembled and made to suit each purchaser's needs and specifications. United States v. Baker Hughes, Inc., 731 F. Supp. 3, 8 (D.D.C. 1990). In this case, the large field-erected tanks and TVCs are custom made to suit each purchaser's needs. See generally supra Part II.D. In Baker Hughes, customers sought bids from several suppliers and placed great emphasis upon a supplier's reputation for quality and service. 731 F. Supp. at 8. In this case, customers generally seek competitive bids from several suppliers for each of the products at issue and place great emphasis upon a supplier's reputation for quality and service. E.g., F. 166-172, 222-26, 250-52, 283, 286. Baker Hughes addressed a very thin product market; the overall size of the market ranged from 51 to 61 sales over a three year period. 731 F. Supp. at 9. In this case, in the two years from the Acquisition to trial, one LNG tank, one LPG tank, five LIN/LOX tanks, and zero TVCs have been sold. F. 233, 292, 407-409. Indeed, Complaint Counsel has had to reach back eleven years to

find more than a handful of sales in three of the four markets. F. 66, 211, 364.

The district court in Baker Hughes held, "because of the nature of the products sold and the fact that the volume of business done is relatively small and customers' needs for new equipment are irregular, market shares in the line of commerce alone are not an accurate measure of market dominance." 731 F. Supp. at 9. As in Baker Hughes, here because of the nature of the products sold, the fact that the volume of business done is relatively small, and the customer's needs for new equipment are irregular, market shares in the line of commerce alone are not a conclusive measure of market dominance. Thus, other factors besides market shares are analyzed.

"In evaluating monopoly power, it is not market share that counts, but the ability to maintain market share." United States v. Syufy Enterprises, 903 F.2d 659, 665-66 (9th Cir. 1990) (emphasis in original). Thus, a more accurate picture of competition arises through an examination not just of the number and the value of the tank projects awarded, but of the competitive pressure each manufacturer is able to exert by bidding. See Baker Hughes, 731 F. Supp. at 9 (evaluating numbers of bids over last two years). This approach was used by the Court of Appeals for the Second Circuit in evaluating "the unusual market" of carrier-based aircraft. Grumman Corp. v. LTV Corp, 665 F.2d 10, 12-13 (2d Cir. 1981).

In Grumman Corp., the defendants did not dispute that during the past two decades the acquired and the acquiring companies had been substantial competitors. Defendants argued that there was an "insufficient basis to believe that [the acquired company would] be a competitive factor in the future." Id. at 12. Even though the last order for the product in one of the relevant markets had been placed two years earlier and the single domestic purchaser had no current plans to purchase the product from the acquired company, the district court concluded that the acquired company could reasonably be expected to provide competition in the relevant market. Id. at 12.

The court of appeals upheld the district court's finding in Grumman, stating it reflected "an inevitable aspect of an unusual market."

> [The relevant product does] not roll off assembly lines like television sets or automobiles. In a market with a single domestic purchaser, which buys intermittently, a court assessing the anti-competitive effect of a horizontal combination must consider future possibilities in assessing whether there exists a significant probability of decreased competition. Whether or not [the acquired company] will sell more [of the relevant product to the single domestic purchaser], the fact remains that it was properly found to be competing to do so. . . . The [purchaser's] rejection of the proposal [to sell a modified version of the product] does not lessen the significance of [the acquired company's] capacity and desire to make it.

Id. at 12-13.

United States v. United Tote, Inc. provides another example of a court, in analyzing an unusual market, basing its opinion not just on a review of past sales, but on an analysis of the companies' ability to constrain competition by bidding. 768 F. Supp. 1071 (D. Del. 1991). In Tote, the relevant product market lines were on-track, off-track, and inter-track totalisator systems and services. Id. at 1069. In those markets, where companies submitted bids to tracks to have their systems used, the court found it to be significant that the two merging companies submitted bids against each other on 49 of the 116 totalisator contracts for which bids were sought. Id. at 1071 (holding that even though the acquired company had never replaced the acquiring company, where the acquiring company was the incumbent, the government's statistical case accurately reflected the state of competition).

Although CB&I has not won projects in three of the four markets from 1996 to the Acquisition, to conclude that CB&I

does not have market power "ignores the competitive effect they exert simply by being available to compete." Grumman, 665 F.2d at 14. The fact that CB&I and PDM competed against each other consistently through the bid process is more dispositive to the determination of market power than how many projects were won. Thus, in the sections that follow, CB&I's market power is demonstrated through an evaluation of which companies provided competition through bids on recent projects.

(i) LNG market

From 1990 to the Acquisition, nine LNG tank projects were awarded in the United States. CB&I won five of these projects and PDM won four. F. 65. For all but two of these projects, no company other than CB&I and PDM submitted bids. F. 72.

(ii) LPG market

From 1990 to the Acquisition, eleven LPG tank projects were awarded in the United States. CB&I won five and PDM won four. F. 210. From 1994 to the Acquisition, of the five LPG tank projects built in the United States, CB&I won zero and PDM won three. F. 210. Morse Tank and AT&V each won one. F. 210. For the last four pre-acquisition LPG tank projects for which the parties presented evidence on the companies that submitted bids, CB&I bid on all four projects and PDM bid on three of the four. F. 222-26. On two of these, CB&I and PDM were the only bidders. F. 224. Although CB&I did not win any of the last five LPG projects, both CB&I and PDM were effective competitors through bidding. See Grumman, 665 F.2d at 14.

(iii) LIN/LOX market

From 1990 to the Acquisition, 109 LIN/LOX tanks were awarded in the United States. F. 269. CB&I won 25 of the tanks and PDM won 44. F. 269. Graver, which went out of business in 2001 won 34 of the projects. F. 269, 270. CB&I, PDM, and Graver were competing with each other by bidding on LIN/LOX projects. F. 286-88. Because Graver is no longer in the business, it

is no longer bidding against CB&I and no longer provides competition.

(iv) TVC market

From 1990 to the Acquisition, only one field-erected TVC has been built, and this TVC was built by PDM in 1996. F. 364. Both CB&I and PDM provided final pricing offers for [redacted] in 1997. F. 366 (in camera). Both CB&I and PDM submitted best and final offers for the Spectrum Astro project in 1999. F. 368. Both CB&I and PDM were asked to provide rough order of magnitude ("ROM") pricing to TRW in 1999. F. 369. [redacted] sought a sole-source procurement with PDM for its [redacted] facility. F. 367 (in camera). In all but one of these instances, CB&I and PDM were competing against each other. F. 366, 368, 369. In all but one of these instances, no other company was even asked to participate in the bidding process. F. 366-69.

c. Acquisition of closest competitor

Regardless of how competition is measured, the decisive issue is that CB&I bought its closest competitor which is not likely to be replaced by an equally cost-effective and qualified competitor in any of the four markets. Infra Part III.E.2.c. Without PDM to bid against, CB&I is no longer required to submit the lowest possible bid to win projects. F. 498. Numerous recent D.C. court cases have used this economic principle when evaluating whether to enjoin a proposed merger or acquisition. E.g., Heinz, 246 F.3d at 725 (finding that by buying its closest competitor, Heinz would create a "durable duopoly" that "affords both the opportunity and incentive for both firms to coordinate to increase prices"); FTC v. Libbey, Inc., 211 F. Supp. 2d 34, 47 (D.D.C. 2002) (enjoining merger where there was substantial evidence that the proposed merger might effectively eliminate a competitor in the relevant market that was already highly concentrated); FTC v. Swedish Match, 131 F. Supp. 2d 151, 169 (D.D.C. 2000) ("A unilateral price increase by Swedish Match is likely after the acquisition because it will eliminate one of Swedish Match's primary direct competitors."); Cardinal Health, 12 F. Supp. 2d at 53, 64 (By

combining with their closest competitors to capture an 80% market share, defendants could "curb downward pricing pressure and adversely affect competition."); FTC v. Staples Inc., 970 F. Supp. 1066, 1082 (D.D.C. 1997) (By eliminating its closest competitor, "this merger would allow Staples to increase prices or otherwise maintain prices at an anti-competitive level."); FTC v. Coca-Cola Co., 641 F. Supp. 1128, 1139 (D.D.C. 1986) ("The stark, unvarnished truth is that the [sought to be acquired] brand has been a staunch effective competitor . . . that [the potential purchaser] has tried to stifle" and is "now seeking to buy."). See also Merger Guidelines n.21 ("A merger involving the first and second lowest-cost sellers could cause prices to rise to the constraining level of the next lowest-cost seller.").

According to the D.C. Circuit Court of Appeals in Heinz, "no court has ever approved a merger to duopoly." 246 F.3d at 717 (enjoining merger between the second and third largest sellers of jarred baby food where the higher priced company, Gerber, who was not a participant in the merger, had a 65% market share). In PPG, where there "appeared to be only three fully capable firms in [the] market," and "the proposed acquisition would leave two," the Commission's showing of market concentration was "overwhelming," and the proposed merger was enjoined. 798 F.2d at 1505-06. The circumstances in the instant case are similar to those in Franklin Elec., where there were only two manufacturers of the relevant product. 130 F. Supp. 2d at 1033-35. In that case, the defendants argued that market share or percentage of sales was almost irrelevant, because the market was quite different from most consumer markets. Id. The court held that the combination "should be viewed" as nothing "other than a merger to monopoly that by definition will have an anticompetitive effect[.]" Id.

"One factor that is 'an important consideration when analyzing possible anti-competitive effects' is whether the acquisition 'would result in the elimination of a particularly aggressive competitor in a highly concentrated market . . . .'" Libbey, 211 F. Supp. 2d at 39, 47 (enjoining a merger where, though the firm to be acquired had only seven percent of the market, it was the

"most formidable competitor" in the relevant market) (quoting Staples, 970 F. Supp. at 1083). In Grumman, where the acquiring company and the acquired company competed against each other for every opportunity, even though neither company had a significant share of the market, the district court "was entitled to conclude that removing one competitor from this market would tend to substantially lessen competition." 665 F.2d at 15. In this case, Respondents do have a significant share of the market, so, for even stronger reasons, removing a competitor would substantially lessen competition.

As discussed in each of the product market sections below, CB&I bought its closest competitor. Prior to the Acquisition, no other still existing company challenged CB&I's market power. Without resorting to the mechanical HHI analysis, the pre-acquisition market shares controlled by CB&I and PDM and the power each exerted by bidding against the other cannot be ignored. As the evidence in this case demonstrates, lower prices for customers resulted from that pre-acquisition competition. See F. 83-87, 231, 286-91, 388-406. Even Respondents recognized at the time that they were contemplating the Acquisition that combined CB&I and PDM could achieve market dominance. F. 491-96. Accordingly, Complaint Counsel has established a presumption of illegality in all four product markets.

(i) LNG market

CB&I and PDM account for all of the sales of LNG tanks in the United States from 1990 to the Acquisition. F. 65. From 1990 to 2001, based on the dollar values of tank projects built, excluding cancelled projects, CB&I accounted for 45.3% and PDM accounted for 54.7% of the market. The combined market share is 100%. F. 68.

Prior to the Acquisition, Respondents were the only two competitors in the LNG market. F. 74. Respondents and industry members viewed CB&I and PDM as the only competitors for LNG tanks. F. 75-82. Customers sought to use competition between CB&I and PDM to obtain lower prices. F. 83-97.

(ii) LPG market

CB&I and its two acquisitions, PDM EC and Morse, account for all but one of the sales of LPG tanks in the United States from 1990 to the time of the Acquisition. F. 210, 214, 215. Dr. Simpson calculated market shares based on sales values from 1990 to 2001 and included the post-acquisition LPG project for BASF in Port Arthur, Texas that was awarded to CB&I. F. 212. Based on Dr. Simpson's data set, PDM had a 34.5% market share, CB&I had a 56.7% market share, Morse Tank had an 8.2% market share, and AT&V had a 0.6% market share. F. 213. By Dr. Simpson's calculations, the combined CB&I and PDM market share from 1990 to the Acquisition is 91.2%. F. 213. n2 On November 30, 2001, CB&I acquired Morse Tank, eliminating the firm that had accounted for the next most substantial share of LPG sales prior to the Acquisition. F. 214.

n2 If the post-acquisition win by CB&I is excluded from the calculations, the market share totals do not vary significantly. The combined CB&I and PDM total would be 90.9%. F. 213.

Respondents viewed each other as their only competition for LPG tanks. F. 228-30. Respondents' expert, Dr. Harris, testified that prior to the Acquisition, neither CB&I nor PDM could increase prices of LPG tanks in the United States without risking losing sales to the other. F. 231.

(iii) LIN/LOX market

CB&I and PDM had a combined market share of 72.8% of the value of LIN/LOX awards for the time period of 1990 to the Acquisition. F. 269. Graver had a 23.3% market share, Matrix had a 2.6% market share, and AT&V had a 1.4% market share. F. 269. Graver went out of business, in 2001, and is no longer a competitor in the LIN/LOX market. F. 270.

Prior to the Acquisition, competition between CB&I and PDM

was very aggressive. Respondents viewed each other as close competitors and in some instances dropped their prices to beat out the other or set prices that would generate "negative margins." F. 277-82. CB&I lost some projects to PDM because of PDM's "very low" pricing levels. F. 280. Prior to the Acquisition and prior to Graver's exit from the business, customers would use the vigorous competition between CB&I, PDM and Graver to obtain lower prices. F. 286-91.

(iv) TVC market

CB&I's acquisition of PDM EC combined the only two competitors in the market for large field-erected TVCs in the United States. F. 363. Since 1960, the only companies that have built TVCs are CB&I and PDM. F. 363.

CB&I viewed PDM as its "only competitor" for TVC projects in the United States. F. 376-78. Purchasers of TVCs viewed CB&I and PDM as the only firms with the capability to construct TVCs. F. 380-85. One customer used competition between CB&I and PDM to obtain lower pricing. F. 388-406.

2. Respondents' rebuttal

a. Standards & factors

Complaint Counsel established its prima facie case. The burden next shifts to Respondents to produce evidence that "show[s] that the market-share statistics [give] an inaccurate account of the acquisition['s] probable effect[] on competition" in the relevant markets. Citizens & Southern Nat'l Bank, 422 U.S. at 120; Phila. Nat'l Bank, 374 U.S. at 363; United States v. Waste Mgmt., Inc., 743 F.2d 976, 981 (2d Cir. 1984). "The more compelling the prima facie case, the more evidence the defendant must present to rebut it successfully." Baker Hughes, 908 F.2d at 991. "Although the ultimate burden of persuasion always rests with the FTC, once a presumption has been established that the proposed transactions will substantially affect competition, the burden of production shifts to the Defendants to rebut the

presumption." Cardinal Health, 12 F. Supp. 2d at 54 (citing Marine Bancorporation, 418 U.S. at 613). Respondents are not required to "clearly" disprove future anticompetitive effects, because such a requirement would impermissibly shift the ultimate burden of persuasion. Baker Hughes, 908 F.2d at 991.

Respondents may demonstrate unique economic circumstances that undermine the predictive value of the government's statistics. Univ. Health, 938 F.2d at 1218 (citing General Dynamics, 415 U.S. at 486). In addition to attacking the government's statistics, a respondent may present evidence on a number of factors that "are relevant in determining whether a transaction is likely to lessen competition substantially." Baker Hughes, 908 F.2d at 985. These factors include: ease of entry into the market, the trend of the market either toward or away from concentration, the continuation of active price competition, and evidence of customer sophistication. Univ. Health, 938 F.2d at 1218; Kaiser Aluminum, 652 F.2d at 1341; Baker Hughes, 908 F.2d at 986. The acquired firm's weakness is also a factor that a defendant may introduce to rebut the government's prima facie case. Univ. Health, 938 F.2d at 1221.

In this case, Respondents contend that the following factors sufficiently rebut the FTC's prima facie case: (1) evidence that Complaint Counsel's concentration statistics are misleading; (2) evidence of actual or potential entry or the existence of low entry barriers; (3) evidence of customer sophistication; and (4) evidence of the weakness of the merging companies. Respondents' Post Trial Brief ("RPTB") at 8-11.

b. Statistics

Statistics reflecting market share and concentration, while of great significance, are not conclusive indicators of anticompetitive effects. Heinz, 246 F.3d at 717 n.12 (citing General Dynamics, 415 U.S. at 498); Brown Shoe, 370 U.S. at 322 n.38 ("Statistics reflecting the shares of the market controlled by the industry leaders and the parties to the merger are, of course, the primary index of market power; but only a further

examination of the particular market - its structure, history and probable future - can provide the appropriate setting for judging the probable anticompetitive effect of the merger."). "The level of market concentration . . . is only the starting point to determine the likelihood of anticompetitive effects, and many other factors affect the likelihood of collusive or unilateral anticompetitive conduct." Adventist, 117 F.T.C. at 307 (citing Merger Guidelines, § 2.0; Baker Hughes, 908 F.2d at 984, 992 ("the Herfindahl-Hirschman Index cannot guarantee litigation victories.").

A respondent "may rebut the government's prima facie case by showing that the government's market share statistics overstate the acquired firm's ability to compete in the future and that, discounting the acquired firm's market share to take this into account, the merger would not substantially lessen competition." Univ. Health, 938 F.2d at 12121 "Under General Dynamics, a substantial existing market share is insufficient to void a merger where that share is misleading as to actual future competitive effect." Waste Mgmt., 743 F.2d at 982. The Supreme Court held that, while the statistical showing proffered by the government in General Dynamics was sufficient to support finding an "'undue concentration' in the absence of other considerations, the question . . . is whether . . . other pertinent factors affecting the coal industry and the business of the appellees mandated a conclusion that no substantial lessening of competition occurred or was threatened by the acquisition . . . ." 415 U.S. at 498. Because of fundamental changes in the structure of the relevant market, the statistics relied on by the government in General Dynamics were insufficient to sustain its case. 415 U.S. at 501.

This case does not present the situation before the court in General Dynamics where the Supreme Court held that the market share statistics that the government used to seek divestiture of the merged firm were insufficient, because in failing to take into account the acquired firm's long-term contractual commitments (coal contracts), the statistics overestimated the acquired firm's ability to compete in the relevant market in the future. General Dynamics, 415 U.S. at 500-04. By contrast to General Dynamics, where sales made by defendants represented "the obligation to

fulfill previously negotiated contracts at a previously fixed price" and thus did not represent the exercise of market power, sales made by CB&I and PDM represent CB&I's and PDM's continuing ability to bid for, win, and build tank projects in all four relevant markets.

Nor does this case present the situation before the court in Baker Hughes where the market shares were "volatile and shifting," where there were four domestic firms that each manufactured the relevant products, and where a contract to provide multiple rigs could catapult any one of those firms from fourth to first place. 908 F.2d at 986. As discussed above, in three of the four markets, Respondents were consistently the number one and number two competitors. In the fourth market, LIN/LOX, CB&I and PDM shared the field with Graver. Graver, however, is no longer in the business and is, thus, not able to take shares away from CB&I. Supra Part III.E.b. Therefore, this case does not present the situation addressed by the court in Baker Hughes where there were other competitors who were taking away sales and able to continue to take away sales from the merging companies.

As discussed in the previous section, the government's HHI statistics are not reliable and probative evidence. Nevertheless, the deficiencies in the government's HHI statistics do not undermine the evidence presented that CB&I bought its closest competitor or the evidence on CB&I's ability to compete in the future. Accordingly, Respondents have not successfully demonstrated that the government's market share statistics overstate CB&I's ability to compete the relevant markets.

c. Actual or potential entry

Standards

"Ease of entry is the ability of other firms to respond to collusive pricing practices by entering to compete in the market." Cardinal Health, 12 F. Supp. 2d at 54-55. "Even in highly concentrated markets, if there is sufficient ease of entry, enough

firms can enter to compete with the merging firms, undercutting any of the likely anti-competitive effects of the proposed mergers." Id. If Respondents' evidence regarding entry shows that the Commission's market share statistics give an incorrect prediction of the Acquisition's probable effect on competition because entry into the markets would likely avert any anticompetitive effect by acting as a constraint on CB&I's prices, then Respondents have rebutted the prima facie case. See Staples, 970 F. Supp. at 1086.

In Consolidated Foods, the Supreme Court held that post-acquisition evidence tending to diminish the probability or impact of anticompetitive effects might be considered in a § 7 case, but that the probative value of such evidence was limited. 380 U.S. at 598. In General Dynamics, the Supreme Court held that post-acquisition evidence goes "directly to the question of whether future lessening of competition was probable and the District Court was fully justified in using it." 415 U.S. at 506. "Post-acquisition evidence favorable to a defendant can be an important indicator of the probability of anticompetitive effects where the evidence is such that it could not reflect deliberate manipulation by the merged companies temporarily to avoid anticompetitive activity, and could not reasonably be construed as representing less active market competition than would otherwise have occurred without the questioned acquisition." Lektro-Vend Corp., 660 F.2d at 276. Accordingly, in assessing whether entry will likely avert any anticompetitive effects, post-acquisition evidence is considered.

Complaint Counsel asserts that entry must be timely (within two years); likely to be profitable at pre-merger prices; and sufficient to deter or counteract the possible anticompetitive effects of the Acquisition. CCPTB at 18 (citing Merger Guidelines § § 3.1-3.4; Coca Cola, 117 F.T.C. at 953). Respondents assert that evidence regarding actual or potential entry rebuts a prima facie case and that even the mere threat of entry can rebut a prima facie case. RPTB at 9-10 (citing Baker Hughes, 908 F.2d at 981). See also Waste Mgmt., 743 F.2d at 983

("entry by potential competitors may be considered in appraising whether a merger will 'substantially lessen competition'").

Likelihood and timing of entry

In Baker Hughes, the district court reviewed the prospects for future entry and concluded that entry was likely, particularly if the acquisition were to lead to supracompetitive pricing. 908 F.2d at 988. The government appealed this conclusion, asserting that the district court should have required defendants to show clearly that entry would be quick and effective. Id. at 988. The court of appeals held that the district court's factual findings amply supported its determination that future entry was likely. Id. at 989. Discussing Baker Hughes, the court in Tote stated, the "crucial aspect" of Baker Hughes was "that the leading firm's 'growth suggests that competitors not only can, but probably will, enter or expand if this acquisition leads to higher prices.'" 768 F. Supp. at 1081 (quoting Baker Hughes, 908 F.2d at 989). No such inference can be made in this case where the strength of Respondents, the leading firms, is not recent or attributable to any significant changes in the industry, but is grounded on long experience and a proven track record.

Despite characterizing the government's position in Baker Hughes that entry must be "quick and effective" as "novel and unduly onerous," the court of appeals found that "if the totality of a defendant's evidence suggests that entry will be slow and ineffective, then the district court is unlikely to find the prima facie case rebutted." Id. at 988 (emphasis added). Further, case law developed after Baker Hughes illustrates that a "quick and effective" standard for analyzing entry is no longer "novel." In Tote, where evidence presented at trial established that it would take 18 to 24 months to study, develop and then adequately debug a truly competitive product and where there was other evidence of factors that complicate a potential entrant's ability to design or modify the relevant product in a timely manner, defendants did not rebut the government's case. 768 F. Supp. at 1073-75. See also Franklin Elec., 130 F. Supp. 2d at 1035-36 (enjoining merger where defendants had "not shown that entry is so easy that [the

merged entity] could not sustain monopolist profits for some period of time") (emphasis added); United States v. Calmar, Inc., 612 F. Supp. 1298, 1301 (D.N.J. 1985) ("If ease of entry in the market is such that the producers in the market could not long sustain an unjustified price increase, then in spite of a high degree of concentration there has not been a substantial lessening of competition.") (emphases added).

As discussed below, in all four of the relevant markets, the totality of the evidence establishes that potential and actual entry is slow and ineffective and cannot keep these markets competitive. Further, the evidence of entry in this case is not as compelling as the evidence was in Baker Hughes where at least two companies had entered the United States market immediately prior to the challenged acquisition and were poised for future expansion. 908 F.2d at 988-89. In Baker Hughes, a number of firms competing in Canada and other countries had not penetrated the United States market, but could be expected to do so if the acquisition led to higher prices. Id. Although, in this case, there is evidence that there are a number of firms competing worldwide, the evidence does not establish that they can be expected to enter the U.S. market and compete in a timely and effective manner.

Constrain pricing

Entry "must be able to restore competitive pricing -- i.e., it must be effective in offsetting any loss of competition due to the business combination in question." Coca Cola, 117 F.T.C. at 953, 960 ("If new entrants cannot sufficiently expand output to prevent existing producers from raising prices, their entry will not be sufficient to prevent a cartel from raising prices."). Where the likely and timely entry is not "sufficient to offset any post-merger pricing practices," defendants' claim of entry and expansion is "insufficient to rebut the Government's prima facie case." Cardinal Health, 12 F. Supp. 2d at 58. Even in Baker Hughes, the court found potential entry would be sufficient only if it "can keep that market competitive." Id. at 988 (emphasis added).

Respondents have presented evidence that other manufacturers are interested in entering the market and that customers might consider turning to these other sources. An interest of other firms in making sales is not sufficient to restore competition and prevent CB&I from exercising market power. See Rebel Oil Co. v. Atlantic Richfield Co., 51 F.3d 1421, 1440 (9th Cir. 1995) (If the output or capacity of the new entrant is insufficient to take significant business away from the predator, [the new entrants] are unlikely to represent a challenge to the predator's market power.") (emphasis added). Rather, the inquiry is focused on whether those firms will actually prevent an exercise of market power. See Staples, 970 F. Supp. at 1087-88; Swedish Match, 131 F. Supp. 2d at 170; Coca-Cola, 117 F.T.C. at 960 (Entrant must "be 'successful' in the sense of being profitable" and "sufficiently expand output to prevent existing producers from raising prices . . . ."). The greater weight of evidence in this case establishes that other firms have not prevented and will not prevent CB&I from raising prices after acquiring PDM EC.

Respondents have also presented evidence of companies that have bid on recent projects. However, in most of the examples presented, the other companies' bidding has not exerted sufficient competitive pressure. In Tote, the defendants pointed to the example of a company that had submitted a number of bids to tracks and that could have entered the market in seven months. The court held:

> despite the fact that ITS is actively bidding in the marketplace, United Tote was unable to offer even a single example of a competitor adjusting its prices in response to an ITS bid. Quite to the contrary, on one recent bid, ITS's price was almost twice that of AmTote's and 50% higher than Autotote's once the cost of buying was converted to the cost of leasing.

Tote, 768 F. Supp. at 1083. Thus, the court held that actual entry by ITS was not sufficient, because it would not constrain anticompetitive price increases by incumbents. Id. at 1082. In examples set forth below, the evidence in this case establishes

that, as in Tote, the bids offered by smaller competitors are at higher prices than those of CB&I and thus do not constrain pricing.

(i) LNG market

Since the Acquisition, domestic companies partnered with foreign companies are taking steps to enter the United States LNG market. In three of the eleven new or potential LNG projects, foreign manufacturers have even submitted bids or budget pricing. However, in many of the examples presented at trial, the steps that recent or potential entrants have taken are too preliminary to challenge CB&I's market power.

The bidding stages of seven of the recently announced projects are sufficiently advanced to provide a basis for determining that other manufacturers do not constrain CB&I's exercise of market power:

> In CMS Energy's planned LNG tank expansion, CB&I was awarded the contract over Skanska/Whessoe which had provided a budget price that was [redacted] than the firm negotiated price submitted by CB&I. F. 102-05 (in camera).
>
> [redacted] F. 106-07 (in camera).
>
> With Poten & Partners, CB&I is negotiating a sole-source contract. F. 108.
>
> For British Petroleum's three separate projects, CB&I is negotiating sole-source contracts. F. 109-13. Testimony from BP's representative that [redacted] (Sawchuck, Tr. 6062-63, 6092 in camera) is not persuasive evidence that these other companies have entered the market.
>
> For Dynegy's Hackberry Facility, the one post-acquisition LNG tank award that CB&I did not win,

> CB&I declined to submit a tank bid only because it did not like the conditions under which it was asked to bid. F. 89-101.

The bidding stages of the other four recently announced projects are not sufficiently advanced to provide a basis for determining that other manufacturers constrain CB&I's exercise of market power. For some of these projects, the recent or potential entrants' level of participation rises only to the level of expressing an interest or participating in preliminary meetings. Thus, the evidence presented on recent or potential entrants' attempts to enter the LNG market does not support a conclusion that recent or potential entry restrains CB&I's market power:

> For Yankee Gas' Waterbury project, CB&I has submitted budgetary pricing; Skanska/Whessoe has provided preliminary design solutions, preliminary design data sheets and pricing information; and [redacted] F. 117-32 (in camera). However, Yankee Gas has not yet determined whether Skanska/Whessoe or Technigaz are qualified to bid. F. 129.
>
> For Freeport LNG's project, which is in the early design stages and may never be built, CB&I has sent Freeport LNG a proposal to do the front end engineering and design; Black & Veatch has sent Freeport LNG a letter which indicates that it has formed an alliance with Whessoe to build LNG tanks in the Western Hemisphere; Skanska/Whessoe met with Freeport LNG to discuss contracting strategies and general tank designs and to provide Freeport LNG with marketing materials; TKK/AT&V has made presentations to Freeport LNG on the companies' capabilities and discussed contracting capabilities; and Technigaz/Zachry has approached Freeport LNG to present its alliance. F. 133-40.

> For Williams' Cove Point II project, CB&I has submitted budgetary pricing; TKK, in partnership with DYWIDAG and AT&V, has submitted budgetary pricing. F. 114-16. Testimony from [redacted] is not persuasive evidence that [redacted] has entered the market. ([redacted], Tr. 4693, (in camera)).
>
> Calpine's Humboldt, California facility is "in the early stages of possible development;" there is only a 50% chance that the facility will be built. F. 141. Testimony from Calpine's representative that he believes that Skanska/Whessoe, Technigaz/Zachry, and TKK/AT&V are all competent builders and can build LNG tanks (Izzo, Tr. 6494-500) is not persuasive. CB&I is the only constructor with whom Calpine has had discussions about potentially building this facility. F. 142-43.

Although Respondents presented evidence that TKK/AT&V, Skanska/Whessoe, and Technigaz/Zachry have begun bidding in the U.S. LNG market and that several other manufacturers have taken steps to try to enter the U.S. LNG market, the evidence does not demonstrate that they compete with sufficient force to constrain CB&I.

Further, although Respondents assert that there is a trend toward building double or full containment tanks, and that CB&I is disadvantaged in competing for double or full containment tanks, the evidence does not demonstrate that there is a trend toward double or full containment tanks. F. 57. Respondents have not demonstrated that actual or potential entry is sufficient to challenge CB&I's market power in the LNG market.

(ii) LPG market

Respondents presented little evidence of recent entry in the LPG market. Respondents assert that two entrants, AT&V and Matrix, have recently begun to compete for LPG jobs, and that

Chattanooga Boiler & Tank ("Chattanooga") is poised to enter this market. No evidence or testimony was offered to show that any foreign tank manufacturer has bid on U.S. LPG projects. F. 246. The evidence presented at trial does not demonstrate that these domestic or that foreign manufacturers can constrain CB&I's market power.

From the Acquisition to the time of trial, there has been one LPG project awarded, Port Arthur in 2001. This project was awarded to CB&I. F. 233.

The only still existing company that has built an LPG tank from 1990 to present, AT&V, lacks the capacity to constrain CB&I. Although AT&V was awarded the last pre-acquisition LPG tank project award, Deer Park, in 2000, the value of this project was a fraction of the value of the next largest tank built from 1990-2001. F. 226. AT&V also bid on the only LPG tank awarded since the Acquisition, which was won by CB&I. F. 237. Although AT&V provides some competition by bidding, the greater weight of the evidence demonstrates that AT&V cannot compete with sufficient force to constrain CB&I's market power. F. 238-40.

There is also insufficient evidence to demonstrate that Matrix, Wyatt, or Chattanooga can effectively compete. F. 241-44. Respondents did not present evidence that foreign manufacturers are poised to enter the U.S. LPG market. F. 245-49.

Therefore, Respondents have not demonstrated that actual or potential entry is sufficient to challenge CB&I's market power in the LPG market.

(iii) LIN/LOX market

Respondents presented evidence of recent entry by AT&V in the LIN/LOX market. Respondents assert that two other domestic manufacturers, Matrix and Chattanooga, compete in the LIN/LOX market. Respondents do not assert that foreign manufacturers are poised to enter the U.S. LIN/LOX market.

From the Acquisition to the time of trial, there have been five LIN/LOX projects awarded. AT&V won three; CB&I won two. F. 292-93. In all three of the LIN/LOX projects that AT&V bid on and won, CB&I was also a bidder. F. 294. Respondents presented evidence that AT&V effectively competes against CB&I by bidding at lower prices than CB&I. F. 294.

However, Complaint Counsel presented evidence that AT&V cannot compete on an equal footing with CB&I in the LIN/LOX market as it lacks revenue and field capacity. F. 315. Further, some customers that have done business with AT&V have found that any initial savings are offset or exceeded by oversight costs and costs related to change orders. F. 297-98, 304-05, 314. Other customers have expressed concern with AT&V's performance and reputation. F. 318-19.

The greater weight of the evidence demonstrates that although AT&V has entered the LIN/LOX market and has won three of the five post-acquisition projects, AT&V does not provide the competitive force that PDM once did.

Matrix recently entered the LIN/LOX market, winning 4 recent pre-acquisition LIN/LOX projects. F. 320. However, Matrix has been a high bidder, and consequently non-competitive, on other recent LIN/LOX tank projects for several customers, including Air Liquide and Linde, and is viewed by some customers as not sufficiently qualified. F. 321-23. Moreover, after the sale of its subsidiary which owned the fabrication facility where Matrix fabricated LIN/LOX tanks, Matrix's capacity decreased. F. 324.

Chattanooga has never built a LIN/LOX tank and does not effectively compete in the LIN/LOX market. F. 325. LIN/LOX industry participants question Chattanooga's ability to build a LIN/LOX tank. F. 327. On one occasion when it recently bid on a LIN/LOX project, Chattanooga's price was [redacted] higher than CB&I's. F. 326 (in camera).

Therefore, Respondents have not demonstrated that actual or potential entry is sufficient to challenge CB&I's market power in the LIN/LOX market.

(iv) TVC market

There is no evidence of actual or potential entry in the TVC market. In all but one of the TVC projects for which pricing was requested prior to the Acquisition, no company other than CB&I or PDM was even asked to provide pricing. F. 367-69. In the one instance where two other companies responded to the customer's request for proposals, these manufacturers were eliminated from the bidding process because the customer found them unqualified. F.366. The only company that, post-acquisition, has been asked to provide pricing on a TVC project, Howard Fabrication, was not considered by that customer to have "the technical competence nor the financial backing" necessary to award it a TVC project. F. 445. See also F. 410-11. Industry members testified that the field for manufacturing TVCs is limited to CB&I. F. 380-85. See also F. 412-14.

Therefore, Respondents have not demonstrated that actual or potential entry is sufficient to challenge CB&I's market power in the TVC market.

d. Barriers to entry

Determining whether there is ease of entry also entails an analysis of barriers to new firms entering the market or to existing firms expanding into new regions of the market. Cardinal Health, 12 F. Supp. 2d at 54 (citing Baker Hughes, 908 F.2d at 987). If barriers to entry are low, the threat of outside entry can significantly alter the anticompetitive effects of the merger by deterring the remaining entities from colluding or exercising market power. Heinz, 246 F.3d at 717 (citing United States v. Falstaff Brewing Corp., 410 U.S. 526, 532-33 (1973); Baker Hughes, 908 F.2d at 987 ("In the absence of significant barriers, a company probably cannot maintain supracompetitive pricing for any length of time."). Low barriers to entry enable a potential

competitor to deter anticompetitive behavior by firms within the market simply by its ability to enter the market. Heinz, 246 F.3d at 717 n.13 (citing FTC v. Procter & Gamble Co., 386 U.S. 568, 581 (1967)).

Expertise in the industry, a fair amount of capital, a positive reputation, and the need to have specialized equipment are all barriers to entry. Fruehauf Corp. v. FTC, 603 F.2d 345, 357 (2d Cir. 1979); Cardinal Health, F. Supp. 2d at 58; United States v. Blue Bell, Inc., 395 F. Supp. 538, 549 (M.D. Tenn. 1975). In Kennecott Copper Corp. v. FTC, 467 F.2d 67, 79 (10th Cir. 1972), the court found that due to the specialized nature of the industry, which required particular knowledge and highly developed equipment, the entry barriers were formidable. See also FTC v. PPG Indus., 628 F. Supp. 881, 885 (D.D.C. 1986) (high entry barriers where witnesses estimated it would take from two to six years to acquire the technological expertise, assemble the trained personnel, and devise the tooling to enter the market as a credible competitor). As set forth for each of the product markets below, these barriers exist in this case.

Another barrier is that most customers already have established relationships with an existing manufacturer. Thus, to persuade those customers to conduct business with it, a new entrant would probably have to undercut the current competitors in the market by selling at lower prices in order to secure new business. Libbey, 211 F. Supp. 2d at 48. As set forth for each of the product markets below, this barrier exists in this case.

In some markets, "the need for reliability is so great and the consequences of new product failure so dire that, even if the competitive nature of the market deteriorated, consumers would still be reluctant to switch to new entrants." Tote, 768 F. Supp. at 1076 (finding proven ability to provide reliable systems and service an important factor in a racetrack's selection of a totalisator supplier to preserve the track's revenue and goodwill).

The unwillingness of customers to use a company with an unproven track record is a barrier to entry. See Tote, 768 F. Supp. at 1078. As set forth for each of the product markets below, this barrier exists in this case.

Even in Baker Hughes, the district court noted that the following facts suggested difficulty of entry and "may handicap new entrants": products that are custom-made are not readily interchangeable or replaceable; buyers tend to return to sellers from whom they have purchased in the past; and customers typically place great importance on assurances of product quality and reliable future service. 908 F.2d at 989 n.10. As set forth for each of the product markets below, these factors exist in this case.

Many witnesses in this case, including those of Respondents, testified that to be successful in these markets, a company has to be large, have experience and know-how, have specialized equipment, and have a fair amount of capital. As set forth below, Complaint Counsel introduced evidence of high barriers to entry in all four markets. These barriers to entry make it unlikely that any potential competitor, or even a small existing competitor in the U.S., such as AT&V, will be able to replace PDM as a competitive force, by filling the capacity that PDM had or by being profitable at pre-acquisition prices at a pricing level that constrains CB&I's ability to raise prices.

(i) LNG market

Barriers to entry in the LNG tank market are high. LNG tank suppliers must have sufficient personnel to design, engineer and construct LNG tanks and to handle adjustments to possible schedule changes. F. 166, 169, 172. LNG suppliers must also have sufficient capacity to bond large projects. F. 175-76. Experience and reputation are extremely important in a product market, like the one for LNG tanks, where the values of the projects are so high and where there are tremendous safety considerations. F. 167-173. The evidence establishes that barriers are not low and that entry is not so easy that an existing or potential company could replace PDM in the LNG market.

(ii) LPG market

Barriers to entry in the LPG market, while not as high as in the LNG or TVC markets, still exist. LPG tank suppliers must have sufficient personnel to design, engineer and construct LPG tanks and to handle adjustments to possible schedule changes. F. 250-51. Experience and reputation are important in this market. F. 252. See also F. 253. The evidence establishes that barriers are not low and that entry is not so easy that an existing or potential company could replace PDM in the LPG market.

(iii) LIN/LOX market

Barriers to entry in the LIN/LOX market, while also not as high as in the LNG or TVC markets, do exist. LIN/LOX manufacturers must establish the capability to perform specialized metal fabrication and must have sufficient financial capacity to conduct physical tests of materials and tank prototypes or components. F. 329-33. Experience and reputation are also important in this market. F. 328, 331, 334. The evidence establishes that barriers are not low and that entry is not so easy that an existing or potential company could replace PDM in the LIN/LOX market.

(iv) TVC market

Barriers to entry in the TVC market are high. No evidence or testimony was offered to show that barriers to entry are low in the large field-erected TVC market. TVC customers want experienced suppliers with knowledge, ability to fabricate in the field a stainless steel vessel, and ability to satisfy the quality requirements of leak testing and cleanliness for a TVC. F. 415-17. A new entrant would need to hire engineers with previous experience in designing TVCs, which are "truly one-of-a-kind designs for very specific applications on very technical products." F. 416. A new entrant would need to expend significant resources in developing proposals and price quotations for TVCs. F. 418. The evidence establishes that barriers are not low and that entry is

not so easy that an existing or potential company could replace PDM in the TVC market.

e. Customer sophistication

"Well-established precedent and the . . . Merger Guidelines recognize that the sophistication and bargaining power of buyers play a significant role in assessing the effects of a proposed transaction." FTC v. R.R. Donnelley & Sons Co., 1990 U.S. Dist. LEXIS 11361, *10 (D.D.C. 1990). "Although the courts have not yet found that power buyers alone enable a defendant to overcome the government's presumption of anti-competitiveness, courts have found that the existence of power buyers can be considered in their evaluation of an anti-trust case, along with such other factors as the ease of entry and likely efficiencies." Cardinal Health, 12 F. Supp. 2d at 58. Some courts have stressed that the existence of power buyers does not necessarily mean that a merger will not result in anticompetitive effects. The court in Tote held that the existence of power buyers did not outweigh the potentially damaging effects of a merger on numerous smaller customers. 768 F. Supp. at 1085. Although the larger buyers were not likely to suffer the effects of a lack of competition, the court concluded that the defendants' smaller to mid-size customers without any significant bargaining power would be impermissibly harmed by the proposed merger. Id.

In all four of the relevant product markets, the customers purchasing the products are large companies, with sophisticated procurement processes, who generally seek to have two or more bidders for their projects. F. 254, 353-55, 471-73. However, due to the fact that, in three of the four markets, there are very few products purchased and there are confidentiality provisions, past pricing is not well known. E.g., F. 204-07. Thus, most customers do not have significant bargaining power. In the end, although evidence of the sophistication of customers in these markets was presented and has been considered, this does not rebut Complaint Counsel's prima facie case.

f. Weakness of the merging companies

The acquired firm's weakness is another factor that a defendant may introduce to rebut the government's prima facie case. Kaiser Aluminum, 652 F.2d at 1339; United States v. Int'l Harvester Co., 564 F.2d 769, 774 (7th Cir. 1977) ("The prima facie case presented by the Government was rebutted by persuasive evidence, including [the acquired firm's] weakened financial condition."). However, such a defense is credited "only in rare cases, when the defendant makes a substantial showing that the acquired firm's weakness, which cannot be resolved by any competitive means, would cause that firm's market share to reduce to a level that would undermine the government's prima facie case." Univ. Health, 938 F.2d at 1221.

Facts presented at trial establish that PDM was not a weak firm. PDM was winning recent tank projects. Supra Part III.E.1. Moreover, PDM was a profitable company and PDM's EC Division was profitable. F. 535-45. As of July 2000, the month before CB&I and PDM signed the acquisition letter of intent, PDM EC projected earnings before interest and taxes of $ 2 million in 2000. F. 538. Accordingly, this factor does not rebut the government's prima facie case.

3. Burden of persuasion

"If the defendant successfully rebuts the presumption [of illegality], the burden of producing additional evidence of anticompetitive effect shifts to the government, and merges with the ultimate burden of persuasion, which remains with the government at all times." Baker Hughes, 908 F.2d at 983; see also Kaiser Aluminum, 652 F.2d at 1340 and n.12. Respondents did not successfully rebut Complaint Counsel's presumption of anticompetitiveness and thus the inquiry into whether CB&I's acquisition of PDM EC and Water Divisions violated the Clayton Act may conclude. Nevertheless, although it was not required to do so, Complaint Counsel attempted to show that anticompetitive effects have already occurred in three of the four markets. As set

forth below, Complaint Counsel's evidence did not prove that CB&I has implemented price increases.

a. LNG market

(i) Sole-source contracts

Complaint Counsel argues that CB&I used its position as the only domestic supplier of LNG tanks to force LNG tank purchasers into sole-source arrangements. CCPTB at 37-38. The evidence establishes that three companies have entered sole-source arrangements with CB&I. F. 106-13. Complaint Counsel presented evidence that sole-source arrangements can result in higher profit margins and that one of these customers believed that CB&I was essentially its only choice. F. 111-13. Although the evidence presented at trial did not establish conclusively that the sole-source arrangements have resulted in higher prices, without competitive constraints, higher prices are probable.

(ii) Memphis Light Gas and Water

Complaint Counsel argues that recent prices provided for Memphis Light Gas and Water ("MLGW") represent a post-acquisition price increase. Complaint Counsel attempts to compare the competitively bid and negotiated 8% margin projected by CB&I on the 1994 MLGW project to a [redacted] margin included as part of a budget price given to MLGW in 2002. CCPTB at 6, 35 (in camera). This argument is misleading, because it is based entirely on a comparison of apples and oranges. The 1994 price was a fixed, firm price bid that was competitively bid and negotiated, while the 2002 number was a budget price. F. 83, 84, 180-82. Budget prices are preliminary in nature and are often based on broad assumptions of many unknown variables. F. 474-75, 478-79. Complaint Counsel's assertion that CB&I implemented a price increase to MLGW is not supported by sufficient evidence.

(iii) Cove Point I

Complaint Counsel argues that PDM increased its price on the Cove Point expansion in September 2000 in anticipation of the Acquisition. CCPTB at 33-34. Complaint Counsel bases its argument first upon RX 127, a chart prepared by CB&I for a bid review meeting in March 2000, entitled "To Be Completed Prior to Final Proposal Submittal." CCPFF 781 (citing RX 127 at CBI-H008204). While RX 127 contains proposed pricing of [redacted] for the Cove Point project, there is no evidence in the record suggesting that this figure was actually submitted by CB&I or used as a bid for the project. RX 127 (in camera). Complaint Counsel asked no witnesses at trial about this document. Complaint Counsel asserts that PDM initially quoted a price of approximately [redacted]. CCPFF 781 (citing CX 226 at CBI-PL044978, in camera). CX 226 is a CB&I memorandum wherein an employee of CB&I speculates that PDM had provided a "budget of something like [redacted]." (CX 226 at CBI-PL044978, in camera). Based on this speculation, the CB&I employee recommended that CB&I reduce its price to [redacted]. F. 187 (in camera). Speculations made by a CB&I employee about what PDM may have provided as a budget price do not support Complaint Counsel's assertion that PDM bid [redacted]. (In camera). Complaint Counsel then asserts that PDM subsequently bid [redacted]. CCPFF 781 (citing CX 1058 at PDM-HOU 017465, in camera). CX 1058, a summary of pending LNG projects, does not establish conclusively that PDM bid [redacted] million. (CX 1058 at PDM-HOU 017465, in camera). No witnesses at trial were asked about this document.

The evidence does establish that on September 8, 2000, PDM quoted Williams a budget price of [redacted] for a 750,000 barrel tank. F. 192 (in camera). Complaint Counsel compares the September 8, 2000 budget price to the earlier figures to argue that PDM implemented a price increase in September 2000, in anticipation of the Acquisition. CCPFF 793. But because Complaint Counsel has not established that the earlier figures were budget prices or were ever submitted, Complaint Counsel's

assertion that PDM implemented a price increase in September 8, 2000 is not supported by reliable evidence.

Next, Complaint Counsel argues that PDM increased its price on the Cove Point expansion in November 2000 in anticipation of the Acquisition. CCPTB at 33-34. Complaint Counsel bases this theory on CX 1160, [redacted]. See CCPTB at 33-34. The evidence shows that this document was created for purposes of evaluating an estimate from the estimating department in a formal bid review meeting. Decisions made at the meeting resulted in the November 2, 2000 "as submitted" price. F. 194, 195. The fact that CX 1160 shows a different price on November 2 as compared to the estimated price on November 1 is not probative, since the very nature of the meeting was to review the bid.

Complaint Counsel points to CB&I's actual post-acquisition profit margin for performing the Cove Point project and argues that the actual profit margin has increased in comparison to the March 2000 chart prepared for a bid review meeting. CCPTB at 34. However, the evidence establishes that CB&I will earn a greater than expected margin because [redacted] F. 201-03 (in camera). [redacted] F. 203 (in camera). In addition, Complaint Counsel's arguments pertaining to RX 323, a document not used at trial and CX 906, a document demonstrated by Respondents to be unreliable, are speculative and not supported by reliable evidence.

(iv) Fairbanks

Complaint Counsel asserts that the LNG project for Fairbanks Natural Gas, LLC in Alaska ("Fairbanks") in 2002 illustrates that, since the merger, CB&I has raised prices and increased profit margins. CCPFF 955. To support this assertion, Complaint Counsel relies on CX 307, a document that was not introduced in evidence, and on RX 407, a document for which only very limited testimony was introduced. (See Scorsone, Tr. 5331, in camera). The trial transcript is devoid of any specific information about the document including who wrote the document and when, who viewed the document and when, and what the document means.

The conclusions Complaint Counsel draws from RX 407 are speculative. The conclusions Complaint Counsel draws from CX 307, a document not in evidence, are disregarded.

In addition, Complaint Counsel compares CB&I's budget price for Fairbanks in 2002 to PDM's budget price for BC Gas in 1996 for an LNG tank to be built in Vancouver, British Columbia and argues that the difference between these figures illustrates that CB&I implemented a price increase on the Fairbanks project. CCPFF 977. This argument fails for two reasons. First, CX 791, the document Complaint Counsel asserts represents PDM's budget estimate for the BC project, was not used at trial with any fact witness and Complaint Counsel's expert testified that he did not know how the figures listed on CX 791 were formulated. (Simpson, Tr. 5387-92). Thus, the conclusions Complaint Counsel draws from it are not reliable. Second, the differences between a 1996 budget estimate prepared by PDM for a 1.2 million gallon LNG tank located in Canada and a 2002 budget estimate prepared by CB&I for a 1.0 million gallon LNG tank located in Alaska render a comparison between the two figures meaningless. The 1996 PDM budget estimate appears to have been extrapolated from a 1993 estimate to a different client in a vastly different location. (See CX 791; Simpson Tr. 5390-93). By contrast, CB&I derived the Fairbanks estimate in 2002 using a formal budgetary exercise. (Compare RX 626 to CX 791). Further, Complaint Counsel has not shown that the costs for the BC Gas job (such as material or shipping costs) would be the same as those on the Fairbanks job located deep in interior Alaska. The Fairbanks budget price contained a very high margin figure to account for lack of information and contingencies associated with an Alaska project, such as a cold climate, short construction seasons, and burdensome labor regulations. (RX 626 at CBI 063013; Scorsone, Tr. 5004-06). Indeed, Dr. Simpson acknowledged that these factors would be relevant in any comparison of the two projects. (Simpson, Tr. 5385). Accordingly, Complaint Counsel did not present reliable evidence to support its allegation that the Fairbanks LNG project illustrates that CB&I is raising prices and increasing margins.

b. LPG market

Complaint Counsel does not assert that there have been anticompetitive effects in the LPG market.

c. LIN/LOX market

Complaint Counsel asserts that there are three examples of CB&I implementing an 8.7% price increase to Linde and to Praxair. None of Complaint Counsel's allegations are supported by sufficient, reliable evidence.

Complaint Counsel's argument that CB&I implemented its first price increase to Linde in April 2002 is based on testimony from a fact witness' comparison of CB&I's budget price to a three year old PDM firm fixed price and his comparison to an outdated pricing model. F. 341-44. The witness admitted several deficiencies in his pricing model. F. 344. Although the witness may have believed the price was high, the opinion that the price actually increased is not reliable and is disregarded.

Complaint Counsel's argument that CB&I implemented a second price increase to Praxair in June 2002 is based on Complaint Counsel's assertion, with no cites to record evidence, that the difference in CB&I's price to Praxair and CB&I's price to Linde is only [redacted], or less than [redacted]. CCPFF 1075 (in camera). Next, Complaint Counsel hypothesizes that because CB&I's price to Linde increased by 8.7%, and because the Linde tank is similar in size to the Praxair tank, and because CB&I's price to Praxair was close to CB&I's price to Linde, then CB&I's price to Praxair must have increased 8.7%. CCPFF 1072-76. This conclusion is not supported by sufficient probative evidence. First, it is based on Complaint Counsel's theory - that is rejected in the preceding paragraph - that CB&I implemented an 8.7% price increase to Linde in April 2002. Second, because of differences in the details, such as construction schedule, location, conditions of the project site, provided by Praxair and Linde to CB&I and because of differences between the tank specifications, Complaint Counsel's comparison is speculative. F. 336-37, 345,

347-48. Therefore, Complaint Counsel did not present reliable evidence to support its allegation that CB&I implemented an 8.7% price increase to Praxair in June 2002.

Complaint Counsel's theory of a third instance of an 8.7% price increase to Praxair in April 2002 is based on a comparison between PDM's budget price for a 500,000 gallon LOX tank in Colorado in November 2000 to CB&I's budget price for a LR-60 LIN tank in New Mexico in April 2002. CCPFF 1077-1085. CB&I's estimating staff was instructed to use PDM's price on the Colorado Springs LOX tank as a basis for determining the price for Praxair's New Mexico LIN tank. F. 350. Complaint Counsel compared these two budget prices and concluded that the difference in price amounts to an 8.7% price increase. The documents Complaint Counsel relies upon, CX 448 and CX 449, while admitted into evidence, were never used at trial with any witness. CX 448 does not provide technical specifications, including the proposed tank size. Complaint Counsel has not presented evidence that the design of the Colorado LOX tank and the New Mexico LIN tank are identical. Thus, Complaint Counsel's argument that differences in the prices is the result of an exercise of market power is not supported by reliable and probative evidence. Accordingly, the evidence does not support Complaint Counsel's allegation that CB&I implemented an 8.7% price increase to Praxair in April 2002.

d. TVC market

Complaint Counsel alleges that, after the letter of intent for the Acquisition was signed, CB&I and PDM colluded regarding pricing for Spectrum Astro's proposed TVC project. CCPTB at 31-32. Complaint Counsel first points to a handwritten internal note reflecting a conversation between CB&I's Chief Operating Officer and PDM's President of PDM EC calling this project "D.O.A." (CX 1705 at PDM-HOU009169). Complaint Counsel also points to an internal CB&I memorandum from a low-level salesman (Dave Lacey) to support its argument. CCPTB at 31 (citing CX 242, in camera). The evidence does not establish that issues of pricing, profit margins, costs or anything else related to

this project were discussed between PDM and CB&I. (Scorsone, Tr. 4796-97, 5045-46; Scully, Tr. 1217).

Complaint Counsel alleges that, after the Acquisition, CB&I increased its price for the Spectrum Astro project. CCPTB at 32. The evidence presented does not establish this allegation. F. 423-41.

Complaint Counsel alleges that, after the Acquisition, CB&I attempted to coordinate a pricing proposal with Howard Fabrication for TRW's proposed TVC project. CCPTB at 31-32. The evidence presented does not demonstrate that anyone in CB&I's management was aware of or approved such a proposal. F. 446-51.

Complaint Counsel alleges that, after the Acquisition, CB&I increased its price on a [redacted] project. F. 454-70 (in camera). The evidence presented does not conclusively establish this allegation.

e. Conclusion

Complaint Counsel's evidence in support of many of its allegations of price increases implemented by CB&I after the Acquisition does not prove that CB&I has in fact increased prices. However, Complaint Counsel is not required to prove that anticompetitive effects have in fact occurred. "The Government is not required to establish with certitude that competition in fact will be substantially lessened." Crown Zellerbach Corp. v. FTC, 296 F.2d 800, 823 n.21 (9th Cir. 1961) (citation omitted). Because § 7 deals in "'probabilities, not certainties,'" "the mere nonoccurrence of a substantial lessening of competition in the interval between acquisition and trial does not mean that no substantial lessening will develop thereafter . . . ." General Dynamics, 415 U.S. at 505 (quoting Brown Shoe, 370 U.S. at 323).

Complaint Counsel did prove that, prior to the Acquisition, in all four product markets, there were two primary competitors, and

that, as a result of the Acquisition, there is now one dominant firm. A merger of the two strongest suppliers enables CB&I to increase prices up until the point where other less-strong suppliers begin to constrain it. There can be no doubt that CB&I has the ability to exercise market power as a result of its acquisition of the only other competitor that had constrained CB&I. Complaint Counsel presented reliable and probative evidence to carry its burden of persuasion that the probability of a substantial lessening of competition did exist at the time of trial.

F. Exiting Assets Defense

Respondents assert an affirmative defense of "exiting assets." Respondents definitively state that "CB&I does not assert the failing firm defense, . . . which requires a showing that the acquired company is 'so depleted and the prospect of rehabilitation so remote' that it is at risk of 'the grave possibility of business failure' and that 'the company that acquires the failing company . . . is the only available purchaser.'" RPTB at 153-54 (quoting Citizen Publ'g v. United States, 394 U.S. 131, 138 (1969)). n3 Rather, Respondents argue that the "exiting assets" defense is a viable defense to Complaint Counsel's allegations. RPTB at 152-55. Respondents acknowledge that "there has been no case since Olin asserting the defense until this case was tried." RPTB at 154-55 n.29.

n3 The criteria for establishing a failing company are not met by PDM. F. 535-45.

Respondents claim that, absent the Acquisition, PDM would have liquidated its EC Division and that there was no potential purchaser other than CB&I. RPTB at 138-52. Under these circumstances, Respondents argue that there has been no substantial lessening of competition, because competition if CB&I had not bought PDM EC is exactly the same as competition after CB&I's acquisition of PDM EC. RPTB at 152-55.

Complaint Counsel asserts that the "exiting assets" defense is not based on any accepted law, but rather upon a 1986 law review

article, and that the Commission has rejected this defense. Complaint Counsel's Post Trial Reply Brief ("CCPTRB") at 62. Complaint Counsel further asserts that Respondents failed to establish that CB&I was "the only available purchaser" for PDM's EC and Water Divisions, that PDM conducted an "exhaustive" search for alternative buyers, and that PDM's EC Division was actually exiting the market. CCPTRB at 63-70.

The defense presented by Respondents is similar to the one rejected in United States v. Phillips Petroleum Co., 367 F. Supp. 1226, 1258 (C.D. Cal. 1973), where the court rejected the defense that since the acquired company "would have gone out of business on the West Coast anyway, the acquisition of its assets by [defendant] did not result in any anticompetitive effect in the market." Id. "Unless the seller objectively comes within the 'failing company' doctrine, it is irrelevant why one corporation sells its assets to another." Id.

The exiting assets defense, as described by a law review article, has as its "key element . . . proof that, without the merger, the assets owned by the acquired firm would shortly be leaving the market." John E. Kwoka, Jr. & Frederick R. Warren-Boulton, Efficiencies, Failing Firms, and Alternatives to Merger: A Policy Synthesis, 31 Antitrust Bull. 431, 446 (1986) (cited in Olin Corp. v. FTC, 986 F.2d 1295, 1307 (9th Cir. 1993)). The exiting assets defense was first presented to the Commission in In re Olin Corp., 113 F.T.C. 400 (1990). In Olin, the ALJ characterized the exiting assets defense as a "novel policy proposal" and held that, even if the "novel 'exiting assets' doctrine" was accepted, it would not save the challenged acquisition. 113 F.T.C. at 582-84. The ALJ found that there were alternatives short of merger and that the evidence failed to show that the acquired company made an unsuccessful effort to sell its business to a competitively preferable buyer and failed to show that there were no competitively preferable acquirers. Id. at 583.

On appeal from the initial decision, the Commission held that the evidence in Olin did not establish that the selling company had made the decision to close the relevant business at issue in the

near future (instead, the evidence showed that the selling company continued to operate the facility in the expectation that the facility could at some point be sold) and that there was no evidence that the selling company had conducted an exhaustive effort to sell the assets at issue. Olin, 113 F.T.C. at 618. Based on these factual findings, the Commission concluded "the facts would not support the description of the proposed defense, even if we adopted the defense, and we decline to do so in this case." Id.

On appeal from the Commission's decision, the Court of Appeals for the Ninth Circuit did not adopt the exiting assets defense either. Rather, it characterized the defense as "novel," stated that the Commission had indicated that it was not inclined to recognize this defense, and held that the "burden of proof is undoubtedly on Olin to establish any such defense." 986 F.2d at 1307 (emphasis added).

A finding that the assets would not be exiting the relevant market "shortly" is sufficient to sustain a ruling that CB&I did not establish an "exiting assets" defense. See Olin, 986 F.2d at 1307 (The Ninth Circuit did not need to determine whether or not less anticompetitive alternatives to the merger existed.). In Olin, the respondent had not demonstrated that assets would be exiting the market shortly where: (1) the evidence did not establish that the selling company had made the decision to close the business in the near future; and (2) there was no evidence that the selling company had conducted an exhaustive effort to sell the relevant assets to any companies other than respondent. Olin, 113 F.T.C. at 618 (emphasis added).

To the extent that an exiting assets defense is legally recognizable, the facts presented in the instant case do not support the proposed defense. First, Respondents did not establish that PDM would have closed the business in the near future. Second, Respondents did not establish that PDM had conducted an exhaustive effort to sell the EC Division to any company other than CB&I.

Because Olin is the only case law found specifically addressing an exiting assets defense, cases analyzing failing company or failing division defenses are utilized. Cases analyzing a failing company defense hold that intent to leave the market is not sufficient to establish the defense. E.g., Phillips Petroleum, 367 F. Supp. at 1260 (subjective statements of management intention or desire by management to exit the business does not satisfy the defense); Warner Communications, 742 F.2d at 1165 ("a company's stated intention to leave the market or its financial weakness does not in itself justify a merger"); Blue Bell, 395 F. Supp. at 550 (company's intention to divest itself of a certain division is immaterial).

Respondents' argument that PDM intended to leave the market is not supported by the evidence presented at trial. Mr. Scorsone, the former President of PDM EC, testified that if the EC Division had not been sold, it would not have gone out of business, and that it would be profitable in the future. F. 548. Mr. Byers, former V.P. of Finance for PDM, testified that before making any recommendation to liquidate the PDM EC Division, his fiduciary duties would have required him to investigate to assure himself that there was no alternative purchaser for either PDM or PDM EC willing to pay more than the liquidation value of the business. F. 549. PDM's investment banker, Tanner & Company ("Tanner"), would also have attempted to find alternative purchasers prior to recommending liquidation. F. 550. PDM's President, William McKee, stated that if the CB&I transaction fell through, PDM would have continued its efforts to sell the PDM EC and PDM Water Divisions by seeking other purchasers. F. 551. Finally, PDM's Board of Directors never took up the issue of liquidating the PDM EC Division. F. 552.

Thus, the evidence does not establish that PDM had made the decision to close the business in the near future. Respondents' defense may be rejected on this basis. Citizen Publ'g, 394 U.S. at 136 (rejecting defense where there was "no indication that the owners of the Citizen were contemplating a liquidation").

In addition, Respondents did not present sufficient evidence to demonstrate that PDM conducted an exhaustive effort to sell the package of assets sold to CB&I. Respondents have not made a "clear showing" that PDM "undertook a well conceived and thorough canvas of the industry such as to ferret out viable alternative partners." United States v. Pabst Brewing Co., 296 F. Supp. 994, 1002 (E.D. Wis. 1969) (defendant had burden of proving that it had made every reasonable effort to explore alternative possibilities).

Tanner assembled a preliminary list of potential buyers, including 18 steel companies, 15 engineering and construction companies, and 4 financial buyers. F. 528. This list was presented to the PDM Board on June 1, 2000. F. 528. Among the companies identified by Tanner as potential acquirers of PDM EC were Fluor, Jacobs Engineering, Foster Wheeler, and Morrison Knudsen. F. 529. However, to Mr. Byers' knowledge, none of these companies were contacted about acquiring PDM. F. 529. Tanner never contacted any foreign firms regarding the purchase of PDM EC. F. 530.

In July of 2000, PDM announced that it would sell the company. F. 525. Tanner prepared an offering memorandum for the sale of the PDM EC Division. F. 517. This offering memorandum was sent to only one company -- CB&I. F. 517. By the time the offering memorandum was completed, negotiations between CB&I and PDM were at a point "that it didn't make sense to send it out to other people." F. 518.

These efforts in no way rise to the level sufficient to sustain the proposed defense. For example, in California v. Sutter Health Sys., the defendant's efforts to seek offers from other potential purchasers satisfied an element of a failing company defense where defendant proved that it had conducted a three-year "extensive good faith search for purchasers" in which it "formulated a detailed and thorough proposal process and sought out numerous potential partners." 130 F. Supp. 2d 1109, 1136 (N.D. Cal. 2001). One "expression of interest" came only after the defendant "repeatedly contacted" the potential buyer who

"failed to make any offer in response to these inquiries." Id. Further, the efforts taken by PDM were even less exhaustive than those found to be insufficient in FTC v. Harbour Group Invs., 1990 U.S. Dist. LEXIS 15542, *12-13 (D.D.C. Nov. 19, 1990), where the efforts made by the investment banker did not comport with its normal exhaustive search; where the offering materials were minimal, containing a brief two page executive summary with financial information and product brochures attached; and the search consisted of minimal exploratory phone calls, with little follow-up or attention by the brokers who were responsible for the search.

Financial buyers, who would have maintained PDM as an independent on-going entity, were available and had been recommended by Goldman Sachs and by Tanner as alternative buyers. F. 526. Matrix, then the third-largest United States tank constructor, made efforts to buy PDM EC. F. 531. Tanner's fairness opinion, dated February 7, 2001, noted that if CB&I's acquisition of PDM EC and Water Divisions fell through, there were other potential buyers with the interest and adequate resources to purchase PDM EC. F. 532.

Because Respondents have not presented sufficient evidence to demonstrate that PDM had made the decision to close the business in the near future and that PDM had conducted an exhaustive effort to sell the assets sold to CB&I, Respondents have not demonstrated that the assets would be exiting the market shortly. Thus, to the extent that exiting assets is a viable defense, Respondents have not met their burden of establishing it.

G. Summary of Liability

Count I of the Complaint charges that "the effect of the Acquisition may be substantially to lessen competition or tend to create a monopoly in violation of Section 7 of the Clayton Act, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45." Count II of the Complaint charges that "CB&I and PDM, through the Acquisition and the Acquisition agreement described in Paragraph 8 [of the Complaint], have engaged in

unfair methods of competition in or affecting commerce in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45." Complaint Counsel has presented reliable and probative evidence to support Counts I and II of the Complaint.

H. Remedy

1. Standard

Complaint Counsel has established that the acquisition of PDM's Water and EC Divisions by CB&I may substantially lessen competition in the relevant markets and, thus, has established that Respondents violated Section 7 of the Clayton Act. Pursuant to Section 11(b) of the Clayton Act:

> If upon such hearing the Commission . . . shall be of the opinion that any of the provisions of [Section 7] have been or are being violated, it shall . . . issue and cause to be served on such person an order requiring such person to cease and desist from such violations, and divest itself of the . . . assets, held . . . in the manner and within the time fixed by said order." 15 U.S.C. § 21(b) (emphasis added).

Through Section 11 of the Clayton Act, Congress expressly directed the FTC to issue orders requiring that a violator of § 7 divest itself of the assets held in violation of the Clayton Act. Am. Stores, 495 U.S. at 284-85 and n.11; FTC v. Western Meat Co., 272 U.S. 554, 559 (1926) (Commission has a duty to issue an order directing that a violator of § 7 "cease and desist therefrom and divest itself of what it had no right to hold.").

Under both the text of the Clayton Act and Supreme Court precedent, divestiture is the usual and proper remedy where a violation of § 7 has been found. E.I. du Pont, 366 U.S. at 329 ("The very words of § 7 suggest that an undoing of the acquisition is a natural remedy."); Ford Motor Co. v. United States, 405 U.S. 562, 573 (1972) ("Complete divestiture is particularly appropriate where asset or stock acquisitions violate

the antitrust laws."); Am. Stores, 495 U.S. at 285 n.11 (A person who is allowed to continue holding ownership over stock or assets that created a Section 7 violation would be engaging in a perpetual violation, thus divestiture is the only effective remedy.). See also United States v. El Paso Natural Gas Co., 376 U.S. 651, 662 (1964) (directing the district court to order divestiture without delay). "Of the very few litigated § 7 cases which have been reported, most decreed divestiture as a matter of course." E.I. du Pont, 366 U.S. at 330.

Respondents argue that Complaint Counsel's proposed remedy is not appropriate because Complaint Counsel has not met a burden of presenting evidence relating to the effectiveness of the proposed remedy. RPTB at 158-59 (relying principally on United States v. Microsoft, 253 F.3d 34, 46 (D.C. Cir. 2001)). In Microsoft, a case brought under the Sherman Act, the Court of Appeals for the D.C. Circuit reversed the district court order of remedy based in large part on the district court's failure to take evidence concerning remedy. See id. at 103. However, as the Microsoft Court recognized, merger cases are different from monopolization cases:

> By and large, cases upon which plaintiffs rely in arguing for the split of Microsoft have involved the dissolution of entities formed by mergers and acquisitions. On the contrary, the Supreme Court has clarified that divestiture "has traditionally been the remedy for Sherman Act violations whose heart is intercorporate combination and control," and that "complete divestiture is particularly appropriate where asset or stock acquisitions violate the antitrust laws."

Microsoft, 253 F.3d at 105 (citations omitted) (emphasis added). Thus, Microsoft is distinguishable and does not impose on Complaint Counsel the burden of presenting evidence related to the effectiveness of Complaint Counsel's proposed remedy for this violation of the Clayton Act.

To the contrary, "it is well settled that once the Government has successfully borne the considerable burden of establishing a violation of law, all doubts as to the remedy are to be resolved in its favor." E.I. du Pont, 366 U.S. at 334. In a merger case, "absent clear proof, which is generally likely to come only at the compliance stage when a good faith effort to divest has been made, the presumption should be that an acquired competitive entity can be viably restored to its preacquisition status." In re RSR Corp., 88 F.T.C. 800, 894 (1976), aff'd 602 F.2d 1317 (9th Cir. 1979).

Consistent with the Commission's "duty" to order divestiture, Am. Stores, 495 U.S. at 285 n.11, the Commission has held that "the burden rests with the respondent to demonstrate that a remedy other than full divestiture would adequately redress any violation which is found." In re Fruehauf Corp., 90 F.T.C. 891, 892 n.1 (1977). In In re Diamond Alkali Co., after stating that the most appropriate remedy to redress a Section 7 violation is "generally divestiture," the Commission held, "exceptions to the general rule can be reasonably invoked . . . only when the proof of their probable efficacy is clear and convincing." 72 F.T.C. 700, 742 (1967).

> In the absence of proof to the contrary the assumption of this Commission must be that "only divestiture can reasonably be expected to restore competition and make the affected markets whole again." Moreover, if an order of divestiture appears to the Commission to be in all likelihood the most effective available remedy, the Commission need not justify its order beforehand by showing that it will unquestionably restore competition.

Id. (citation omitted).

The Commission has ordered divestiture of integrated assets in consummated merger cases numerous times where violations of the Clayton Act have been found. E.g., Olin, 113 F.T.C. at 619; In re Crown Zellerbach Corp., 54 F.T.C. 769, 808 (1957), aff'd,

296 F.2d 800 (9th Cir. 1961); In re Ekco Prods. Co., 65 F.T.C. 1163, 1228-29 (1964), aff'd 347 F.2d 745 (7th Cir. 1965). In this case, Respondents have not presented compelling arguments or sufficient evidence to depart from the usual remedy of divestiture.

2. Divestiture is the appropriate remedy

"In section 7 cases, the principal purpose of relief is to restore competition to the state in which it existed prior to, and would have continued to exist but for, the illegal merger." In re B.F. Goodrich, 110 F.T.C. at 345. The foremost function of divestiture is "the liquidation of the illegally acquired market power." United States v. Greater Buffalo Press, Inc., 402 U.S. 549, 556 (1971) (citing Schine Chain Theatres v. United States, 334 U.S. 110, 127-29 (1948)). Divestiture is limited to assets that were purchased in the illegal acquisition. Reynolds Metals Co. v. FTC, 309 F.2d 223, 230-31 (D.C. Cir. 1962); Luria Bros. & Co. v. FTC, 389 F.2d 847, 865 (3rd Cir. 1968) (An order can only be directed at assets obtained by the buyer "as a result of the illegal acquisition.").

Complaint Counsel, relying on Ford, 405 U.S. at 573 and n.8, urges additional equitable relief to create a viable entity that operates independently of CB&I. Nowhere does Ford refer to the use of such relief to increase the competitiveness of the marketplace beyond the level existing prior to the merger. Further, Ford concerned the equitable powers of a district court. Id. Specific provisions of Complaint Counsel's proposed order that are designed to force CB&I to give up any after acquired assets or to do more than "restore competition to the state in which it existed prior to . . . the illegal merger[,]" B.F. Goodrich, 110 F.T.C. at 345, are rejected.

The record in this case includes evidence on the structure, composition, and competitive viability of PDM and CB&I premerger, the PDM assets and personnel acquired by CB&I, and the disposition of those assets and personnel. F. 545-65. Upon consideration of the entire record in this case, divestiture is hereby ordered.

a. Complete divestiture

To "ensure that the package of assets divested is sufficient to give its acquirer a real chance at competitive success," the Commission may order broad divestiture. Olin, 113 F.T.C. at 619-20. In Olin, the Commission ordered the respondent to divest a facility that manufactured the relevant product, isocyanurate (ISOS) and a product outside the relevant market, cyanuric acid (CA). The ISOS and CA facilities were located at the same plant. The respondent in Olin failed to introduce evidence that the facilities were separate, stand-alone operations, rather than integrated facilities that share common facilities of power, emission control, receiving and shipping, and other functions. Id. Because both facilities were intertwined, both were ordered to be divested. Id.

In the instant case, the evidence clearly establishes that PDM's EC and Water Divisions are closely interrelated. F. 566-72. The same personnel, equipment, and fabrication facilities are generally used in the construction of the products of both groups. F. 566-69. The dispositive point is that the assets of both divisions were acquired together by CB&I. F. 554-65. PDM did not find it practical or value optimizing to split the EC and Water Divisions when it evaluated the best course of action for the assets prior to the Acquisition. F. 570-72. Although only the products made by the EC Division are within the affected lines of commerce, the Water Division must be divested along with the EC Division.

3. Relief

The record in this case includes evidence on the assets CB&I acquired from PDM. F. 554-65. The evidence establishes that CB&I acquired intellectual property, technology and know-how and other intangible assets related to the relevant products from PDM. F. 564-65. Evidence also establishes that CB&I acquired a number of outstanding contracts from PDM. F. 563.

Upon consideration of the entire record, relief designed to restore competition as it existed prior to the Acquisition is hereby

ordered. The attached Order, discussed below, is designed to remedy the anticompetitive effects arising from the Acquisition.

Paragraph II.A.1 orders CB&I to divest all assets, title, properties, interest, rights and privileges purchased from PDM in the Acquisition. CB&I is also ordered to divest all assets that have been purchased by CB&I to replace or maintain assets purchased in the Acquisition. See B.F. Goodrich, 110 F.T.C. at 344 (ordering divestiture of all additions and improvements); Ekco, 65 F.T.C. at 1228-29 (ordering assets acquired, together with all additions thereto and replacements therefore to be divested).

Paragraphs II.A.2-4 order CB&I to divest all intellectual property or rights to such intellectual property as were purchased by CB&I from PDM in the Acquisition. See Ekco, 347 F.2d at 754 (intellectual property subject to divestiture when acquired in contravention of Section 7). Any rights that CB&I acquired to the PDM name shall also be divested. See Ford, 405 U.S. at 574.

Paragraphs II.A.5-6 order CB&I to divest all contracts formerly held by PDM and obtained by CB&I in the Acquisition that have not been fully performed. A lag-time provision of 180 days, after the Order becomes final, is included for construction contracts. Complaint Counsel's proposed order sought the divestiture of "45% of the total combined dollar value of CB&I's Tank Business Customer Contracts." Complaint Counsel's Proposed Order ("CCPO") at II.C.3. Such requested relief would require the divestiture of assets not obtained in the Acquisition. This is not appropriate. Luria Bros., 389 F.2d at 865; Reynolds Metals, 309 F.2d at 231 ("no basis for ordering divestiture of after acquired properties"). Accordingly, the Order does not require CB&I to divest a portion of its backlog of work or customer contracts entered into by CB&I post-acquisition.

Paragraph II.B. of the Order requires that "if at all possible, irrespective of loss suffered by CB&I, the divested assets shall be sold as a viable going concern that will enhance competition in the relevant markets." For bonding purposes, to be a viable competitor in the LNG market, a company must have a substantial

revenue base. F. 586-90. Therefore, to comply with the Order, the Acquirer, if at all possible, must possess the necessary revenue base to actively compete in the LNG market.

The divestiture sale shall be conducted in "good faith," Paragraph II.D., and CB&I is ordered to maintain the assets to be divested, Paragraph V. In conjunction, these provisions prohibit CB&I from disclosing or making available any proprietary information regarding the divested assets to any person, except as is necessary to effect the sale.

Complaint Counsel also sought to require CB&I to transfer 45% of its total full time employees to the Acquirer. CCPO at II.F. Although educated, experienced, and knowledgeable employees are required to build the relevant products, F. 582-85, unlike other necessary assets, such as tools, building supplies, and mechanical equipment, employees are not owned by the company for which they work. Furthermore, Complaint Counsel has cited no authority supporting the proposition that at-will employees are assets that may be divested. Accordingly, this proposed measure is not included in the Order. The Order does, at Paragraph IV, preclude CB&I from granting incentives to its employees or enforcing any non-compete clauses in its employees' contracts in order to prevent its employees from transferring to the Acquiring company.

Paragraph VII orders a divestiture trustee. Complaint Counsel sought both a "monitor trustee," CCPO at V, whose responsibility would be to ensure that Respondents comply with the terms of the Order; and a "divestiture trustee," CCPO at VI, who would be appointed to accomplish the divestiture, in the event that CB&I fails to divest in the manner and time required by the Order. Complaint Counsel has failed to cite any litigated case where a monitor trustee has been ordered. Although monitor trustees have been used recently to monitor compliance with divestiture agreements where respondents have entered into consent decrees with the FTC, e.g., Solvay, 2002 FTC LEXIS 34, *47 (2002), America Online, Inc., 2001 FTC LEXIS 44, *37 (2001), this is not persuasive. E.I. du Pont, 366 U.S. at 330 n.12 ("the

circumstances surrounding . . . negotiated [consent decrees] are so different that they cannot be persuasively cited in a litigation context"). A contingent divestiture trustee is ordered; a monitor trustee is not.

Complaint Counsel sought to require CB&I to provide technical assistance and administrative services to the Acquirer. CCPO at II.I-J. Requiring technical assistance and administrative services may provide an opportunity for anticompetitive behavior. In addition, Complaint Counsel did not demonstrate that technical assistance or administrative services are not available from a source other than CB&I. These assets were not expressly acquired by CB&I in the Acquisition. (See CX 328). Therefore, the Order does not require this relief.

Complaint Counsel did not seek to prohibit Respondents from future acquisitions of all or any part of the stock or assets of, or any interest in, any producer of the relevant products. Therefore, such a prohibition is not included in the Order.

IV. SUMMARY OF CONCLUSIONS OF LAW

1. The Federal Trade Commission ("FTC") has jurisdiction over the subject matter of this proceeding and over Respondents Chicago Bridge & Iron Company, N.V., Chicago Bridge and Iron Company, and Pitt-Des Moines, Inc. ("PDM"), pursuant to Section 5 of the Federal Trade Commission Act ("FTC Act"), 15 U.S.C. § 45, and Sections 7 and 11 of the Clayton Act, 15 U.S.C. § § 18, 21(b).

2. Chicago Bridge & Iron Company N.V., and Chicago Bridge & Iron Company, a corporation (collectively, "CB&I") is a corporation, as "corporation" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44.

3. Respondents were engaged in commerce, as "commerce" is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. § 12, and affected commerce, as "commerce" is defined in Section 4 of the FTC Act, as amended, 15 U.S.C. § 44.

4. On or about February 7, 2001, CB&I acquired PDM's Water and Engineered Construction ("EC") Divisions, ("the Acquisition"). The Acquisition is a transaction subject to Section 7 of the Clayton Act, 15 U.S.C. § 18, and Section 5 of the FTC Act, 15 U.S.C. § 45.

5. Section 7 of the Clayton Act prohibits any acquisition of stock or assets "where in any line of commerce . . . in any section of the country, the effect of such acquisition may be substantially to lessen competition or to tend to create a monopoly." 15 U.S.C. § 18.

6. Section 7 of the Clayton Act is designed to arrest in its incipiency the substantial lessening of competition from the acquisition by one corporation of the assets of a competing corporation. Section 7 does not require proof from Complaint Counsel that a merger has caused higher prices in the affected market. To satisfy Section 7, Complaint Counsel need only show a reasonable probability that the proposed transaction would substantially lessen competition in the future.

7. The appropriate lines of commerce within which to evaluate the probable competitive effects of the Acquisition are: large, field-erected: (1) liquefied natural gas ("LNG") storage tanks (individually, or as a component of an import terminal or a LNG peak shaving plant); (2) refrigerated liquid petroleum gas ("LPG") storage tanks; (3) liquid nitrogen, oxygen and argon ("LIN/LOX") storage tanks; and (4) large (over 20 feet in diameter) thermal vacuum chambers ("TVCs").

8. The appropriate section of the country within which to evaluate the probable competitive effects of the Acquisition is the United States.

9. The government has the burden of showing that the Acquisition would produce a firm controlling an undue percentage share of the relevant markets and would result in a significant increase in the concentration of the firms in those markets. A merger which significantly increases the share and

concentration of firms in the relevant markets is so inherently likely to lessen competition that it is considered presumptively invalid.

10. Complaint Counsel established its prima facie case by showing that the Acquisition produces a firm controlling an undue percentage share in each of the four relevant markets. Complaint Counsel established that CB&I and PDM were the number one and two competitors in all four product markets and that no other company provides effective competition.

11. Finding a prima facie violation of Section 7 creates a rebuttable presumption of anticompetitive effects and shifts the burden of going forward with evidence to Respondents. Respondents have the burden of producing evidence that shows that the market share statistics supporting the prima facie case give an inaccurate account of the Acquisition's probable effects on competition.

12. Respondents have not demonstrated that the market share statistics give an inaccurate prediction of the Acquisition's probable effects on competition.

13. Respondents may rebut the prima facie case by demonstrating that entry by other firms would likely avert the Acquisition's probable effects on competition by acting as a constraint on CB&I's exercise of market power. Respondents may rebut the prima facie case by demonstrating that barriers to entry are so low that the threat of entry can significantly alter the anticompetitive effects of the merger by deterring the remaining entities from exercising market power.

14. Respondents have not demonstrated that actual or potential entrants constrain CB&I's exercise of market power. Due to high barriers, entry by new manufacturers or the expansion of existing manufacturers is not likely to avert the anticompetitive effects of the Acquisition in the relevant markets.

15. Respondents have not produced any significant evidence rebutting the presumption of a violation of Section 7 of the Clayton Act.

16. Because Respondents did not produce evidence sufficient to rebut the presumption of a violation of Section 7 of the Clayton Act, the burden of producing further evidence of anticompetitive effects did not shift to Complaint Counsel.

17. Respondents have presented an exiting assets defense. To the extent that an exiting assets defense is a valid defense, Respondents have not demonstrated that PDM EC's assets would have left the market in the near future or that PDM had conducted an exhaustive effort to sell the EC Division to a company other than CB&I.

18. The Acquisition is likely to increase CB&I's ability to raise prices unilaterally in the relevant markets because the Acquisition eliminates competition from PDM, CB&I's closest competitor. The Acquisition is a merger involving the first and second lowest-cost sellers which could cause prices to rise to the constraining level of the next lowest-cost seller.

19. The Acquisition violates Section 7 of the Clayton Act because "the effect of such acquisition may be substantially to lessen competition or to tend to create a monopoly." 15 U.S.C. § 18. The Acquisition also constitutes an unfair method of competition in or affecting commerce in violation of Section 5 of the FTC Act. 15 U.S.C. § 45.

20. Complaint Counsel met its burden of proof in support of Count I and Count II of the Complaint.

21. Divestiture is the proper remedy.

22. Complete divestiture of all assets acquired in the Acquisition is required to restore competition as it existed prior to the Acquisition.

23. Relief designed to restore competition as it existed prior to the Acquisition is appropriate.

24. The Order entered hereinafter is necessary and appropriate to remedy the violations of law found to exist.

ORDER

I.

IT IS HEREBY ORDERED that for the purposes of this Order, the following definitions shall apply:

A. "Acquirer" means an entity approved by the Commission who purchases the assets divested, pursuant to this Order.

B. "Acquisition" means the transaction consummated on February 7, 2001, whereby CB&I purchased PDM's Water and Engineered Construction ("EC") Divisions.

C. "CB&I" means Chicago Bridge & Iron Company N.V. and Chicago Bridge & Iron Company, individually and collectively.

D. "Chicago Bridge & Iron Company N.V." means Chicago Bridge & Iron Company, N.V.; its directors, officers, employees, agents and representatives, predecessors, successors, and assigns; its subsidiaries, divisions, groups, and affiliates controlled by Chicago Bridge & Iron Company N.V.; and the respective directors, officers, employees, agents and representatives, successors, and assigns of each.

E. "Chicago Bridge & Iron Company" means Chicago Bridge & Iron Company; its directors, officers, employees, agents and representatives, predecessors, successors, and assigns; its subsidiaries, divisions, groups, and affiliates controlled by Chicago Bridge & Iron Company; and the respective directors, officers, employees, agents and representatives, successors, and assigns of each.

F. "Commission" means Federal Trade Commission.

G. "Divestiture Trustee" means a person, with experience and expertise in acquisitions and divestitures, appointed by the Commission to effect the divestiture requirements of this Order.

H. "PDM" means Pitt-Des Moines, Inc.; its directors, officers, employees, agents and representatives, predecessors, successors, and assigns; its subsidiaries, divisions, groups, and affiliates controlled by Pitt-Des Moines, Inc.; and the respective directors, officers, employees, agents and representatives, successors, and assigns of each.

II.

IT IS FURTHER ORDERED that:

A. No later than one hundred and eighty (180) days from the date that this Order becomes final, CB&I shall completely divest all assets, title, properties, interest, rights and privileges, of whatever nature, purchased from PDM in the Acquisition. This divestiture shall be complete and shall include, but is not limited to, all buildings, machinery, equipment, raw material reserves, inventory, customer lists, trade names, trademarks, patents, and any other assets, of whatever description, that were acquired by CB&I from PDM in the Acquisition.

1. Complete divestiture shall include any assets that have been purchased by CB&I to replace or maintain assets purchased in the Acquisition.

2. Complete divestiture shall include any intellectual property or any rights to intellectual property as were purchased by CB&I from PDM in the Acquisition. Any rights acquired by CB&I to the "Pitt-Des Moines," "PDM," "Pitt-Des Moines EC," "PDM EC," "Pitt-Des Moines Water," and "PDM Water" names or any other variation of these names shall be divested.

3. Complete divestiture shall include a worldwide, royalty-free, perpetual, irrevokable, transferable, sublicensable, non-exclusive license to all intellectual property that was (1) created in part by former PDM employees who became employed by CB&I as a result of the Acquisition or (2) was premised in part upon intellectual property formerly owned by PDM and transferred to CB&I in the Acquisition.

4. Complete divestiture shall include a worldwide, royalty-free, perpetual, irrevokable license to any intellectual property owned by CB&I that would block Acquirer's legal use of the intellectual property that shall be required to be licensed to Acquirer, pursuant to Paragraph II.A.3 of this Order.

5. Complete divestiture shall include the assignment of all construction contracts formerly held by PDM and obtained by CB&I in the Acquisition that have not been fully performed by CB&I one hundred and eighty (180) days after this Order becomes final. Acquirer shall compensate CB&I in quantum meruit for any work completed under these contracts by CB&I prior to assignment. If a third party's consent must be obtained to assign any of these contracts, CB&I must use all available means, in good faith, to obtain such consent.

6. Complete divestiture shall include all non-construction contracts formerly held by PDM and obtained by CB&I in the Acquisition that have either not been fully performed by CB&I or that have not yet expired. These contracts include, but are not limited to, sales representative agreements, cooperation agreements, license agreements, partnership agreements, term employment contracts, and leases. If a third party's consent must be obtained to assign any of these contracts, CB&I must use all

available means, in good faith, to obtain such consent.

B. If at all possible, irrespective of loss suffered by CB&I, the divested assets shall be sold as a viable going concern that will enhance competition in the relevant markets.

C. Prior to the execution of the divestiture sale, a full accounting of all assets purchased in the Acquisition shall be provided to the Commission. The accounting shall disclose the approximate value, both at the time of the Acquisition and at the time that this Order becomes final; the current location; and the current condition of all of the assets purchased in the Acquisition. In the event that an asset is no longer in the possession of CB&I, any consideration received for the sale of such an asset shall be disclosed.

D. The divestiture sale shall be conducted in good faith, at no minimum price, and in compliance with the laws of the United States. The Acquirer, a divestiture agreement, and the manner of the sale must be approved by the Commission prior to the execution of the divestiture sale. The divestiture agreement shall not vary from or contradict, or be interpreted to vary from or contradict, the terms of this Order.

E. The divested assets shall not be sold or transferred, directly or indirectly, to any entity that at the time that this Order becomes final is a substantial stockholder, officer, director, employee, agent of, or otherwise directly or indirectly connected with or under the control or influence of CB&I.

III.

IT IS FURTHER ORDERED that CB&I shall comply with all terms of the divestiture agreement to be approved by the Commission, pursuant to Paragraph II.D of this Order. The divestiture agreement shall be deemed incorporated by reference into this Order, and any failure by CB&I to comply with the terms of the divestiture agreement shall constitute a failure to comply

with this Order.

IV.

IT IS FURTHER ORDERED that CB&I shall, from the date that this Order becomes final and extending for a period of two (2) years after the divestiture required by Paragraph II.A of this Order is completed: (1) not offer or provide any incentive to any employee of CB&I to decline employment with the Acquirer; (2) waive any non-compete clauses in CB&I employees' contracts that would prevent such employees from seeking employment with the Acquirer.

V.

IT IS FURTHER ORDERED that from the date that this Order becomes final, until such time as the divestiture required by Paragraph II.A of this Order is completed, CB&I shall take all measures necessary to maintain all assets ordered to be divested in their accounted for condition and to prevent any further deterioration, except normal wear and tear, so as to not impair the assets' operating viability, marketability, or confidentiality, if applicable.

VI.

IT IS FURTHER ORDERED that:

A. CB&I shall, within sixty (60) days from the date that this Order becomes final and every sixty (60) days thereafter, for one (1) year from the date that the divestiture required by Paragraph II.A of this Order is completed, submit in writing to the Commission a verified compliance report. Each report shall set forth, in detail, the manner and form in which CB&I intends to comply, is complying, or has complied with each of the requirements of this Order.

B. CB&I shall include in the compliance reports, among other relevant information requested by the Commission, a description

of all substantive contracts or negotiations relating to the divestiture, both oral and written; the identity of all potential Acquirers; copies of all written communications (including email) to and from such entities regarding the divestiture; internal documents and communications relating to the divestiture; and a statement that the provisions of this Order have been and are being fully complied with.

VII.

IT IS FURTHER ORDERED that:

A. If CB&I has not fully complied with Section II.A of this Order within one hundred and eighty (180) days of this Order becoming final, the Commission may, at its discretion and at any time thereafter, appoint a Divestiture Trustee to fulfill the requirements of Paragraph II.A. This provision by no means hinders either the Commission or the U.S. Attorney General from seeking civil penalties or a court-appointed trustee for any violation of this Order by CB&I.

B. If a Divestiture Trustee is appointed, that Divestiture Trustee shall have the following powers, duties, authority, and responsibilities:

> 1. Subject to the prior approval of the Commission, the Divestiture Trustee shall have the exclusive authority to effect the divestiture, in accordance with the requirements of this Order, for which the Divestiture Trustee has been appointed.
>
> 2. Within ten (10) days of the Divestiture Trustee's appointment, CB&I shall grant the Divestiture Trustee, with the prior approval of the Commission, all of the rights and powers necessary to effect the divestiture for which the Divestiture Trustee has been appointed.

3. The Divestiture Trustee shall have twelve (12) months, from the date that the Commission approves the grant of rights and powers, to complete the divestiture in accordance with this Order. This temporal duration may be extended for good cause or extenuating circumstances with the consent of the Commission.

4. CB&I shall provide the Divestiture Trustee with full and complete access to personnel, books, records, facilities, or any other information that is related to the assets ordered to be divested. CB&I shall cooperate with the Divestiture Trustee in good faith and comply with any reasonable requests for the production of additional relevant information. Should CB&I delay or hinder the Divestiture Trustee, the duration of time lost due to the delay or hindrance shall be credited to the twelve-month temporal deadline for completion of the divestiture.

5. Best efforts shall be used by the Divestiture Trustee to negotiate the most favorable price and terms available for the assets being divested; but at the same time, the Divestiture Trustee shall seek to submit the proposed sales contracts to the Commission as promptly as possible at no minimum price. If the Divestiture Trustee receives good faith offers from more than one eligible potential Acquirer, and if the Commission approves more than one of these entities, the Divestiture Trustee shall divest the assets to the Acquirer that is selected by CB&I from those approved by the Commission. However, if CB&I does not respond within five (5) business days to the Commission's request for such a selection, the Divestiture Trustee shall have complete discretion in choosing the Acquirer from those entities approved by the Commission.

6. The Divestiture Trustee shall serve without bond or other security, at the cost and expense of CB&I, on such reasonable and customary terms and conditions as the Commission may set. The Divestiture Trustee shall have the authority to employ, at the cost and expense of CB&I, such consultants, accountants, attorneys, investment bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the Divestiture Trustee's duties and responsibilities. The Divestiture Trustee shall account for all consideration derived from the sale and all expenses incurred. Upon approval by the Commission of the Divestiture Trustee's accounting, all remaining fees and expenses shall be paid and the remainder of the consideration shall be distributed at the discretion of CB&I. Following the final distribution, the Divestiture Trustee's power and authority shall be terminated.

7. CB&I shall indemnify and hold the Divestiture Trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of or in connection with the performances of the Divestiture Trustee's duties. This indemnification shall include all reasonable fees for counsel and other expenses incurred in connection with the preparation for or defense of any claim, whether or not resulting in any liability, except to the extent that such liabilities, losses, damages, claims, or expenses result from gross negligence or willful misconduct by the Divestiture Trustee. This indemnification shall be inclusive of all agents of or entities retained by the Divestiture Trustee, pursuant to Paragraph VII.B.6 of this Order.

8. The Commission may appoint a substitute in the event that the Divestiture Trustee fails to perform in a diligent manner, acts with gross negligence, or engages in willful misconduct.

9. The Divestiture Trustee shall have no obligation or authority to operate or maintain the assets ordered to be divested.

10. The Divestiture Trustee shall report to the Commission, in writing, every sixty (60) days to inform it of the Divestiture Trustee's efforts to complete the ordered divestiture.

C. The Commission may, at the request of the Divestiture Trustee, issue such additional orders or directions, within the scope of this Order, as may be necessary or appropriate to further the completion of the divestiture.

VIII.

IT IS FURTHER ORDERED that CB&I shall provide a copy of this Order to each of CB&I's officers, employees, or agents possessing managerial responsibility relating to any of the provisions contained in this Order, no later than ten (10) days after the date that this Order becomes final.

IX.

IT IS FURTHER ORDERED that CB&I shall notify the Commission at least thirty (30) days prior to any proposed change in the corporate structure or financial condition of CB&I that could affect compliance with the requirements of this Order, including, but not limited to, dissolution, assignment, sale, merger, sale or dissolution of subsidiaries, or bankruptcy.

X.

IT IS FURTHER ORDERED that, for the purpose of determining or securing compliance with this Order, subject to any legally recognized privilege, and upon written request with reasonable notice, CB&I shall permit any authorized agent of the Commission:

A. Access, during office hours and in the presence of counsel, to all relevant facilities and documents. Such documents that may be inspected and copied include, but are not limited to, non-privileged books, ledgers, accounts, and correspondence memoranda that are in the possession of or under the control of CB&I and relate to any matter contained in this Order.

B. Access to interview CB&I's officers, directors, or employees who may possess information relevant to any matter contained in this Order. Counsel may be present for such interviews.