PUBLIC VERSION

232257

BEFORE THE
SURFACE TRANSPORTATION BOARD

E.I. DUPONT DE NEMOURS & COMPANY Complainant v. NORFOLK SOUTHERN RAILWAY COMPANY Defendant	)	Docket No. NOR 42125

OPENING EVIDENCE AND ARGUMENT OF

E.I. DU PONT DE NEMOURS AND COMPANY

Volume II:
Market Dominance Evidence

Jeffrey O. Moreno
Sandra A. Brown
Nicholas J. DiMichael
Jason D. Tutrone
Thompson Hine LLP
1919 M Street, N.W., Suite 700
Washington, D.C. 20036
(202) 331-8800

Counsel for E.I. du Pont de Nemours and Company

April 30, 2012

CASE GLOSSARY

AEP Texas 2006	*AEP Texas Northern Co v. BNSF Ry.,* STB Docket No. 41191 (Sub-No. 1) (served Nov. 8, 2006)
AEP Texas	*AEP Texas Northern Company v. BNSF Railway,* STB Docket No. 41191 (Sub-No. 1) (served Sept. 10, 2007)
AEPCO	*Arizona Electric Power Cooperative, Inc. v. BNSF Railway Company and Union Pacific Railroad Company,* STB Docket No. 42113 (served Nov. 22, 2011)
APS	*Arizona Pub. Serv. Co. and Pacificorp. v. The Atchison, T. and Santa Fe Ry.,* 2 S.T.B. 367 (1997)
Bottleneck Decision	*Central Power & Light Company v. Southern Pac. Transp. Co, et al.,* 1 STB 1059 (1996), aff'd sub nom. *MidAmerican Energy Company v. Surface Transportation Board,* 169 F.3d 1099 (8th Cir. 1999)
Coal Rate Guidelines or Guidelines	*Coal Rate Guidelines, Nationwide,* 1 I.C.C. 2d 520 (1985), aff'd sub nom. *Consolidated Rail Corp. v. United States*, 812 F.2d 1444 (3rd Cir. 1987)
Coal Trading Corp.	*Coal Trading Corp. v. The Baltimore & Ohio R.R., et al.,* 6 I.C.C. 2d 361 (1990)
Consolidated Papers	*Consol. Papers, Inc. v. Chi.& Nw. Transp., Inc.,* 7 I.C.C.2d 330 (1991)
CP&L	*Carolina Power & Light Co. v. Norfolk Southern Ry,* STB Docket No. 42072 (served Dec. 23, 2003)
DMIR I and II	*Minnesota Power, Inc. v. Duluth, Missabe & Iron Range Ry.,* 4 S.T.B. 64 (1998), on reconsideration, 4 S.T.B. 288 (1999)
Duke/CSXT	*Duke Energy Corp. v. CSX Transportation Inc.,* STB Docket No. 42070 (served Feb. 4, 2004)
Duke/NS	*Duke Energy Corp. v. Norfolk Southern Railway,* STB Docket No. 42069 (served Nov. 6, 2003)

CASE GLOSSARY

DuPont (Nitrobenzene)	*E.I. du Pont de Nemours and Company v. CSX Transportation, Inc.,* STB Docket No. 42101 (served June 30, 2008)
DuPont (Plastics)	*E.I. du Pont de Nemours and Company v. CSX Transportation, Inc.,* STB Docket No. 42099 (served June 30, 2008)
FMC	*FMC Wyo. Corp. v. Union Pacific Railroad Company,* 4 S.T.B. 699 (2000)
General Electric	*Gen. Elec. Co. v. Balt.& Ohio R.R.,* No. 38125S, 1984 ICC LEXIS 206 (ICC served Oct. 12, 1984)
General Procedures	*General Procedures for Presenting Evidence in Stand-Alone Cost Rate Cases,* STB Ex Parte No. 347 (Sub-No. 3) (served March 12, 2001).
IPA	*Intermountain Power Agency v. Union Pacific Railroad Company,* STB Docket No. 42127 (Public Version of UP Reply dated Nov. 10, 2011)
KCPL	*Kansas City P & L Co. v. Union Pac. R.R. Co.*, STB Docket No. 42095 (served May 19, 2008)
Major Issues	*Major Issues in Rail Rate Cases,* STB Ex Parte No. 657 (Sub-No. 1) (served Oct. 30, 2006)
Market Dominance Determinations	*Mkt. Dominance Determinations & Consideration of Prod. Competition*, 365 I.C.C. 118 (1981)
McCarty Farms	*McCarty Farms v. Burlington N., Inc.*, 3 I.C.C.2d 822 (1987)
Nevada Power II	*Bituminous Coal – Hiawatha, Utah to Moapa, Nevada,* 10 I.C.C.2d 259 (1994)
OG&E	*Oklahoma Gas & Electric Co., v. Union Pacific Railroad Company,* STB Docket No. 42111 (served July 24, 2009)
Otter Tail	*Otter Tail Power Co., v. BNSF Ry.,* STB Docket No. 42071 (served Jan. 27, 2006)

CASE GLOSSARY

PP&L	*PPL Montana, LLC v. The Burlington Northern and Santa Fe Ry. Co.*, 6 S.T.B. 286 (2002)
PSCo/Xcel	*Public Service Co. of Colorado d/b/a Xcel Energy v. Burlington Northern and Santa Fe Railway,* STB Docket No. 42057 (served June 8, 2004)
PSCo/Xcel II	*Public Service Co. of Colorado d/b/a Xcel Energy v. Burlington Northern and Santa Fe Railway,* STB Docket No. 42057 (served Jan. 19, 2005)
Special Procedures	*Special Procedures for Making Findings of Mkt. Dominance as Required by the R.R. Revitalization and Regulatory Reform Act of 1976,* 353 I.C.C. 874 (1976)
TMPA	*Texas Municipal Power Agency v. Burlington Northern and Santa Fe Railway,* 6 S.T.B. 573 (2003)
WFA/Basin	*Western Fuels Ass'n, Inc. and Basin Electric Power Coop. v. BNSF Railway,* STB Docket No. 42088 (served Sept. 10, 2007)
WFA/Basin II	*Western Fuels Ass'n, Inc. and Basin Electric Power Coop. v. BNSF Railway,* STB Docket No. 42088 (served Feb. 18, 2009)
Wisconsin P&L	*Wisconsin Power and Light Co., v. Union Pacific Railroad,* 5 S.T.B. 955 (2001)
West Texas Utilities	*West Texas Utilities Co. v. Burlington Northern Railroad,* 1 STB 638 (1996), aff'd sub nom. *Burlington Northern Railroad v. STB,* 114 F.3d 206 (D.C. Cir. 1997)

ACRONYMS

The following acronyms are used:

AAR	Association of American Railroads
AASHTO	American Association of State Highway Officials
AEI	Automatic Equipment Identification
AEO	EIA's Annual Energy Outlook Forecast
AHM	Anhydrous Methylamines
AII-LF	All-Inclusive Less Fuel Index, published by AAR
AQM	Aqueous Methylamines
AREMA	American Railway Engineering and Maintenance-of-Way Assoc.
ARRA	American Reinvestment and Recovery Act of 2009
ATC	Average Total Cost
ATF	Across-the-Fence
ATV	All-Terrain Vehicle
B&B	Bridge and Building
BNSF	Burlington Northern Santa Fe Railway Company
C&S	Communications and Signals
CAGR	Compound Annual Growth Rate
CFS	2007 Commodity Flow Survey
cmp	Corrugated Aluminized Metal Pipe
CMP	Constrained Market Pricing
CN	Canadian National Railway
CNW	Chicago & NorthWestern
COBRA	Consolidated Omnibus Budget Reconciliation Act
CPI	Consumer Price Index
CSXT	CSX Transportation, Inc.
CTC	Central Traffic Control
CWR	Continuous Welded Rail
CY	Cubic Yards
DCF	Discounted Cash Flow
DFE	Difluoroethane
DME	Dimethyl Ether
DMF	Dimethyl Formamide
DMS	Dimethyl Sulfate
DOT	U.S. Department of Transportation
DP	Distributed Power
DRR	DuPont Stand-Alone Railroad
DTL	Direct to Locomotive Fueling
EDI	Electronic Data Interchange
EEO	Equal Employment Opportunity
EIA	Energy Information Administration
EOTD	End of Train Device
FED	Failed-equipment Detector
FRA	Federal Railroad Administration
FSC	Fuel Surcharges

G&A	General and Administrative
GDP-IPD	Gross Domestic Product – Implicit Price Deflator
GWR	Gross Weight on Rail
HCl	Hydrochloric Acid (a/k/a Muriatic Acid)
HDF	On-Highway Diesel Fuel Index
HR	Human Resources
ICC	Interstate Commerce Commission
IDC	Interest During Construction
IDS/IPS	Intrusion Detection System/Intrusion Prevention System
ISS	Interline Settlement System
IT	Information Technology
KCS	Kansas City Southern Lines
LAN	Local Area Network
MACRS	Modified Accelerated Cost Recovery System
MIT	Massachusetts Institute of Technology
MGT	Million Gross Tons
MLO	Manager of Locomotive Operations
MMF	Monomethyl Formamide
MMM	Maximum Markup Methodology
MOW	Maintenance of Way
MTO	Manager of Train Operations
NCREIF	National Council of Real Estate Investment Fiduciaries
NDGPS	Nationwide Differential GPS
NPI	NCREIF Property Index
NS	Norfolk Southern Railway Company
NT/PC	Network Personal Computer
O/D	Origin/Destination
OS	Operating Station
OSHA	Occupational Safety and Health Administration
PDO	Bio-Propanediol
Pet Coke	Calcined Petroleum Coke
PPI	Producer Price Index
PTC	Positive Train Control
R/VC	Revenue to Variable Cost
RCAF-A	Rail Cost Adjustment Factor, adjusted for productivity
RCAF-U	Rail Cost Adjustment Factor, unadjusted for productivity
RMI	A GE Transportation Company
RMS	RMI's Revenue Management Services System
ROW	Right of Way
RSIA	Rail Safety Improvement Act of 2010
RTC	Rail Traffic Controller Model
SAC	Stand-Alone Cost
SARR	Stand-Alone Railroad
SEC	Securities Exchange Commission
SO3	Sulfur Trioxide
SPLC	Standard Point Location Code
STB	Surface Transportation Board

STCC	Standard Transportation Commodity Code
STEO	Short-Term Energy Outlook
T&E	Train and Engine
TCS	Triple Crown Services
TDIS	Thoroughbred Direct Intermodal Services
TiCl4	Titanium Tetrachloride
TiO2	Titanium Dioxide
TMS	RMI's Transportation Management Services System
TRN	NS Train Event Train Symbol
UP	Union Pacific Railroad
UPS	Uninterruptible Power Supply
URCS	Uniform Railroad Costing System
WAN	Wide Area Network
WFL	Waste, Flammable Liquid
WTI	West Texas Intermediate

TABLE OF CONTENTS

EXHIBITS

Exhibit II-A

17. Lane A09 – Belle, WV to Wyandotte, MI
18. Lane A16 – Lemoyne, AL to Giant, SC
19. Lane A17 – Loudon, TN to Braithwaite, LA
20. Lane A22 – McIntosh, AL to Lemoyne, AL
21. Lane B18 – Belle, WV to Garyville, LA
22. Lane B49 – Dowling, TX to Fort Mill, SC
23. Lane B82 – Orange, TX to Greenville, SC
24. Lane B84 – Pascagoula, MS to Fort Mill, SC
25. Lane B85 – Pascagoula, MS to Lemoyne, AL
26. Lane B89 – Belle, WV to Gainesville, GA
27. Lane B90 – Belle, WV to Port Bienville, MS
28. Lane B91 – Belle, WV to Theodore, AL
29. Lane B93 – Bellwood, VA to Fort Mill, SC
30. Lane B99 – Loudon, TN to Graingers, NC
31. Lane B100 – Loudon, TN, Graingers, NC
32. Lane B106 – Miami Fort, OH to Pepper, VA
33. Lane B107 – Natrium, WV to Belle, WV
34. Lane B111 – New Johnsonville, TN to Morrow, GA
35. Lane B118 – Wurtland, KY to Fort Mill, SC
36. Lane B124 – New Johnsonville, TN to McDonough, GA

Exhibit II-B

1. Direct Truck Costs
2. Transload Cost Analysis
3. Case Lane Rate History

Exhibit III-A

1. Schematic of DuPont Railroad
2. Problems With NS Provided Traffic Data
3. Problems With NS Provided Traffic Data Needed For ATC Calculations

Exhibit III-C

1. Problems with NS Provided Train Event Data
2. Summary of Joint Use and Trackage Rights Agreements
3. DRR Crew Districts and Assignments
4. DRR Helper Districts
5. DRR RTC Modeling Procedures and Results
6. DRR RTC System Diagram

Exhibit III-D

1. DRR Operating Personnel
2. General and Administrative Expense
3. Maintenance Of Way

Exhibit III-F

1. Road Property Investment

Exhibit III-H

1. Summary of SAC Results
2. Railroad Industry Debt - 1998 to 2009

Part II-A

PUBLIC VERSION

PART II

MARKET DOMINANCE

In this Part II, DuPont establishes NS's market dominance over the issue movements. Part II-A addresses quantitative market dominance and Part II-B addresses qualitative market dominance.

A. QUANTITATIVE MARKET DOMINANCE

In making a determination under this section, the Board may find that a railroad has market dominance if the rate charged results in a revenue to variable cost ("R/VC") ratio equal to or greater than 180 percent. 49 U.S.C. § 10707(d)(1). In this Part II-A, DuPont demonstrates that the R/VC ratios for each of the challenged lanes in this proceeding exceed 180 percent.

For purposes of this analysis, NS tariff rates are compared to NS's variable costs for handling DuPont's traffic following the Board's procedures in Major Issues.[1] Specifically, NS's variable costs are calculated using the Board's NS 2009 and NS 2010 Uniform Railroad Costing System ("URCS") unit costs, the URCS Phase III program and the following nine (9) specific traffic and operating inputs for each movement: (1) the railroad; (2) loaded miles (including loop track miles); (3) shipment type (local, originated and delivered, received and delivered or "bridge," and received and terminated); (4) number of freight cars per train; (5) tons per car; (6) commodity; (7) type of movement (single car, multiple car or unit train); (8) car ownership (railroad or private); and (9) type of car.[2]

A complete summary of the variable costs and R/VC ratios for each of DuPont's challenged lanes is included at Exhibit II-A-1 through Exhibit II-A-12. Each Exhibit II-A-1 through II-A-12 identifies the applicable rates and costs for each calendar quarter from 2Q2009

---

[1] STB Ex Parte No. 657 (Sub-No.1), Major Issues in Rail Rate Cases, served October 30, 2006 ("Major Issues").

[2] *See* Major Issues at 52 and 60.

through 1Q2012. It should be noted that some issue movements began during this time period, and thus all issue movements did not occur in all calendar quarters. As shown on Exhibit II-A-1 through Exhibit II-A-12, NS's R/VC ratios at mid-second quarter 2009 levels through mid-first quarter 2012 levels, respectively, are all above 180% and reach as high as 1,043%.

1. Traffic and Operating Characteristics

As directed by the Board, DuPont and NS conferred and agreed upon six (6) of the nine (9) traffic and operating characteristics associated with DuPont's movements to which the challenged rates apply.[3] However, DuPont and NS were unable to agree on the loaded miles and tons per car for all of the issue traffic, nor on the car type for three (3) issue movements. A brief discussion of DuPont's process for developing those three components follows.

a. Loaded Miles – NS provided car waybill data and car event data for 2009 and 2010. NS's car waybill data and car event data was used to identify the rail routes and associated rail miles that NS data suggested each issue car traveled on NS. The rail miles DuPont used to develop NS's variable costs to determine quantitative market dominance were based on the predominant route for each issue movement with one exception which is explained below.

DuPont was forced to develop a convention to identify route miles because the waybill and car event data provided by NS were seriously deficient. As explained in detail in Part III-A and Part III-C, the NS computer records provided to DuPont were of such poor quality that DuPont had to find alternatives to develop many needed statistics while at the same time using as much of the NS-provided data as possible. The predominant route convention that DuPont developed began by analyzing the NS-provided route miles for each issue lane. For any given

[3] Joint Submission of Operating Characteristics ("Joint Submission"), Docket No. NOR-42125 filed December 22, 2011 and included as Exhibit II-A-13 to this opening evidence.

issue lane, the NS route miles could range from zero miles to many multiples[4] of the predominant NS route miles between the study locations. The NS traffic data contained so many of these mileage variations and other data anomalies that the most logical selection process for any given lane had to utilize a methodology that eliminated these problems. The predominant route analysis was selected in order to accomplish this task. The predominant route analysis is based on the theory that the route followed most often by NS for each issue lane represents the most efficient route and, therefore, that was the route selected by DuPont.

The one exception to the predominant route analysis involves extraordinary long back-haul movements[5] that NS's waybill and car event data suggested the issue traffic traveled, i.e., 20 issue lanes. To identify the extraordinary long back-haul movements, DuPont focused on two criteria, i.e., the length of the back-haul and the back-haul miles as a percent of NS total miles including the back-haul. The length of the extraordinary back-haul ranged between a low of 27 to 38 miles to a high of 322 miles. The percent of NS back-haul miles to total NS miles including the back-haul ranged between 11% and 85%.

The reason these two criteria were used can be seen in the following two examples. The issue movement outlined in Exhibit II-A-20 traveled 60 miles from NS origin to NS destination including the back-haul miles. The back-haul miles represent 38 miles, or 63%, of the total NS miles traveled according to NS-provided records. The issue movement outlined in Exhibit II-A-23 traveled 984 miles from NS origin to NS destination, including the back-haul miles. The back-haul miles represent 322 miles, or 33%, of the total NS miles traveled according to NS

---

[4] For example, the predominant route for issue Lane B78 from McIntosh, AL to Mobile, AL equals 41 miles. The NS traffic data shows miles for this lane as high as 1,211 miles, almost 3,000% of the predominant route. Exhibit II-A-14 shows many more examples of these unexplained data anomalies included in the NS-provided data.

[5] For purposes of the predominant route analyses mileage development, DuPont accepted NS-identified back-haul miles on each route except the extraordinary long back-haul movements identified in Exhibits II-A-17 through II-A-36.

provided records. Both criteria used to identify extraordinary long back-haul movements suggest the extremely unusual nature of the movement included in NS-provided records. When these evaluation criteria were coupled with the fact that NS provided no documentation to support these extremely long back-hauls, DuPont excluded these miles.

For each of these 20 issue lanes, DuPont has developed a two page exhibit that identifies the back-haul miles, provides an overview of the impact on NS variable costs if these back-haul miles were included in the analysis, and provides a schematic identifying the NS route including the various back-hauls that have been eliminated because NS provided no data to support or explain these extremely circuitous movements.

For each of the other issue traffic routes, Exhibit II-A-14 summarizes the percent of traffic moving over each predominant route, as well as the range of variation in NS miles for the routes between each origin/destination pair.

b. **Tons per Car** - DuPont also used the predominant route analysis to calculate the weighted average tons per car. In those instances where the tons per car were not included in the NS data, the weighted average tons per car from the data available for the specific car type were used.

c. **Car Type** – For three (3) issue DuPont movements[6], DuPont and NS disagreed on the car type in the Joint Submission. For each of the three issue lanes, DuPont now agrees the car type should be "tank car > 22,000 gallons".

The traffic and operating characteristics used by DuPont in its calculation of the variable costs summarized in Exhibit II-A-1 through Exhibit II-A-12 are shown in Exhibit II-A-15.

[6] Lanes B- 49, 84 and 115.

2. Variable Cost Calculations

For seventeen (17) issue lanes, the challenged rates apply to local movements on NS ("Originated and Terminated"). For one hundred twenty-one (121) issue lanes, the challenged rates apply to movements that are either originated by NS and delivered by NS in interchange ("Originated and Delivered") or received in interchange and delivered to destination by NS ("Received and Terminated").

Exhibit II-A-1 through Exhibit II-A-12 show the calculation of the variable costs for each of the issue movements using the STB's NS 2009 or 2010 URCS unit costs. The 2009 NS URCS variable cost calculations are indexed to mid-second quarter 2009 ("2Q09"), mid-third quarter 2009 ("3Q09") and mid-fourth quarter 2009 ("4Q09") wage and price levels using the STB prescribed indexing procedures[7]. The 2010 NS URCS variable cost calculations are indexed to mid-first quarter 2010 ("1Q10") through mid first quarter 2012 ("1Q12") wage and price levels using the STB prescribed indexing procedures.[8]

3. Rates

Prior to June 1, 2009, NS transported some of the issue DuPont traffic pursuant to a Master Contract with DuPont. When the parties were unable to reach agreement on new contract rates, NS published common carrier tariff rates in a collection of private price lists for DuPont that were consolidated in NSRQ 64869, 65178, and 65720.

Prior to June 15, 2010, NS transported some of the issue DuPont traffic pursuant to a Master Contract with DuPont. When the parties were unable to reach agreement on new contract rates, NS published common carrier tariff rates in a collection of private price lists for DuPont that were consolidated in NSRQ 65178, 65720 and 70022. Between June 1, 2009 and June 15,

[7] See e-workpaper "NS09 to 4Q10 Phase III INDEX.xlsx."

[8] See e-workpaper "NS10 to 1Q12 Phase III INDEX.xlsx."

2010, NS also published rates for new DuPont traffic. NS published these common carrier tariff rates in a collection of private price lists for DuPont that currently were consolidated in NSRQ 65720 and 70022.

In addition to the foregoing tariffs, NS waybill data shows that some of the issue movements also have been rated, during the complaint period, under NSRQ 64455, 64799, 64802, 65725, 70028, and 70029.

Because DuPont and NS were unable to agree upon contract rates for the issue movements, DuPont initiated this proceeding and has continued to pay NS's public tariff rates since June 1, 2009. NS increased DuPont's tariff rates again in January 2011. A summary of the 2Q09 through 1Q12 rates applicable to the DuPont issue movements is shown in Exhibit II-A-16.

Comparing the aforementioned variable cost calculations to the applicable rates summarized in Exhibit II-A-16 produces R/VC ratios for 2Q09 through 1Q12 that are in excess of the 180 percent jurisdictional threshold.

The testimony in this Part II-A is being jointly sponsored by Thomas D. Crowley and Timothy D. Crowley of L.E. Peabody & Associates, Inc. Their credentials are detailed in Part IV.

Part II-B

B. QUALITATIVE MARKET DOMINANCE

In this Part II-B, DuPont presents its qualitative market dominance evidence. Subpart B-1 addresses the absence of any intramodal competition, much less "effective" competition. Subpart B-2 presents evidence of either the absence of any intermodal competition or the lack of effective intermodal competition separately for each of the 26 issue commodities in the following subsections:

a. Acid, Glycolic
b. Acid, Sulfuric
c. Acid, Spent Sulfuric
d. Acid, Fuming Sulfuric ("Oleum")
e. Acid, Muriatic ("HCl")
f. Aniline Oil
g. Bio-Propanediol ("PDO")
h. Caustic, Potassium
i. Caustic, Sodium
j. Chlorine
k. Dimethyl Ether ("DME")
l. Difluoroethane ("DFE")
m. Dimethyl Formamide ("DMF")
n. Dimethyl Sulfate ("DMS")
o. Lime
p. Methylamines, Anhydrous ("AHMs")
q. Methylamines, Aqueous ("AQMs")
r. Monomethyl Formamide ("MMF")
s. Petroleum Coke ("Pet Coke")
t. Polyethylene
u. Sodium Methylate
v. Sulfur Trioxide ("SO3")
w. Titanium Dioxide ("TiO2")
x. Titanium Tetrachloride ("TiCl4")
y. Waste, Flammable Liquid ("WFL")
z. Zircon Sand

All issue movements of a commodity are covered under the respective commodity headings. In a few instances where there are common facts across two or more commodities, DuPont presents a full set of facts in the discussion of one commodity and incorporates those facts by reference in

the discussion of the other commodities (*e.g.* AHM and AQM, DFE and DME, DMF and MMF, sulfur trioxide and Oleum, sulfuric acid and spent sulfuric acid).

In Part I: Counsel's Argument and Summary of Evidence, DuPont has addressed broad-based legal principles that apply across all or large subsets of the issue commodities and summarized common fact evidence across various commodities. The individual commodity subsections in this Part II-B make general reference to the appropriate legal principles when invoked and present detailed fact evidence. Therefore, this Part II-B should be read in conjunction with Part I-A-2 for DuPont's complete opening evidence and argument on qualitative market dominance.

1. Intramodal Competition

Because "[i]ntramodal competition refers to competition between two or more railroads transporting the same commodity between the same origin and destination," there can be no intramodal competition where NS is the sole rail carrier at either the origin or destination. APS, 2 STB at 373; see also, Market Dominance Determinations, 365 I.C.C. at 132. For each of the 139 issue movements, NS is the only rail carrier that serves the origin, the destination, or both. All 17 issue movements in Exhibit A to DuPont's Third Amended Complaint are captive to NS at both the origin and destination. Eighty-four issue movements in Exhibit B to the Complaint involve origins where NS is the only railroad that can provide service. Thirty-seven issue movements in Exhibit B involve destinations where NS is the only railroad that can provide service. There is no intramodal competition possible for any of these lanes because NS is the sole railroad that serves either the origin or destination, or both. Therefore, it is impossible to avoid NS rail service for these movements.

2. Intermodal Competition

In this section, DuPont discusses the potential to use trucks, barges, and/or some combination of either with rail as alternatives to NS rail transportation for the issue movement. Where such alternatives may be physically possible, DuPont explains why they are not feasible, practical, available, or effective competitive constraints upon the challenged NS rates. DuPont addresses these subjects by issue commodity in the subsections below. Within the discussion of each commodity, DuPont also addresses each issue movement of that commodity, including any facts that are specific to an individual movement.

a. Glycolic Acid[1]

DuPont has challenged the NS rate for transportation of glycolic acid in just a single case lane: Lane B-2 from Belle, WV to Bayport, TX. NS transports the glycolic acid from Belle to East St. Louis, IL, where it interchanges the railcars with UP, which delivers them to Bayport. At Bayport, the railcars are loaded directly into ocean vessels for transport to Europe. DuPont is captive to NS at the Belle, WV origin.

Glycolic acid is a Hazard Class 8 corrosive liquid that is produced at 70% strength. It is used in industrial applications for cleaning, such as by refineries and for boiler cleaning. DuPont, which is the largest domestic producer of glycolic acid, produces {[redacted]} annually at Belle. Upon production, the glycolic acid is piped into storage tanks where it is tested and stored until loaded into railcars or trucks. DuPont does not have the infrastructure required to load glycolic acid into barges at Belle. Although approximately one-third to one-half of Belle's glycolic acid production is shipped by truck every year, all truck shipments are to domestic destinations. In contrast, all export shipments are transported by rail, except when shipping in isotanks for smaller quantities and emergency shipments. DuPont maintains a dedicated fleet of ten railcars for all of its rail shipments of glycolic acid.

The glycolic acid that DuPont ships to Bayport in Lane B-2 is for export to Europe. Moreover, it is a special grade that DuPont produces just for European consumption. {[redacted]} Each campaign produces {[redacted]} pounds of the European grade of glycolic acid, which fills {[redacted]} railcars. DuPont ships all the railcars simultaneously to Bayport.

[1] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Matthew Nowicki, Supply Chain Manager.

Rail Transportation. Rail transportation is essential for Lane B-2 because of the nature of large volume export shipments. DuPont has a scheduled window of time for loading glycolic acid into an ocean vessel. If DuPont misses that window, it must accrue costly detention charges to hold the vessel. Rail transport enables DuPont to transport the glycolic acid to Bayport in advance of that window. Moreover, DuPont can use its private railcars for storage until loading begins.

Truck Alternatives. In contrast, truck shipments would have to be very carefully timed and coordinated to arrive within the precise window for loading the vessel. If the trucks arrive too early, detention charges accrue on each truck shipment; if they arrive too late, detention charges accrue on the ocean vessel. Alternatively, DuPont would have to lease storage tanks at Bayport in which to unload truck shipments, at an annual cost of {[redacted]}.[2] The {[redacted]}railcars that DuPont ships over Lane B-2 at one time would require a caravan of {[redacted]} trucks, assuming 4.0 trucks per railcar. DuPont has not shipped a single truck over Lane B-2.[3]

Even if the above obstacles could be overcome, direct truck shipments are not price competitive with direct rail service. The truck price for shipping the equivalent of one railcar of glycolic acid from Belle to Bayport would be {{[redacted]}} compared with a through rail rate of {{[redacted]}}, which is a difference of nearly {{[redacted]}}.[4] Finally, direct trucking from the origin to destination is not alternate transportation for the bottleneck NS segment to which the challenged rate applies, which is Belle to East St. Louis. See DMIR, 4 STB at 292 (n. 13) and 293.

---

[2] DuPont would have to lease a tank for an entire year because there is a three month minimum lease period and DuPont ships over this lane 4-6 times per year. See Dup. Op. Workpaper "Odjfell e-mail" in the "Glycolic Acid" folder. Since DuPont may only need this storage capacity for anywhere from a few days to a few weeks for each production campaign, this capacity would be sitting empty for virtually the entire lease period.

[3] See Dup. Op. Workpaper "Glycolic Truck Shipments" in the "Glycolic Acid" folder.

[4] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

Trucking glycolic acid from Belle to a nearby transloading facility also would not be practical. Whenever a transfer of the glycolic acid occurs, it must be surveyed for quality. DuPont hires a third party surveyor to inspect the receiving vessel, monitor the product transfer, and test product samples to ensure that the transferred product remains within required specifications. For example, DuPont surveys all transfers of glycolic acid from railcars into ocean vessels in Lane B-2.[5] If DuPont were to add another transfer into the transportation chain by transloading from trucks into railcars, that would add over {{[redacted]}} in surveying costs for a typical shipment of 6 railcars.[6] Of greater significance, however, is the four-fold increase in the potential for contamination of the glycolic acid.

The nearest non-NS bulk terminal is at {[redacted]}. Although transload costs are {{[redacted]}} less than direct rail costs, that is before consideration of additional surveying costs and contamination risks.[7] Furthermore, at a truck loading rate of 2 hours per truck, it would take DuPont three days of continuous loading into trucks for transport to the bulk terminal and an even longer time to transload the trucks into railcars because of the survey requirements. DuPont also would have to pre-position empty railcars at the bulk terminal, and incur storage costs while waiting for the bulk trucks, none of which is included in the transload cost estimate. Moreover, Belle has only one truck loading spot. As previously stated, up to half of the glycolic acid produced at Belle is shipped by truck. Because outbound truck loading for these customers would take precedence over the Lane B-2 export shipments, truck loading and transloading would in reality take much longer than a theoretical three days. It simply is not practical to orchestrate truck loading for Lane B-2 while also trying to satisfy regular customer truck orders.

---

[5] See the Chemcoast Survey Report which is a recent survey report for the Lane B-2 issue movement, embedded in Dup. Op. Workpaper "Liquid Bulk Process for GCA" in the "Glycolic Acid" folder.

[6] See Dup. Op. Workpaper "Liquid Bulk Process for GCA" in the "Glycolic Acid" folder.

[7] See Exhibit II-B-2 (Dup. Op. Workpaper "Transload Cost Analysis" in the "Rates" folder).

Barge Alternative. Barge transportation also is not an effective competitive alternative to NS rail service for multiple reasons. First, and foremost, DuPont does not ship enough volume at one time to satisfy the minimum requirement for barge shipments. DuPont currently ships methanol by barge from Bayport to Belle, which is precisely the reverse movement of Lane B-2. The contract has a {[redacted]} short ton minimum volume requirement.[8] This represents the capacity of the barge, which is about one-third smaller than the typical barges that DuPont uses. The {[redacted]} railcars of glycolic acid that DuPont ships at one time hold the equivalent of just {[redacted]} short tons, which is less than one-third of the capacity for this small barge. If DuPont were to nevertheless ship less than {[redacted]} tons of glycolic acid by barge, it would still have to pay for {[redacted]} tons. For that reason alone, barge is not an option for Lane B-2.

Second, DuPont would need storage tanks at Bayport for barge shipments, just as discussed above for truck shipments. Because both barges and ocean vessels are routinely delayed, DuPont undoubtedly would incur detention charges for one or the other without storage tanks. The detention charges on barges are {[redacted]} after 48 hours. In addition, DuPont would have to pay {[redacted]} to park the barge at Blessey's fleet in Houston and {[redacted]} for barge shifting (i.e. the time a tug is with the barge).[9] Moreover, even if the barge and ocean vessel arrivals could be timed with precision, DuPont will not load glycolic acid directly from a barge into a vessel because of the risk of a spill into open water during the transfer with no real way to contain it. Instead, barges must be unloaded into ocean vessels via a "shore loop," which requires that a terminal have dock space simultaneously for the barge and the vessel.[10] This is very difficult to coordinate and many terminals simply cannot or will not accommodate shore

[8] See Dup. Op. Workpaper "Methanol Contract" in the "Glycolic Acid" folder.

[9] See Dup. Op. Workpaper "Blessey Rates" in the "Glycolic Acid" folder.

[10] See Dup. Op. Workpaper "Liquid Bulk Process for GCA" in the "Glycolic Acid" folder.

loops.[11] "Shore loops" also require more testing samples by the surveyor, because of elevated contamination risks.

Third, DuPont does not currently have the infrastructure to load barges with glycolic acid at Belle. DuPont would have to construct approximately 600 yards of dedicated piping from existing storage tanks to the barge docks at Belle at a cost of approximately {{[redacted]}}.[12]

Rate History. Finally, the rate history for this issue movement reveals the extent to which NS is exercising its market dominance. Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder), shows the change in rates for the issue movement from 2007. Since 2007, the combined through rate for Lane B-2 has increased {{[redacted]}}. Since 2009, when NS and UP began pricing on a Rule 11 basis, the NS rate has increased by {[redacted]}, while the UP rate has increased just {{[redacted]}}. Clearly, most of the through rate increase since 2007 has occurred in the last two years as a consequence of extraordinary NS rate increases, which is the reason why the truck-transload option recently has gone from being substantially more expensive to less expensive than rail. These extraordinary NS rate increases have not been accompanied by any loss of traffic to alternative transportation, which is strong evidence of market dominance.[13]

In summary, NS possesses market dominance over the glycolic acid shipments in Lane B-2 because:

- DuPont is captive to NS at the origin.
- Direct trucking is not cost competitive.
- Truck-to-rail transloading is not practical and increases contamination risks.

---

[11] See Dup. Op. Workpaper "Odjfell e-mail" in the "Glycolic Acid" folder.

[12] See Dup. Op. Workpaper "Barge Infrastructure" in "Glycolic Acid" folder.

[13] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

- NS has priced up to higher cost alternatives, with triple digit rate increases, while retaining 100% of the traffic.
- DuPont does not ship glycolic acid in sufficient volume to use barges.
- DuPont does not have the infrastructure at Belle to load barges.
- Both barge and direct truck transportation would require DuPont to lease storage tanks at the destination.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

b. Sulfuric Acid[14]

DuPont has challenged the NS rates for transporting sulfuric acid in the following twenty-six (26) case lanes:

Lane #	Origin	Interchange	Destination	Customer
A-2	Bayway, NJ	NS Direct	Waynesville, NC	Giles Chemical Co.
A-23	Reybold, DE	NS Direct	Detroit, MI	PVS Chemicals
A-24	Reybold, DE	NS Direct	Fort Mill, SC	Nation Ford
A-25	Reybold, DE	NS Direct	Morrisville, PA	Basic/ Univar
B-92	Bellwood, VA	Petersburg, VA	Dallas, GA	Basic / Univar
B-93	Bellwood, VA	Charlotte, NC	Fort Mill. SC	Nation Ford
B-94	Bellwood, VA	Petersburg, VA	Rockwell, NC	Alchem Inc
B-101	Miami Fort, OH	Cincinnati, OH	Dallas, GA	Basic Chemical
B-118	Wurtland, KY	Charlotte, NC	Fort Mill, SC	Nation Ford
B-119	Wurtland, KY	Birmingham, AL	McIntosh, AL	BASF
B-126	Reybold, DE	Streeter, IL	Albuquerque, NW	Basic Chemical Solutions
B-127	Reybold, DE	Baltimore Bayview Yard	Baltimore, MD	Basic Chemical Solutions
B-127	Reybold, DE	Baltimore Bayview Yard	Baltimore, MD	W R Grace & Co.
B-127	Reybold, DE	Baltimore Bayview Yard	Baltimore, MD	Delta Chemical Corporation
B-128	Reybold, DE	Chicago, IL	Blaire, NE	Cargill Incorporated
B-129	Reybold, DE	Birmingham, AL	Brewton, AL	Georgia Pacific Brewton
B-130	Reybold, DE	Charlotte, NC	Castle Hayne, NC	Elementis Chromium
B-131	Reybold, DE	Kansas City, MO	Clifton, AZ	Freeport-McMoran Copper & Gold
B-132	Reybold, DE	Chicago, IL	Carson, SD	Harms Oil
B-134	Reybold, DE	Memphis, TN	Ferguson, MS	Georgia Pacific
B-135	Reybold, DE	Chicago, IL	Hastings, NE	Equalizer Midwest
B-136	Reybold, DE	Cincinnati, OH	Indianapolis, IN	Univar
B-137	Reybold, DE	Chicago, IL	Omaha, NE	Univar USA Inc.
B-138	Reybold, DE	E. St. Louis, MO	Orange, TX	DuPont
B-139	Reybold, DE	Streeter, IL	Phoenix, AZ	Basic Chemical Solutions
B-140	Reybold, DE	Chicago, IL	Sioux City, IA	Basic Chemical Solutions
B-141	Reybold, DE	Toledo, OH	Toledo, OH	Jones Hamilton
B-142	Reybold, DE	Hagerstown, MD	Washington, WV	DuPont

[14] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Ted Edward Morris, Operations Business Leader-Sulfur Products

The issue movements of sulfuric acid originate at five different DuPont production facilities: Bayway, NJ (Lane A-2); Bellwood, VA (Lanes B-92 through 94); Miami Fort, OH (Lane B-101); Reybold, DE (Lanes A-23 through 25; B-126 through 132 and B-133 through 142); and Wurtland, KY (Lanes B-118 and 119). Bayway and Reybold are captive NS origins. Issue movements originating at the other three production plants are captive to NS at the destinations. All of the Complaint Exhibit A Lanes are captive to NS at both the origin and destination.

Most of the issue movements originate at Reybold, DE. The Reybold plant is embedded within a large oil refinery complex owned and operated by PBF Energy Partners. It had been closed for 18 months after the previous refinery owner shuttered the complex, which is why most of the issue movements have no historic traffic volumes. DuPont resumed operations at Reybold when PBF reopened the complex.

Sulfuric acid is a Hazard Class 8 clear, colorless, odorless, viscous liquid that is very corrosive.[15] As the largest-volume industrial chemical produced in the world, consumption of sulfuric acid is often used to monitor a country's degree of industrialization. Agricultural fertilizers represent the largest single application for sulfuric acid. Other uses include production of dyes, alcohols, plastics, rubber, ether, glue, film, explosives, drugs, paints, food containers, wood preservatives, soaps and detergents, pharmaceutical products, petroleum products, pulp, and paper. Although sulfuric acid can be transported by various modes, as shown below, NS has market dominance over the issue movements.

Direct Truck. Trucks are used predominantly for short distance movements of sulfuric acid, for low volume purchasers, to serve customers without rail access, and for expedited or emergency shipments to rail-served customers. DuPont has not used trucks extensively, if at all,

[15] See Dup. Op. Workpaper "Sulfuric Acid MSDS" in the "Sulfuric Acid" folder.

for any of the issue movements.[16] Even in those instances where truck rates are lower than rail rates, they are still too high to be economically sustainable.

As a matter of law, the Complaint Exhibit A movements (Lanes A-2, A-23, A-24 and A-25) are the only issue movements of sulfuric acid where direct trucking from the origin to the destination can be a form of alternative transportation, because NS transports the sulfuric acid in single line service from the origin to the destination. For the remaining 22 issue movements of sulfuric acid, which are the Complaint Exhibit B Lanes, direct trucking is not alternate transportation for the movements to which the challenged NS rates apply, because the challenged rates apply to just a bottleneck segment of the through rail movement. Specifically, DuPont has challenged NS bottleneck segment rates from the Reybold origin to various interchange points in 16 lanes and NS bottleneck segment rates from various interchange points to the destinations in another 6 lanes. Pursuant to the Board's decision in DMIR, 4 STB at 292 (n. 13) and 293, direct trucking to the customer is not alternate transportation for the bottleneck movements to which these challenged NS rates apply.

Even assuming *arguendo* that direct trucking is an alternate form of transportation for all of the sulfuric acid issue movements, direct trucking rates are higher than the rail rates for 16 lanes, and for 15 of these 16 lanes, the direct trucking rate is at least 10% higher than the rail rate and ranges up to {{[redacted]}} higher.[17] Where there is at least a 10% rate difference after a substantial rail rate increase, the Board has found market dominance. DuPont (Plastics), slip op. at 7.

---

[16] See Dup. Op. Workpaper "Sulfuric Acid Truck Shipments" in the "Sulfuric Acid" folder.

[17] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder). The 16 lanes with higher truck rates are Lanes A-23 and 24; and Lanes B-93, 118, 119, 126, 128, 129, 131, 132, 134 (less than 10%), 135, and 137-140.

Upon a close examination of the sulfuric acid issue movements with more than two years of historical rate and traffic data, there is clear evidence that the dramatic NS rate increases of the past few years reflect pricing by NS to match much higher cost truck alternatives, as opposed to those alternatives being an effective competitive constraint.[18] Of the 26 issue movements, only 7 have more than two years of data: Lanes A-2, A-25, B-92, B-94, B-101, B-119, and B-134. Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder), shows the change in rates for these issue movements from the later of 2007 or the first DuPont rail movement in each lane. Since 2007, the NS local rates for lanes A-2 and A-25 have increased by {[redacted]}, respectively. Since 2007, the combined through rates for the joint line movements have increased between {[redacted]}. Since 2008 or 2009, as applicable, when NS and its connecting carriers began pricing on a Rule 11 basis, the NS rate has increased between {[redacted]}, while the connecting carrier rates have ranged from {{[redacted]}}. The specific details for these 7 sulfuric acid issue movements are summarized in the following chart:

Lane #	Through Rate Increase Since …	NS Rule 11 Rate or Local Rate Increase Since …	Connecting Carrier Rule 11 Rate Increase Since…	Truck Premium
A-2	NS-Direct	{{[redacted]}}	NS-Direct	{{[redacted]}}
A-25	NS-Direct	{{[redacted]}}	NS-Direct	{{[redacted]}}
B-92	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-94	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-101	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-119	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-134	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}

[18] DuPont evaluated only those sulfuric acid issue movements with more than 2 years of rate history because 19 of the 26 issue movements are too new to have but 1-2 years of rate history, which is too brief to map a trend. Moreover, the initial NS rates for those movements already would reflect the new NS pricing strategy, which the data for the older lanes indicates began in 2008-09.

Clearly, most of the through rate increases since 2007 have occurred in the last two years as a consequence of extraordinary NS rate increases. Moreover, these extraordinary NS rate increases have reversed the historical relationship of truck and rail rates by making trucks less expensive than rail for nearly all of these sulfuric acid issue movements, without any loss of traffic to trucks, which is strong evidence of market dominance.[19]

Five of these seven issue movements stand out as particularly striking examples of NS pricing up to less efficient, higher cost alternatives. For Lane B-134, although the truck distance is nearly 1100 miles, the direct truck rate is just {{[redacted]}} higher than the through rail rate, after NS increased its rate by {[redacted]} since just 2009, contrasted against just a {{[redacted]}} increase by the connecting carrier over the same time period. Similarly, in Lane A-2, although the truck distance is 686 miles, the direct truck rate is {{[redacted]}} lower than the rail rate, after NS imposed back-to-back rate increases of {[redacted]} in each of the past two years. Moreover, in Lane B-92, although the truck distance is 546 miles, the direct truck rate is {{[redacted]}} lower than the through rail rate, after NS increased its rate by {[redacted]} since just 2009, contrasted against a {{[redacted]}} cumulative increase by the connecting carrier. In Lane B-101, although the truck distance is 435 miles, the direct truck rate is {{[redacted]}} lower than the through rail rate, after NS increased its rate by {[redacted]} since just 2009, contrasted against a {{[redacted]}} by the connecting carrier. The fact that direct truck rates at these long distances could be comparable with, and in some cases lower than, direct rail rates shows that trucking is not an effective competitive constraint. Finally, the fact that NS would raise rates in Lane B-119 by {[redacted]} since

[19] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

2009 when rail rates clearly were already higher than truck rates shows a complete disregard by NS for truck competition.

The remaining 19 lanes of sulfuric acid have just two years or less of rate and traffic data because they are new movements from Reybold, DE. Therefore, DuPont cannot present similar direct evidence for these lanes of NS pricing up to higher cost truck options. Nevertheless, because all 7 issue movements with more than two years of historical rate and traffic data show that NS has uniformly engaged in such pricing behavior, it is reasonable to deduce that NS has pursued the same pricing strategy for these 19 lanes. Of these 19 issue movements, Lanes B-130, B-136, B-141, and B-142 are the only lanes with lower-priced direct truck alternatives. At distances ranging from 400-1238 miles, however, they reflect the same pattern described in the preceding paragraph of NS setting its rates based upon higher-cost alternatives. Because the other 15 lanes (except B-127) have much higher truck rates, they cannot constrain NS's pricing.

In addition to the rate and cost issues discussed above, DuPont's Reybold plant has significant infrastructure constraints that restrict the number of trucks that it can load. Reybold has just two truck loading/unloading racks. One rack is dedicated to loading fresh sulfuric acid and the other to unloading spent sulfuric acid.[20] Therefore, DuPont truly has only one rack for loading sulfuric acid into trucks. At 1.5 hours per truck, DuPont mathematically could load 16 trucks in 24 hours, which is the equivalent of 4 railcars, if every truck could be scheduled to arrive at precise intervals. Of course, such precision is not realistic. Moreover, because the truck and rail loading racks share the same pump, trucks cannot be loaded at the same time as railcars, and each railcar requires 2.5 hours to load. Also, truck loading is less efficient because, at 4

[20] As discussed in Part II-B-2.c., concerning the spent sulfuric acid issue commodity, upon consuming purchases of fresh sulfuric acid, many DuPont customers return their spent sulfuric acid to DuPont facilities for recycling, which DuPont can resell as fresh acid.

trucks per railcar, it would take 6 hours to load the same volume of sulfuric acid into a truck that it takes only 2.5 hours to load into a railcar, which is 140% longer.[21]

Although Reybold produces three concentrations of sulfuric acid, including one concentration with three grades, it only has two storage tanks. That means DuPont must rely upon railcars to store large quantities of its sulfuric acid production. Moreover, the two storage tanks have a maximum capacity each of 2800 short tons, or 5600 short tons total, which is equal to 59 railcars. Although this is adequate for current truck volumes, it would not support a substantial shift of volume from rail to trucks, because Reybold currently relies upon railcars for supplemental storage.

DuPont has estimated that it would need to construct one additional truck loading rack at Reybold to handle its current rail requirements for sulfuric acid shipments by truck. This is easier said than done, however, because the Reybold plant occupies a small footprint within a large refinery complex that is not owned by DuPont, and consequently has almost no room to expand. DuPont has come up with one viable option that would add a new truck loading rack just north of the existing racks. In order to do this, however, DuPont would have to relocate an existing warehouse in that area to a new plot of land that is currently owned by the refinery. Using actual costs from recent similar work at Reybold, DuPont estimated the total cost (excluding real estate acquisition costs) to be {{[redacted]}}.[22] DuPont does not know if it even could acquire the additional property from the refinery owner, or if so, at what cost.

For most of the sulfuric acid issue movements, truck rates are higher. In the few lanes where this is not the case, the truck rates are lower only after extraordinary NS rate increases,

---

[21] In actuality, between 4 and 5 trucks are needed to fill a railcar, which further exacerbates the inefficiency of trucks relative to railcars.

[22] See Dup. Op. Workpaper "Reybold Truck Rack Estimate" in the "Sulfuric Acid" folder.

which indicate that truck alternatives have not provided an effective competitive constraint upon NS pricing. Moreover, these rate comparisons do not include the infrastructure costs that DuPont must incur in order to make extensive use of trucks.

Transloading. Although sulfuric acid can be transloaded, it is typically transloaded only from railcars into trucks at bulk terminals near the final destination. Historically, this has been the most economical way to serve customers without rail access at great distances because direct trucking is not economically competitive with rail over long distances. As noted in the preceding discussion of direct trucking, the challenged NS rates have altered this long-held economic truism for several of the issue movements, which strongly indicates that NS has chosen to increase its rates to match those of much higher cost truck alternatives.

Transloading from railcars into trucks is only an alternative to NS for the 6 issue movements that originate at Bellwood, VA (Lanes B-92, 93, and 94), Miami Fort, OH (Lane B-101), and Wurtland, KY (Lanes B-118 and 119), because these are the only issue movements that are captive to NS solely at the destinations. All of the remaining 20 movements are captive to NS at the origin, which would require a truck-to-rail transload.

DuPont has seldom transloaded sulfuric acid from trucks into railcars and is not aware of anyone else who has done so routinely. Although truck-to-rail transloading is physically feasible, there are substantial obstacles. Because a railcar holds the equivalent volume of at least 4, but not quite 5, trucks of sulfuric acid, DuPont would have to load railcars at less than their full capacity, which increases rail costs by requiring more rail shipments and a larger railcar fleet to handle the same volume of acid.

The same infrastructure issues at Reybold for direct trucking are equally applicable to transloading. Even if the obstacles to loading trucks at Reybold could be overcome, there are

additional obstacles at the bulk terminal. DuPont would have to stage its empty railcars for loading at the bulk terminal rather than at its Reybold plant and pay storage fees.

Another obstacle pertains to a concentration of sulfuric acid for which transloading is more difficult because of its physical characteristics. The issue movements involve three different concentrations of sulfuric acid: 93%, 98%, and 99%. Because 98% and 99% sulfuric acid freeze at just 42° F, steam and/or hot water is required to thaw the acid when transloading below that temperature. As noted above, transloading of sulfuric acid from Reybold would occur in Philadelphia, which experiences frequent and extended periods of below 42° weather. Because the DuPont customers in {{[redacted]}}, which all originate at Reybold, purchase 98% or 99% sulfuric acid, transloading at the origin in order to by-pass NS is not a viable option for those movements.

Furthermore, concentrations of 93% sulfuric acid come in 3 grades, only one of which can be transloaded without degrading product quality. The three grades are technical, water white, and electrolytic. Only the technical grade can be transloaded without degrading quality. Weaker concentrations of sulfuric acid (*e.g.*, 93%) are more corrosive, which means that they are more prone to corrode stainless steel trucks.[23] Transloading exposes the sulfuric acid to air, which creates more water, which increases corrosion. The corrosion in the tank trucks, in turn, contaminates the acid. DuPont's customers in the following case lanes purchase water white or electrolytic grades of 93% sulfuric acid that cannot be transloaded: {{[redacted]}}.

[23] Railcars and storage tanks contain special plastic lining that is a barrier against corrosion. Very few trucks have these linings, and they are very expensive.

DuPont has estimated the transload costs for each of the Complaint Exhibit B lanes[24] in Exhibit II-B-2 (Dup. Op. Workpaper "Transload Cost Analysis" in the "Rates" folder).[25] The two lanes that originate at DuPont's Wurtland, KY plant, Lanes B-118 and 119, have transload rates that are {{[redacted]}} higher than the rail rates, respectively. Lane B-101, which originates at Miami Fort, OH, has a transload premium of {{[redacted]}}. Lane B-93, which originates at Bellwood, VA, has a transload premium of {{[redacted]}}. Notably, each of these lanes involve typical rail-to-truck transloading near the destination in order to by-pass NS.

Only Lanes B-92 and 94, which originate at Bellwood, have destination transload rates that would be the same or less than the rail rates. However, the customer in Lane B-92 is not the end-user, but a distributor that operates out of a bulk terminal. Transloading at one bulk terminal to reach a distributor's bulk terminal does not make sense. The customer in Lane B-94 is a spot customer for off-spec sulfuric acid. It too requires railcars for storage because it cannot mix its off-spec purchase with the specification grade acid in its storage tanks. Thus, neither of these issue movements of sulfuric acid can use the lower transload rates.

The other lanes where the transload rates are less than the rail-direct rates are movements out of Reybold that require uncommon truck-to-rail transloading in order to by-pass NS. Although DuPont could transload sulfuric acid around NS at Reybold for savings that range from {{[redacted]}}, that savings does not include the infrastructure costs and inefficiencies of transloading from trucks into railcars discussed above. Nor does transportation at those lower

---

[24] DuPont has excluded the Exhibit A lanes because those would require transloading around NS at both the origin and destination.

[25] In selecting bulk terminal locations for these comparisons, DuPont has selected the lowest cost transload facility rather than adhere to the DMIR requirement that the alternative transportation be between the same points as the NS transportation to which the challenged rates apply. The DMIR points are rarely the least costly and sometimes no alternative at all exists at those points. Therefore, by selecting the most practical and least costly transload alternatives, DuPont has been very conservative in its analysis.

transload rates make economic sense from Reybold, despite Reybold being DuPont's lowest cost sulfuric acid production plant.

Barge. Barges are not an alternative for the sulfuric acid issue movements because either or both the origin and the destination, if they have access to a navigable waterway at all, lack the infrastructure to load and unload barges. Moreover, for the bottleneck issue movements in Complaint Exhibit B, it is the rail interchange location that must have access to a navigable waterway, because barge transportation to/from any other location would not be alternative transportation to the movement covered by the challenged NS rate. DMIR, 4 STB at 292 (n. 13) and 293. If the interchange locations between NS and connecting rail carriers are not on navigable waterways, barge is a physically impossible alternative for those issue movements.

Barge is not an option for the six issue movements that are captive to NS at the destination. For Lanes B-92, 93, 94, 101, and 118, the customer facilities at the destinations are not on navigable waters. Although Lane B-119 is on a navigable waterway, the customer does not have the infrastructure to unload barges of sulfuric acid, and its storage tank only has a {[redacted]}, while barges hold 250,000 gallons (*i.e.* 20 railcars). Therefore, barge is not an alternative mode of transportation for sulfuric acid in those issue lanes.

There are 19 issue movements that are captive to the NS at the Reybold, DE origin, which is situated within a large refinery complex on the Delaware River. As a practical matter, however, barges are not an option because water transportation would require shipment via ocean-going vessels in the Atlantic Ocean that cannot sail up the Delaware River. Therefore, the sulfuric acid would have to be loaded first into river barges and then transloaded into ocean vessels on the open water.

Reybold also does not have the infrastructure to load sulfuric acid into barges. DuPont's sulfuric acid plant is located within a refinery complex that is owned and operated by PBF Energy Partners. Although the complex has a dock on the Delaware River, DuPont cannot use the dock for sulfuric acid shipments for multiple reasons.

First, DuPont does not own the dock or have any right to use it. DuPont could request access to the dock, but DuPont does not know whether such access would be granted or at what cost. A thorough engineering study and a process hazard analysis would be required of the entire project before the refinery officials even would consider such a request.

Second, DuPont would have to construct at least two miles of piping, along with associated pumps and tanks, to convey sulfuric acid to the dock for loading. In addition to the cost, this would complicate the process of obtaining approval from the owner of the complex, as discussed in the preceding paragraph. Moreover, even if DuPont had the infrastructure to load barges with sulfuric acid, it also would need infrastructure for unloading, storing and transloading the sulfuric acid at the barge destination, wherever that might be, for continuing transportation to the final destination.

The final factor, which renders the preceding discussion academic, is that the Delaware Coastal Zone Act, Del. Code tit.7, § 7001 *et seq.*, (the "CZA") prohibits DuPont's use of the existing piers to load sulfuric acid. The purpose of the CZA is set forth in it its opening section:

> It is hereby determined that the coastal areas of Delaware are the most critical areas for the future of the State in terms of the quality of life in the State. It is, therefore, the declared public policy of the State to control the location, extent and type of industrial development in Delaware's coastal areas. In so doing, the State can better protect the natural environment of its bay and coastal areas and safeguard their use primarily for recreation and tourism. Specifically, this chapter seeks to prohibit entirely the construction of new heavy industry in its coastal areas, which industry is determined to be incompatible with the protection of that natural

> environment in those areas. While it is the declared public policy of the State to encourage the introduction of new industry into Delaware, the protection of the environment, natural beauty and recreation potential of the State is also of great concern. In order to strike the correct balance between these 2 policies, careful planning based on a thorough understanding of Delaware's potential and the State's needs is required. Therefore, control of industrial development other than that of heavy industry in the coastal zone of Delaware through a permit system at the state level is called for. It is further determined that offshore bulk product transfer facilities represent a significant danger of pollution to the coastal zone and generate pressure for the construction of industrial plants in the coastal zone, which construction is declared to be against public policy. For these reasons, prohibition against bulk product transfer facilities in the coastal zone is deemed imperative.

Del. Code tit. 7, § 7001.

Under the CZA, "heavy industry uses" and "bulk product transfer facilities" are prohibited within the coastal zone unless such uses were in existence on June 28, 1971. By contrast, manufacturing facilities not in existence on June 28, 1971, and the expansion or extension of non-conforming uses, are allowable by permit only. See Del. Code tit. 7, § 7003 – 7004. The CZA is implemented through regulations promulgated by the Office of the Secretary of the Delaware Department of Natural Resources and Environmental Control ("DNREC"), Del. Admin. Code tit 7, §101 (the "CZA Regulations").

The Reybold complex is within Delaware's coastal zone. Del. Code tit. 7, § 7002(a). Because it was in existence prior to June 28, 1971, the complex is permitted to operate in the coastal zone notwithstanding that it would otherwise be prohibited as a "heavy industry use" under the CZA. The existing dock was in place and being utilized on June 28, 1971. Since that time, no docks have been removed, and none added. Importantly, the limited use of the dock on that date is significant because any expansion of the use of such dock is not grandfathered and is subject to the strictures of the CZA.

Any expanded use of the Reybold dock to permit DuPont to share access is prohibited under the CZA. Because any use of the dock to accommodate the shipment of sulfuric acid causes that dock to serve more than one industrial or manufacturing facility, the dock would be forced into the definition of "bulk product transfer facility":

> "Bulk product transfer facility" means any port or dock facility, whether an artificial island or attached to shore by any means, for the transfer of bulk quantities of any substance from vessel to onshore facility or vice versa. Not included in this definition is a docking facility or pier for a single industrial or manufacturing facility for which a permit is granted or which is a nonconforming use. Likewise, docking facilities for the Port of Wilmington are not included in this definition.

Del. Code tit. 7, § 7002(f). Under the CZA, any offshore gas, liquid or solid bulk product transfer facility is absolutely prohibited:

> Heavy industry uses of any kind not in operation on June 28, 1971, are prohibited in the coastal zone and no permits may be issued therefor. In addition, offshore gas, liquid or solid bulk product transfer facilities which are not in operation on June 28, 1971, are prohibited in the coastal zone, and no permit may be issued therefor. Provided, that this section shall not apply to public sewage treatment or recycling plants. A basic steel manufacturing plant in operation on June 28, 1971, may continue as a heavy industry use in the coastal zone notwithstanding any temporary discontinuance of operations after said date, provided that said discontinuance does not exceed 2 years. An incinerator is neither "public sewage treatment" nor a "recycling plant" for the purpose of this chapter.

Del. Code tit. 7, § 7003. The CZA Regulations do not provide any help in this regard, as the CZA Regulations include the following in the list of prohibited uses:

> Bulk product transfer facilities and pipelines which serve as bulk product transfer facilities that were not in operation on June 28, 1971.

Del. Admin. Code tit. 7, §101 – 4.5. Delaware has taken a liberal view of what constitutes a "bulk product transfer facility" and, when in doubt, its administrative agencies and courts have

erred on the side of finding a proposed use to be a bulk product transfer facility.[26] Accordingly, a hypothetical use by DuPont of the Reybold complex dock to ship or receive sulfuric acid is prohibited under Delaware law.

Lane Specific Requirements. In addition to the multiple factors discussed above, many of the issue movements have individual factors that limit the feasibility of truck and transloading options. For example, some customers require rail delivery in their purchase contracts with DuPont. A contractual requirement to deliver product to a customer by rail "makes a switch to trucks highly infeasible from an economic standpoint due to the risk of losing its customer or incurring breach-of-contract liability." DuPont (Nitrobenzene), slip op. at 6. Some customers need railcars for storage. For customers who are distributors, trucking or transloading does not make sense because those customers are themselves transloading the product at the destination.

In the following chart, DuPont summarizes those factors for each issue movement of sulfuric acid:

LaneNo.	Lane Specific Factors
A-2	{{ [redacted] }}.[27]
A-24; B-93; B-118	{{ [redacted] }}.[28]
B-94	Customer requires railcars for storage because it purchases off-spec product that cannot be mixed with specification grade product in storage tank.
B-127	Three customers at this destination. All are high volume purchasers. Univar is a distributor that requires railcars for storage.
A-23; B-126; B-132; B-135; B-139; B-140	The customers are distributors that require the railcars for storage.

[26] For example, vessel to vessel lightering operations and a liquefied natural gas storage and regasification facility have been held to be bulk product transfer facilities. See Coastal Barge Corp. v. Coastal Zone Industrial Control Board, 492 A.2d 1242, 1246 (Del. 1985) (proposed lightering operation was prohibited offshore bulk transfer facility); Delaware Dept. of Natural Resources and Environmental Control v. Vane Line Bunkering, Inc., 2007 WL 4170810 (Del.Super.) (Proposed lightering operation was prohibited offshore bulk transfer facility); In the matter of Coastal Zone Status Decision on the Application of Crown Landing LLC, Appeal No. CZ 2005-01 (March 31, 2005) (Pier serving a single LNG regasification facility nonetheless found to be a prohibited offshore bulk product transfer facility).

[27] {{ [redacted] }}

[28] {{ [redacted] }}

In summary, NS possesses market dominance over all of the issue sulfuric acid movements because:

- NS serves both the origin and destination in lanes A-2, A-23, A-24, and A-25.
- For 6 of the 22 "B" lanes, the customer is captive to NS at the destination.
- For 16 of the 22 "B" lanes, DuPont is captive to NS at the origin.
- For 15 of the lanes, direct trucking rates are at least 10% higher than rail rates and up to {{[redacted]}} higher.
- In lanes with historical traffic data, NS has priced up to or above higher cost truck alternatives with double or triple digit rate increases while retaining its predominant market share. NS is engaged in similar pricing for the new Reybold lanes that do not yet have historic traffic or pricing data.
- Trucks are used primarily to serve non-rail destinations and/or lower volume customers; and for the issue movements, trucks are used in response to expedited customer requests, and in emergency situations to keep customer facilities from shutting down.
- DuPont lacks the capability to load trucks at Reybold for direct trucking or transloading without significant infrastructure investment.
- DuPont cannot transload 98% and 99% concentrations of sulfuric acid when the temperature is below 42° F, because the acid freezes. This seriously inhibits DuPont's ability to transload acid that originates at DuPont's Reybold, DE plant.
- DuPont cannot transload the electrolytic and water white grades of 93% sulfuric acid because of quality degradation problems.
- DuPont's contracts with certain customers specify delivery in railcars.
- DuPont lacks the capability to load barges without significant infrastructure investments at the origins and at intermediate terminals. The Delaware CZA prohibits such investment at Reybold.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

c. Spent Sulfuric Acid[29]

DuPont has challenged the NS rate for transportation of spent sulfuric acid ("Spent Acid") in Lane B-77, from McIntosh, AL to Burnside, LA. The Spent Acid is an inbound shipment to DuPont at the Burnside Plant, which is served by CN. The Spent Acid originates at BASF, which is captive to NS. The traffic is interchanged at Mobile, AL.

Spent Acid is fresh sulfuric acid that has been "used" in another process, but not chemically reacted. It is a heavy, oily, strong liquid mineral acid with many characteristics similar to fresh acid, including all the same safety and health concerns, plus it may pose additional concerns from other components in the Spent Acid. DuPont typically ships fresh acid to its customers, which then return the Spent Acid to DuPont to be regenerated into fresh acid.[30]

The Spent Acid produced by BASF in Lane B-77 is a "chemical" Spent Acid which is generated as a by-product when producing chemicals used in plastics, paints, and detergents. Chemical Spent Acid is brownish to blackish in color from residual charred reactants and often has a distinct sulfur dioxide odor. Spent Acid is corrosive and reacts rapidly with water. Personal protective equipment, including respiratory protection, is required when sulfur dioxide fumes are present.

DuPont's Burnside Plant processes the Spent Acid in its Sulfuric Acid Regeneration (SAR) process, which regenerates the acid to commercial quality fresh sulfuric acid that is resold by DuPont.

Direct Truck. Direct trucking is not an option because the Board must consider market dominance for the transportation to which the challenged rate applies. See, 49 U.S.C.

---

[29] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Ted Edward Morris, Operations Business Leader-Sulfur Products.

[30] See Dup. Op. Workpaper "Spent Acid Brochure,"pp. 1-3, in the "Spent Acid" folder.

§ 10707(a). Consequently, when evaluating the reasonableness of bottleneck rates where the connecting carrier rates are in contracts, the Board evaluates market dominance only for transportation over the bottleneck segment. DMIR, 4 STB at 292 (n. 13) and 293. Since the challenged NS rate for Lane B-77 applies only over the NS bottleneck segment, direct trucking from origin to destination does not constitute alternative transportation.[31]

Although the direct truck rate is {{[redacted]}} lower than the through rail rate,[32] this is a stark reversal of the historical relationship between rail and truck pricing for this movement. Since 2007, the through rail rate has increased by {{[redacted]}}. Since 2009, when the rail carriers initiated Rule 11 pricing, the NS rate has increased by {[redacted]}, in contrast to just a {{[redacted]}} increase by the connecting carrier.[33] Clearly, most of the through rate increase since 2007 has occurred in the last two years as a consequence of extraordinary NS rate increases. Moreover, these extraordinary NS rate increases have reversed the historical relationship of truck and rail rates by making trucks less expensive than rail, without any loss of traffic to trucks,[34] which is strong evidence of market dominance.[35]

The Spent Acid volumes in Lane B-77 also are far too large to transport by truck. In 2009 and 2010, DuPont received {[redacted]} and {[redacted]} railcars of Spent Acid over this lane, respectively.[36] At 3.5 trucks per railcar, this would have required as many as {[redacted]} trucks in

---

[31] Similarly, direct barge is not an option because of the DMIR precedent and because the origin of this movement is not located on a navigable body of water.

[32] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[33] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

[34] See Dup. Op. Workpaper "Spent Acid Truck Shipments" in the "Spent Acid" folder, which shows {{[redacted]}}.

[35] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

[36] See Dup. Op. Workpaper "2009-10 Rail Shipments" in the "Shipment Data" folder.

2010. The additional handling, labor and equipment needed to ship so many more trucks than railcars further reduces the effectiveness of trucks as a viable alternative to rail.

Transloading. Aside from direct trucking, the only alternate transportation that could bypass NS in Lane B-77 would be for BASF to load trucks at the origin, ship to a nearby bulk terminal, and transload the Spent Acid into railcars for delivery to DuPont. This transload alternative from rail to trucks is not an economically viable option because it is {{[redacted]}} more expensive than rail service.[37] Moreover, it still would require BASF to load as many as {[redacted]} trucks annually. DuPont also would have to coordinate with BASF on a daily basis to pre-position adequate railcars at the bulk terminal. BASF, rather than simply loading an empty railcar at its convenience and releasing that car to NS, would have to schedule truck loadings at its facility and transloading at the bulk terminal. There is no rational reason why BASF would agree to undertake this substantially greater workload, and the additional cost and risks associated with 3.5 times more truck hook-ups, either for direct shipments or for transloading.

In addition, when transloaded, spent sulfuric acid must be scrubbed with a weakened caustic soda solution. Therefore, the bulk terminal must have caustic storage tanks and storage tanks to capture waste from the scrubbing process, for which DuPont would have to pay storage and disposal costs.

[37] See Exhibit II-B-2 (Dup. Op. Workpaper "Transload Cost Analysis" in the "Rates" folder).

In summary, NS possesses market dominance over the movement of spent sulfuric acid in Lane B-77 because:

- BASF is captive to NS at the origin.
- The volume in this lane is too great to feasibly use trucks and would require substantially more time and effort from both BASF and DuPont to coordinate truck loading and/or transloading.
- A comparable direct truck rate is the result of recent substantial NS rate increases that have reversed the historical relationship between rail and truck rates for this movement, thereby demonstrating that NS is pricing to match the rates of much higher cost transportation alternatives.
- The transloading rate is {{[redacted]}} higher than direct rail service.
- Transloading would require scrubbing, which requires storage tanks for caustic solution and disposal of the waste product.
- DuPont cannot require BASF to undertake the cost and burden of loading 3.5 times the number of trucks as railcars for such a high volume of rail traffic.
- Barge is not an option because the origin is not on a navigable waterway.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

d. Fuming Sulfuric Acid (Oleum)[38]

DuPont has challenged the NS rates for transportation of fuming sulfuric acid, also known as Oleum, in two lanes: Lane B-103 from Miami Fort, OH to McIntosh, AL; and Lane B-106 from Miami Fort, OH to Pepper, VA. CSXT serves the Miami Fort origin and interchanges Lane B-103 with NS at Chattanooga, TN, and Lane B-106 with NS at Cincinnati, OH. DuPont's customers are captive to NS at each destination. The origin plant at Miami Fort is also known as North Bend or Fort Hill, which is near Cincinnati, OH.

Oleum is a Class 8 corrosive liquid that is produced in strengths of 20%, 65%, and 67%. Oleum consists of sulfur trioxide ("SO_3") dissolved in 100% sulfuric acid ("H_2SO_4") so that 20% Oleum contains 20% SO_3 and 80% H_2SO_4. The DOT regulates fuming sulfuric acid over 30% as a TIH, but fuming sulfuric acid under 30% is not classified as a TIH. However, DuPont's best business practice is to treat all fuming sulfuric acid the same for transportation and handling purposes.[39] DuPont is one of only two shippers of over 30% Oleum in the United States. Because Oleum gives off irritating and corrosive fumes or mist, handling requires full personal protective equipment including respiratory protection.[40] Oleum is hygroscopic, which means that it reacts violently with water so that handling must avoid contact with even trace amounts of water.[41] In addition, because Oleum reacts with certain metals, carbon or stainless steel are used in equipment for the transport, storage, and piping of Oleum.[42]

---

[38] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Ted Edward Morris, Operations Business Leader—Sulfur Products.

[39] See Dup. Op. Workpaper "SO3 and Oleum PUSH Manual" in the "Sulfur Trioxide" folder, which describes a single set of common handling procedures for all grades of Oleum.

[40] Id. at 11 (describing Class B protective equipment required for connecting/disconnecting hoses to/from transport vehicles).

[41] Id. at 1, 10.

[42] Id. at 14, 26.

DuPont only ships Oleum in privately-owned equipment that is dedicated to transporting Oleum. DuPont uses specification DOT-312 trailers that comply with DOT HM-181 regulations, are equipped with a glycol heating system, and are insulated to maintain temperatures above the product's freezing point.[43] In addition to using dedicated trucks, DuPont only delivers Oleum using drivers who have been trained and equipped to safely handle Oleum, in order to provide the proper controls and to minimize the potential exposure to the general public.[44] There is a limited resource of these specialized trucks. DuPont owns 31 of these trailers to transport both sulfur trioxide and Oleum, and no new trailers have been built for DuPont since 1994. A new truck would cost at least $160,000.[45] Due to equipment and driver limitations, DuPont requires customers to pre-schedule truck deliveries.[46]

Over 30% Oleum is not transloaded because it is a TIH. Every time hoses are connected to or disconnected from a transport vehicle is another opportunity for a leak. Just a cursory review of the engineering and design factors for handling Oleum explains why no bulk terminals will transload this product. These factors include locating facilities away from densely populated areas and major highways; suitable scrubbing facilities for venting/evacuating unloading, storage, and handling equipment; and a means of isolating tank cars or trucks with remotely actuated block valves in the event of a hose failure.[47] The first factor alone is largely disqualifying because most bulk terminals, by design, are located near a major highway.

If the above facts were not sufficient to demonstrate the infeasibility of transloading, the actual transloading process would do so. Because the vapor pressure in railcars is too high to use

---

[43] Id. at 17, 21.

[44] Id. at 18.

[45] See Dup. Op. Workpaper "Sulfur Trioxide trailer email" in the "Sulfur Trioxide" folder.

[46] See Dup. Op. Workpaper "SO3 and Oleum PUSH Manual" in the "Sulfur Trioxide" folder, p. 18.

[47] Id. at 14-15.

an external pump for the transfer process, any transload would have to occur via a pressurized transfer. This process, however, creates a sulfuric acid mist that must be scrubbed using a solution of 93% sulfuric acid. The scrubbing process creates a 98% sulfuric acid solution. Thus, a transfer facility must have storage for the 93% solution used to scrub Oleum and have a means to dispose of the 98% solution created by the scrubbing process. In essence, a bulk terminal must operate as a mini chemical plant, which commercial bulk terminals are not equipped to do and have no desire to do.

Lane B-103. The Oleum that is shipped to McIntosh, AL in Lane B-103 for BASF is at 65% strength, which makes it a TIH. BASF uses the Oleum to clean waste water. BASF cannot receive truck shipments of Oleum at its McIntosh facility. {{[redacted]}}[48] A contractual requirement to deliver product to a customer by rail "makes a switch to trucks highly infeasible from an economic standpoint due to the risk of losing its customer or incurring breach-of-contract liability." DuPont (Nitrobenzene), slip op. at 6. Furthermore, between 2006 and 2010, BASF received no truck shipments of Oleum from DuPont at McIntosh.[49]

The fact that the direct truck rate for this TIH movement of 662 miles is {{[redacted]}} less than the all rail rate[50] also is evidence that NS is not constrained by truck competition, but rather has chosen to set rates above a higher cost alternative, perhaps to discourage rail transportation of this TIH material.[51] Transloading is not an option because this is a TIH material that would

---

[48] {{[redacted]}}

[49] See Dup. Op. Workpaper "Acid Fuming Sulfuric (TIH) Truck Shipments" in the "Oleum" folder.

[50] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[51] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

require scrubbing under pressure.[52] Finally, barge is not an option because BASF is not located on a navigable body of water.

Lane B-106. The Oleum that is shipped to Pepper, VA in Lane B-106 for Alliant Techsystems is at 20% strength. Alliant uses the Oleum to make a key material used in explosives and propellants at the Radford Army Ammunition Plant. The Radford Plant is the only domestic producer of this key material for ammunition used by the military and police officers. Although Alliant can unload tank trucks and railcars, it prefers to purchase Oleum in 90 ton tank cars. {{[redacted]}}.[53] Over the 5 year period from 2006 to 2010, Alliant received just {{[redacted]}} trucks of Oleum.[54]

Direct trucking in Lane B-106 is not an effective competitive constraint upon the NS rate despite being {{[redacted]}} less than the through rail rate.[55] First, direct trucking to this customer is not alternate transportation for the movement to which the challenged NS rate applies, because the challenged rate is from an interchange with a connecting contract rail carrier to the destination. DMIR, 4 STB at 292 (n. 13) and 293.

Second, NS is setting rates to match the prices of a much higher cost alternative. Since 2008, the through rail rate for this movement has increased by {{[redacted]}}. Moreover, since Rule 11 pricing began in 2009, the NS rate has increased by {{[redacted]}} while the connecting carrier's rate has {{[redacted]}}.[56] Clearly, most of the through rate increase since 2008 has occurred in the last two years as a consequence of extraordinary NS rate increases. Moreover,

---

[52] See Dup. Op. Workpaper "SO3 and Oleum PUSH Manual," p. 14, in the "Sulfur Trioxide" folder.

[53] {{[redacted]}}

[54] See Dup. Op. Workpaper "Acid Fuming Sulfuric (Non-TIH) Truck Shipments" in the "Oleum" folder.

[55] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[56] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

the extraordinary NS rate increases have reversed the historical relationship of truck and rail rates by making trucks less expensive than rail, without any loss of traffic to trucks, which is strong evidence of market dominance.[57]

Transloading in Lane B-106 also is not a competitive constraint, because the transload rate is {{[redacted]}} higher than the through rail rate.[58] Moreover, as noted above, DuPont's best practice is to handle all grades of Oleum in the same manner, so DuPont does not transload any Oleum products. Finally, barge is not an option because the destination is not located on a navigable body of water.

In summary, NS possesses market dominance over the issue movements of fuming sulfuric acid because:

- DuPont's customers are captive to NS at the destinations.
- DuPont's customers require rail transportation.
- The Oleum grade in Lane B-103 is a TIH commodity that DuPont prefers to ship by rail and does not transload.
- In Lane B-106, the transload rate is {{[redacted]}} more expensive than rail service, but the bulk terminal subsequently declined to handle this traffic altogether after learning more details regarding the transload process and equipment.
- Lower direct truck rates are evidence that NS is not constrained by truck competition, but rather has chosen to set rates above a higher cost alternative through recent extraordinary rate increases that have reversed the historical relationship between truck and rail rates for these movements.
- From 2006-10, there were {{[redacted]}} trucks in Lane B-103 and just {{[redacted]}} trucks in Lane B-106.

---

[57] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

[58] See Exhibit II-B-2 (Dup. Op. Workpaper "Transload Cost Analysis" in the "Rates" folder). {{[redacted]}}

- DuPont does not have the specialized equipment or drivers needed to ship Oleum by truck to its customers on a routine basis.

- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segments.

e. Muriatic Acid[59]

DuPont has challenged the NS rates for muriatic acid shipments from Louisville, Kentucky to two destinations on the following case lanes:

Lane #	Origin	Destination	Customer
A-18	Louisville, KY	Decatur, IL	ADM Corp.; Tate & Lyle
A-19	Louisville, KY	Lafayette, IN	Tate & Lyle

DuPont is captive to NS at both the origin and destinations.

Muriatic acid is a highly corrosive acid that is also referred to as "Hydrochloric Acid" or "HCl." DuPont produces approximately {[redacted]} tons per year of HCl at its Louisville facility as an unintended byproduct during the manufacture of Freon 22.

{{[redacted]}}

{{[redacted]}}

Trucking. Direct trucking, although less costly than the NS rates, is not a practical alternative for the issue movements. DuPont's Louisville facility supplies the customers at

[59] The evidence and testimony in this section in jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Brad Kulesza, Operation Business Leader for Freon 22.

Decatur and Lafayette with {[redacted]} tons of HCl annually. This equals {[redacted]} railcars, or {[redacted]} trucks. Adding such a high volume of truck shipments will strain both DuPont's and the customers' facilities.

Moreover, DuPont frequently relies on railcar storage to prevent shutdowns of its Freon 22 production. As mentioned above, DuPont cannot produce Freon 22 unless it can store or ship the HCl byproduct. When DuPont's HCl storage at Louisville approaches capacity, DuPont depends upon railcars for storage.

The NS rates for the issue movements of muriatic acid also are a classic example of setting rail rates to match the rates of a higher cost alternative. Since just 2009, the NS rates have increased by {[redacted]} on Lane A-18 and {[redacted]} on A-19.[60] Direct truck rates in these lanes are {{[redacted]}} and {{[redacted]}} below the NS rates in Lanes A-18 and 19, respectively.[61] In other words, NS has dramatically reversed the historic relationship between truck and rail rates for the issue movements in just two short years. NS clearly believed that it could increase its rates so dramatically without losing this business to trucks, and it has been correct. In the case of Lane A-18, {{[redacted]}} In the case of Lane A-19, {{[redacted]}} In neither case, however, has NS lost any of this traffic to trucks.[62]

In summary, NS possesses market dominance over the issue movements of HCl because:

- DuPont is captive to NS at both the origin and destination.
- HCl volumes are too high to switch to trucks.
- DuPont uses railcars for storage in order to avoid disruption to its Freon 22 production.

---

[60] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

[61] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[62] See Dup. Op. Workpaper "Acid Muriatic Truck Shipments" in the "Acid Muriatic" folder.

- Lower trucking rates reflect attempts by NS to match the prices of higher cost direct trucking alternatives.

- Transloading is not viable because DuPont would have to transload around NS at both the origin and destinations of the issue movements.

f. Aniline Oil[63]

DuPont has challenged the NS rates for aniline oil from Dowling, TX and Pascagoula, MS to two destinations in the following case lanes:

Lane #	Origin	Interchange	Destination	Customer
B-49	Dowling, TX	Meridian, MS	Fort Mill, SC	Nation Ford Chemical Co.
B-84	Pascagoula, MS	Mobile, AL	Fort Mill, SC	Nation Ford Chemical Co.
B-85	Pascagoula, MS	Mobile, AL	LeMoyne, AL	US Amines
B-115	Pascagoula, MS	Atlanta, GA	Fort Mill, SC	Nation Ford Chemical Co.

DuPont's customers are captive to NS at the destinations. Lanes B-84 and B-115 are alternative routes between the same points via different origin carriers to different interchange points with NS.

Aniline oil is a Class 6 hazardous material that may be fatal if inhaled, swallowed, or absorbed through the skin.[64] Although aniline oil is not a TIH material, it must be handled like TIH material because of its inhalation hazards. Aniline oil is used in the production of many chemicals that are important to the urethane, rubber, petroleum, plastics, agricultural, explosives, pharmaceuticals, and chemical industries.[65]

DuPont produces aniline oil at two facilities, in Dowling, TX and Pascagoula, MS. In recent years, this business has operated through two different legal entities, First Chemical and DuPont. Both facilities can load aniline oil into trucks, barges, and railcars. Transloading occurs only into ocean barges.

DuPont has a very small customer base for aniline oil. Truck customers typically are not served by rail, purchase in small volumes, or are within a short distance. Customers who receive rail, however, want rail, typically because they purchase in large volumes.

---

[63] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Katie Snyder, Business Manager Aniline.

[64] See Dup. Op. Workpaper "Aniline PUSH Manual" at 7; and "Aniline MSDS", both in the "Aniline Oil" folder.

[65] See Dup. Op. Workpaper "Aniline PUSH Manual" at 6, in the "Aniline Oil" folder.

This is particularly true of Nation Ford Chemical Company, which is the customer in Lanes B-49, 84 and 115, at Fort Mill, SC. Nation Ford consumes over {{[redacted]}} of aniline oil per year. {{[redacted]}}.[66] A contractual requirement to deliver product to a customer by rail "makes a switch to trucks highly infeasible from an economic standpoint due to the risk of losing its customer or incurring breach-of-contract liability." DuPont (Nitrobenzene), slip op. at 6. From 2006-2010, Nation Ford never received more than {{[redacted]}} trucks of aniline oil from DuPont at Fort Mill in any single year, which is less than 5% of its nominal annual consumption.[67] Those trucks were exceptions for emergency shipments.[68] Barge is not an option because Nation Ford is not located on a navigable body of water.

Although DuPont's customer in Lane B-85, US Amines, is not a contract customer, it requires rail delivery. This customer purchases for individual production campaigns. In some years, DuPont wins the business; in some years it loses the business; in some years DuPont does not bid because it is unable to supply the business; and in some years US Amines does not run its production campaign at all. Although this customer purchases much lower volume than Nation Ford, it uses aniline oil in production campaigns that require delivery of the entire purchase in blocks. For example, all of the 2009 shipments occurred within 21 days in March.[69] US Amines uses the railcars for storage until the aniline oil is consumed in the production campaign. This is validated by the fact that DuPont has not shipped a single truck of aniline oil to Lemoyne from

---

[66] {{[redacted]}}

[67] See Dup. Op. Workpaper "Aniline Truck Shipments" in the "Aniline Oil" folder.

[68] See Dup. Op. Workpaper folder "Nation Ford Truck E-mails" in "Aniline Oil" folder.

[69] See Dup. Op. Workpaper "2009-10 Rail Shipments" in the "Shipment Data" folder.

2006-2010.[70] Barge is not an option for US Amines because it is not located on a navigable waterway and it does not purchase aniline oil in sufficient volume.

Direct trucking is not an option for each of the issue aniline oil movements, because the Board must consider market dominance for the transportation to which the challenged rates apply. See, 49 U.S.C. § 10707(a). Consequently, when evaluating the reasonableness of bottleneck rates where the connecting carrier rates are in contracts, the Board evaluates market dominance only for transportation over the bottleneck segment. DMIR, 4 STB at 292 (n. 13) and 293. Because all of the aniline oil issue movements originate at an interchange with NS, direct trucking options also must originate at those locations. This means that the rail shipments must be transloaded at the interchange.

If the DMIR precedent is disregarded, the direct truck rate for Lane B-49 is {{[redacted]}} higher than the through rail rate for a 943 mile road haul. Although the direct truck rates for the other three issue movements are less than or slightly above the through rail rates, there are 606 road miles on Lanes B-84 and 115, which is well beyond any range at which trucks are typically considered to be cost competitive with rail.[71] This indicates that NS is pricing up to much higher cost truck alternatives.

Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder), shows the change in rates for the issue movements from the later of 2007 or the first DuPont rail movement in each lane. Since 2007, the through rates in three of the four lanes have increased by {{[redacted]}}. Since 2009, when NS and the connecting carriers initiated Rule 11 pricing, the NS factor in those three lanes has increased by {[redacted]} while the connecting carrier factors

---

[70] See Dup. Op. Workpaper "Aniline Truck Shipments" in "Aniline Oil" folder.

[71] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder). Although Lane B-85 is just 56 miles, as noted above, this customer requires railcars for storage.

have increased by just {{[redacted]}}, respectively, and actually decreased by {{[redacted]}}. The specific details for each aniline oil issue movement are summarized in the following chart:

Lane #	Through Rate Increase since …	NS Rule 11 Rate Increase Since …	Connecting Carrier Rule 11 Rate Increase Since…	Truck Premium
B-49	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-84	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-85	This lane does not have a rate history prior to 2011			
B-115	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}

These extraordinary NS rate increases have not been accompanied by any loss of traffic to trucks, which is strong evidence of market dominance.[72]

Transloading from railcars into trucks is not a viable option for either Nation Ford or US Amines. Most significantly, DuPont has not been able to identify a bulk terminal that will handle aniline oil because of its poisonous properties. {{[redacted]}}[73] DuPont does not transload aniline oil from rail to trucks anywhere in North America. Even if such a facility existed, both customers require railcars for storage, as evidenced by railcar hold times that average nearly 2 weeks.[74]

[72] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

[73] {{[redacted]}}

[74] See Dup. Op. Workpaper "Customer Hold Times" in the "Shipment Data" folder.

In summary, NS possesses market dominance over all of the issue aniline oil movements because:

- DuPont's customers are captive to NS at the destinations.
- DuPont's customers require rail delivery and need railcars for storage.
- DuPont cannot identify a bulk terminal willing to transload aniline oil because it is a poisonous combustible.
- Direct truck rates are much higher for Lane B-49. For Lanes B-84 and 115, recent sizeable rate increases by NS, resulting in lower direct truck costs for a 606 mile road haul, reflect attempts to price up to a much higher cost alternative.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

g. Bio-Propanediol[75]

DuPont has challenged the NS rates for transporting bio-propanediol ("PDO") from Loudon, TN to 2 destinations on the following lanes:

Lane #	Origin	Interchange	Destination	Supplier
A-17	Loudon, TN	NS-Direct	Braithwaite, LA	DuPont Tate & Lyle
B-99	Loudon, TN	Chattanooga, TN	Graingers, NC[76]	DuPont Tate & Lyle
B-100	Loudon, TN	Chattanooga, TN	Graingers, NC	DuPont Tate & Lyle

DuPont is captive to NS at the origin and destination on lane A-17 and only at the origin on lanes B-99 and B-100. Although lanes B-99 and B-100 are identical movements, B-99 applies to transportation in tank cars with capacities not exceeding 21,999 gallons and B-100 applies to transportation in tank cars with capacities between 22,000 - 27,500 gallons.

PDO is a non-hazardous liquid that is derived from sugar, unlike conventional propanediol, which is derived from petroleum. DuPont Tate & Lyle Bioproducts ("DT&L"), a DuPont joint venture, is the only large scale manufacturer of PDO worldwide and produces PDO exclusively at its Loudon facility. PDO is produced continuously by special, patented bacteria that convert corn sugar to PDO. If production stops, the restart process will take approximately {{[redacted]}}. Therefore, it is vital to keep transportation disruptions from interrupting PDO production.

After manufacture, PDO is shipped to DuPont's Graingers, NC Plant for polymerization and storage or to Braithwaite, LA for storage and export. The Graingers Plant operates two continuous polymerization lines that create multiple grades of DuPont's Sorona® pellets, which

[75] The evidence and testimony in this section is jointly sponsored by Mary Pileggi (Logistics Manager-NA Region), Nicky Mills (Kinston Supply Chain Manager), and Pamela J. Wilson (Global Supply Chain Planner).

[76] Graingers, NC is the rail head for Kinston, NC. "Graingers" and "Kinston" are used interchangeably unless otherwise noted. DuPont commonly refers to its facility at the destination as its Kinston facility.

are poly(trimethylene terephthalate) ("PTT") polymers. These pellets are ultimately used to create carpet, apparel, packaging, and films.

PDO contamination is a significant concern for DuPont. Products made from Sorona® pellets are especially sensitive to discoloration, which can occur from contamination in the PDO used to make the pellets. Although these pellets are small, each pellet produces a significant amount of yarn and other fibers and, therefore, the effects of discoloration in just one pellet can be far reaching. Also, contamination can affect the polymerization process, resulting in pellets that do not meet specifications and must be scrapped. Losing pellets to contamination causes DuPont to miss shipments to its customers and may result in customers trying to recoup their unscheduled downtime costs from DuPont.

PDO can be contaminated by dirt and other foreign materials. In addition, when in contact with aluminum and carbon steel, a reaction occurs causing contamination. Thus, to carry PDO, railcars must have a special liner and tank trucks must be constructed of stainless steel.

A foreign substance as basic as water can cause significant contamination of PDO. An increase in the water level in PDO causes improper operation of the polymerization equipment at the destination, resulting in finished product that does not meet specifications. At certain water levels, the polymerization equipment will not be able to function at all. In fact, a shutdown of a reactor, which is a piece of the polymerization equipment, may occur. To restart the production of first-grade pellets following a reactor shutdown will take {{[redacted]}} and cost DuPont {{[redacted]}}, because DuPont will not be able to produce first-grade product during the restart period even though it must continue to feed PDO and other Sorona® ingredients into the polymerization system at the normal consumption rate. To avoid these substantial costs, the

loading and unloading of PDO cannot take place in any form of precipitation, unless performed under cover.

Truck. Trucks are not a practical or viable alternative to NS rail service for most PDO shipments, including the issue movements. As a matter of pure economics, PDO direct truck rates exceed rail rates on lanes A-17 and B-100. On lane A-17, where DuPont is captive to NS at the origin and destination, the direct truck rate is {{[redacted]}} higher than the NS rate.[77] On lane B-100, the direct truck rate is {{[redacted]}} higher than the through rail rate.[78]

As a practical matter, because PDO contamination occurs when it comes in contact with aluminum and carbon steel, it cannot be transported in aluminum and carbon steel trucks. Instead, PDO must be transported in stainless steel trucks. However, tank trucks are normally aluminum and a sufficient fleet of stainless steel trucks is not available. Thus, switching to trucks would require DuPont to acquire a fleet of stainless steel trucks at a cost of {{[redacted]}} per trailer per month on a 1-3 year lease or {{[redacted]}} per trailer per month on a 5 year lease.[79] In contrast, the current monthly cost to lease one railcar, which is equivalent to 4 trucks on lanes A-17 and B-100 and 3.5 trucks on Lane B-99, ranges from {[redacted]} per car.[80]

Furthermore, the DT&L facility at Loudon is not configured to support a conversion of the case lane volumes to trucks. The DT&L facility produces {{[redacted]}} pounds of PDO per day in large production batches, which are processed continuously into finished product storage tanks. Because the daily production volume is equivalent to 1.7 railcars, having the ability to ship in railcars affords DT&L substantial flexibility to manage the quantity of PDO in its storage

---

[77] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[78] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[79] See Dup. Op. Workpaper "BioPDO trailer quote" in the "PDO" folder.

[80] See Dup. Op. Workpaper "Railcar Leases" in the "Railcars" folder.

tanks and avoid a shutdown when the tanks are full, which requires a {{[redacted]}} restart period.

If the volumes on the case lanes are converted to trucks, DT&L will lose its storage flexibility and incur additional costs. Railcars allow DT&L to draw down storage tank volumes during the week by loading the cars several days prior to shipping. In contrast, trucks lack this storage flexibility because they are loaded only when ready to ship. Moreover, trucks would have to load on weekends to keep up with demand, whereas railcars are preloaded and shipped as needed. In addition, the DT&L production facility is located within a Tate & Lyle plant and relies on Tate & Lyle for security, truck weighing, and shipment processing, including entering shipment information into SAP. These services will have to increase, at an increased cost to DT&L, if the rail volumes on the case lanes are converted to trucks. DuPont cannot require its supplier to incur these additional costs.

Switching to trucks requires additional contamination testing and may result in increased demurrage costs. Contamination tests are performed on all shipments of PDO to Graingers prior to unloading, lest one shipment destroy the contents of an entire storage tank of PDO, which could hold millions of dollars worth of PDO, as indicated above. Each test takes approximately 1.5 hours to complete and costs {{[redacted]}}, but can take even longer if the testing lab is testing Sorona® production samples, which takes 4-6 hours, when a shipment arrives. Accordingly, since 1 railcar is equivalent to 4 trucks, testing time for a single railcar volume of PDO at a minimum would increase from 1.5 hours to 6 hours if transported by truck, and testing costs would increase from {{[redacted]}} to {{[redacted]}}. In addition, to the extent a dedicated, private truck fleet is not available, tank trucks incur detention at {{[redacted]

[redacted]}}[81] and it takes approximately {[redacted]} hours, total, to load and unload a tank truck.[82] Accordingly, for every tank truck shipment, DuPont must add to the truck linehaul rate between {{[redacted]}} in detention charges that accrue during testing.

Also, to the extent DuPont is able to use commercial motor carriers rather than a dedicated, private truck fleet, trucking to Graingers can result in truck detention charges. Specifically, the Graingers facility is not equipped with covered spots for unloading in precipitation. Thus, if it is precipitating at Graingers, the shipments will incur truck detention until the precipitation ceases, which could be minutes, hours, or even days. DuPont's fleet of dedicated railcars, in contrast, does not incur detention while waiting to unload.

The lack of effective competition from trucks is also reflected in the fact that DuPont's total PDO shipments by truck in each year from 2006 to 2010 ranged from just 1 to a high of 46, which is a small fraction of DuPont's total PDO shipments.[83] Moreover, there were only 6 truck movements on the case lanes from 2006 through 2010, all on lane A-17.[84] Because effective competition "may be deduced from . . . the amount of the product in question that is transported by motor carrier where rail alternatives are available," this historical data is highly relevant evidence of market dominance. Market Dominance Determinations, 365 I.C.C. at 133. See also, Product & Geographic Competition, 2 I.C.C.2d 1, 21 (1985).

Even setting aside the economic and practical disadvantages of trucking PDO, direct trucking PDO on lanes B-99 and B-100 is not an effective alternative to rail as a matter of law because DuPont has only challenged NS bottleneck segment rates from Loudon to Chattanooga,

---

[81] Dup. Op. Workpaper "Tidewater Transit Company #0809-0002 Exhibit A" in the "Truck Contracts" folder.

[82] Tank truck loading requires {[redacted]} hours. Tank truck unloading requires {[redacted]} hours.

[83] See Dup. Op. Workpaper "PDO Truck Shipments" in the "PDO" folder.

[84] See Dup. Op. Workpaper "PDO Truck Shipments" in the "PDO" folder.

not the through rate from Loudon to Graingers. Under the Board's decision in DMIR, 4 STB at 292 n.13 and 293, trucking is only an alternative if it is limited to the segments to which the challenged rates applies, which is Loudon to Chattanooga.

Transloading. Transloading is not a viable option for by-passing NS at Loudon. As explained above, railcars are needed for storage at Loudon to avoid costly interruptions to production. Therefore, transloading would need to occur twice: first from railcars into trucks, and second from trucks back into railcars at a nearby bulk terminal. In addition, DT&L is not prepared to transload at its facility—it has not transloaded PDO from railcars to trucks and would need to devise a method for doing this. Also, DT&L would need covered transloading spots so that it can avoid contamination.

Even if DT&L could transload into trucks at Loudon, the cost of transloading back into railcars makes transloading impractical. To transload PDO into railcars, DuPont would have to truck the product from Loudon to Chattanooga, where it would be transloaded to CSXT. Transloading increases the transportation costs between Loudon and Graingers by {{[redacted]}} on lane B-99 and {{[redacted]}} on lane B-100.[85] DuPont has not considered transloading for Lane A-17 because transloading would have to occur at both the origin and destination in order to bypass NS.

Finally, as noted in the discussion of direct trucking, all trucks from Loudon would have to be loaded from railcars. Consequently, the minimum number of transloads required for Lanes B-99 and 100 would be two (once into trucks at Loudon and again back into railcars at the bulk terminal), and for Lane A-17 would be three (once into trucks at Loudon, back into railcars at the origin bulk terminal, and back into trucks at the destination bulk terminal). The contamination

[85] See Exhibit II-B-2 (Dup. Op. Workpaper "Transload Cost Analysis" in the "Rates" folder).

concerns noted above make even a single transload undesirable, much less two or even three transloads per shipment.

In summary, NS possesses market dominance over the issue PDO movements because:

- DuPont is captive to NS at the origin, and as to Lane A-17, also at the destination.
- The direct truck rates are higher than the rail rates on lanes A-17 and B-100.
- Transloading is more expensive than the through rail rate for Lanes B-99 and B-100. Transloading is not an option at all for Lane A-17 because NS serves both the origin and destination.
- PDO cannot be transported in aluminum and carbon steel trucks. Instead, it must be transported in stainless steel trucks, which DuPont would have to acquire at significantly higher cost than its railcars.
- Converting the case lane volumes to trucks will eliminate storage flexibility and result in increased truck handling costs at the DT&L facility.
- New procedures, equipment, and covered transloading locations are needed at Loudon to load trucks from the railcars that are used for storage.
- Each truck must incur a minimum of 90 minutes of detention while it is tested for contamination.
- Transloading and loading trucks at the origin—which involves transloading from railcar storage to trucks—cannot occur in precipitation, which contaminates PDO, unless conducted in a covered area. If contaminated PDO makes it into the polymerization process, it can cause a shutdown of at least {{[redacted]}}, costing DuPont {{[redacted]}}.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

h. Potassium Caustic (Caustic Potash)[86]

DuPont has challenged the NS rate for the transportation of potassium caustic, also called potassium hydroxide or caustic potash, in one lane, Lane B-125 from Charleston, TN to Woodstock, TN. DuPont's supplier is Olin, whose facility is captive to NS. The movement is interchanged with CN at Memphis for delivery to DuPont's facility at Woodstock/Memphis.

Caustic potash is a colorless to slight yellow, clear to cloudy liquid.[87] Personal protective gear is required in handling caustic potash.[88] Caustic potash is a corrosive hazardous material and, when mixed with water, releases heat which can result in splattering or dangerous mists.[89] Caustic potash is used by DuPont as a raw material in the production of water treatment and metal mining solutions. The chemical formula for caustic potash is KOH.

Olin manufactures the caustic potash at its Charleston, TN site. {{[redacted]}}. To the extent that trucking occurs in this lane, it occurs when there are rail delivery problems or for managing the inventory of caustic potash.

---

[86] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region and Suneet Ranganath, Sourcing Manager, Ag & Nutrition.

[87] See Dup. Op. Workpaper "Caustic Potash MSDS" at 2, in the "Potassium Caustic" folder.

[88] Id. at 3; see also Dup. Op. Workpaper "KOH Unloading Procedures" § 4.0, in the "Potassium Caustic" folder.

[89] See Dup. Op. Workpaper "Caustic Potash MSDS" at 4, in the "Potassium Caustic" folder.

[90] See Dup. Op. Workpaper "Olin Contract," Addendum B, in the "Potassium Caustic" folder.

[91] See Dup. Op. Workpaper "2009-10 Rail Shipments" in the "Shipment Data" folder (showing 113 railcars in 2010).

DuPont operates two separate production units at Woodstock that require caustic potash. One is the precious metals business ("KCN"); the other is the water treatment business ("OXONE"). The KCN business requires caustic potash as a raw material for production that is run in campaigns just 2-3 times per year for approximately one month at a time. The volume of caustic potash needed for a campaign is approximately {[redacted]} railcars. The OXONE business uses caustic potash in the production of potassium salt that is used for cleaning, disinfection, and oxidation mostly in residential water applications. It receives approximately {[redacted]} railcars per month.

Direct Truck. Direct trucking in Lane B-125 does not constitute alternative transportation for the movement to which the challenged NS rates apply, because the challenged NS rate is to an interchange with a connecting contract rail carrier, not to the destination. DMIR, 4 STB at 292 (n. 13) and 293.

The volume of caustic potash received by DuPont at Woodstock also is too great to shift to trucks. Across both the KCN and OXONE businesses, DuPont received {[redacted]} net tons of caustic potash from Charleston in 2011.[92] At 22 tons per truck, this would equate to {[redacted]} trucks. Moreover, this truck volume would not be evenly spread throughout the year because there would be spikes in truck deliveries when the KCN business is running one of its three month-long production campaigns each year. The additional handling of this corrosive material, and the labor and equipment needed to truck four times as many shipments as railcars, renders trucking an impractical alternative to rail. Moreover, DuPont cannot force its supplier to incur both the additional risk and costs associated with scheduling trucks, employing additional labor, and making four times as many connections to load trucks as railcars. {{[redacted]

[92] This is based upon {[redacted]} dry tons doubled to reflect that the caustic potash is shipped in a 50% solution.

[redacted]}} Nor does DuPont have any desire to increase the costs and risks associated with handling so many extra hook-ups.

Consequently, even though the direct trucking rate is {{[redacted]}} below the direct rail rate, DuPont cannot use direct trucks. Moreover, the most striking fact is that the extraordinary NS rate increases over the past few years have reversed the historical relationship between the truck and rail rates for this 354-mile truck movement. Since 2007, the through rail rate in Lane B-125 has risen by {{[redacted]}}.[93] Since 2009, when the participating rail carriers implemented Rule 11 pricing, the NS rate has risen by {[redacted]}, while the connecting carrier's rate increased by {{[redacted]}}.[94] This shows that NS has used its market power to increase rail rates far above truck rates, while still retaining the predominant market share.[95]

Transloading. Transloading faces most of the same obstacles as direct trucking. Because the origin is captive to NS, Olin would have to load trucks at its facility and transfer the caustic potash into railcars at a bulk terminal. This is precisely the reverse of typical transloading scenarios. Moreover, it would impose upon Olin all the additional labor and risks that direct trucking would require.

Furthermore, very few commercial bulk terminals will handle caustic potash due to its highly corrosive nature. Some caustic potash producers operate their own terminals to serve customers without rail access, but those terminal locations are selected and optimized to serve their customer destinations, not their origin production facilities, which would be necessary for

---

[93] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

[94] Id.

[95] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

Lane B-125. Because caustic potash producers can move large volumes through a single terminal, they also may team up with a commercial bulk terminal to provide storage and transfer facilities in lieu of constructing their own private terminals.

Barges. The above limits on transloading also apply to barge transportation. Direct barging is not an option for Lane B-125 because the destination is not on a navigable waterway. Therefore, any barge transportation would have to unload and store the caustic potash at a barge terminal to be transloaded into trucks or railcars for delivery to DuPont. Many caustic potash producers, including Olin, own and operate their own barges for transporting caustic potash and lease terminal facilities for storage and transfer, which they are able to do economically because of the large volumes that move through those facilities to serve multiple customers. Olin does not use any inland barge terminals for caustic potash, except at Willow Springs, IL, which is near Chicago. This suggests that Olin primarily barges caustic potash directly to its customers, not to bulk terminals.

In order to be a true alternative to the issue movement, a barge alternative would have to operate between Charleston and Memphis, TN, which are the origin and interchange points for the issue movement in Lane B-125. DMIR, 4 STB at 292 (n. 13) and 293. DuPont currently procures barge terminal services from the {[redacted]} in Memphis for 5 other commodities received at the Woodstock facility, which is approximately 7 miles away. Therefore, DuPont has evaluated whether that facility could handle caustic potash and at what cost.

The {[redacted]} terminal is operated by {[redacted]}, with which DuPont has a contract for the receipt, storage and handling of five commodities destined for

Woodstock.[96] Those commodities are {[redacted]}.[97] Although this terminal can handle caustic potash, it cannot do so in addition to the five commodities that it already handles for DuPont because it does not have an empty storage tank. Therefore, caustic potash would have to displace one of these other commodities for which DuPont would have to secure alternative storage and transportation.[98] Although this factor alone renders this barge alternative infeasible, DuPont has estimated the cost per ton of barge transportation versus rail transportation for Lane B-125.

The barge cost has three components. The barge transportation itself would cost {{[redacted]}} per net ton[99] and the truck transportation from the terminal to Woodstock would be {{[redacted]}} per net ton.[100] Because the terminal charges, which are set forth in Exhibit C of the {[redacted]} contract, are not on a transactional or per ton basis, DuPont cannot calculate precisely how much this would add to the total barge transportation costs. However, DuPont's total 2011 spend under the {[redacted]} contract was {{[redacted]}} for five commodities.[101] If a fifth of that cost is assigned to the issue movement, based upon {[redacted]} net tons received from Charleston in 2011, this yields a terminal cost per ton of {{[redacted]}}.[102] The sum of these costs is {{[redacted]}} per net ton, which is {{[redacted]}} higher than the rail cost per ton of {{[redacted]}}.[103] This clearly is

---

[96] {[redacted]}

[97] Id., Contract Exhibit C.

[98] DuPont also has used the {[redacted]} terminal as an alternative for caustic soda in Lanes B-47 and 81. If this terminal were used as an alternative for both caustic soda and caustic potash, they would displace 2 of the 5 commodities that DuPont currently transships through that terminal.

[99] See Dup. Op. Workpaper "ACL e-mail" in the "Potassium Caustic" folder.

[100] {{[redacted]}}

[101] {[redacted]}

[102] {{[redacted]}}

[103] {{[redacted]}} The through rail rate is the 12/1/11 rate in Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

a higher cost alternative because of the extra storage and handling that is required at the {[redacted]} terminal.

This barge option has the same undesirable requirement as all of the truck options, which is a four-fold increase in the number of hook-ups due to the need to load/unload four trucks for every railcar. Because DuPont seeks to minimize the handling of this highly corrosive commodity, this option would never receive serious consideration.

In summary, NS possesses market dominance over this movement of caustic potash because:

- DuPont's supplier is captive to NS at the origin.
- The high volume of caustic potash moving in this lane makes switching to truck infeasible, unpractical and unwarranted, because of the increased handling of this hazardous material. DuPont cannot impose these increased costs and risks upon its supplier at the origin.
- NS's recent sizeable rate increases have reversed the historical relationship between truck and rail rates and have not had any impact on NS retaining the predominant market share of the traffic.
- Total barge costs, including barge rates, truck rates, and terminal costs, are approximately {{[redacted]}} higher than direct rail costs.
- DMIR precludes the Board from considering alternative transportation options to origins and destinations other than the issue destinations or origins covered by the challenged rates.

i. Sodium Caustic (Caustic Soda)[104]

DuPont has challenged the NS rates for transportation of sodium caustic, which is commonly referred to as "caustic soda," in nine lanes:

Lane #	Origin	Interchange	Destination	Supplier
A-22	McIntosh, AL	NS Direct	Lemoyne, AL	Olin
B-47	Charleston, TN	Memphis, TN	Woodstock, TN	Olin
B-79	McIntosh, AL	Mobile, AL	Delisle, MS	Olin
B-80	McIntosh, AL	New Orleans, LA	Orange, TX	Olin
B-81	McIntosh, AL	Mobile, AL	Woodstock, TN	Olin
B-107	Natrium, WV	Cincinnati, OH	Belle, WV	PPG
B-108	Natrium, WV	Lynchburg, TN	Danville, VA	PPG
B-112	Niagara Falls, NY	Columbus, OH	Belle, WV	OxyChem
B-114	Niagara Falls, NY	Buffalo, NY	Edgemoor, DE	Olin

Lane A-22 is a direct NS movement from a DuPont supplier in McIntosh, AL to DuPont's facility in Lemoyne, AL, both of which are captive to NS. Lanes B-47, B-79, B-80 and B-81 are shipments from DuPont suppliers that are captive to NS at the origin and destined for a DuPont facility after interchange with another carrier. Lanes B-107, B-108, B-112, and B-114 are shipments from DuPont suppliers that are served by another railroad and then interchanged to NS for delivery to DuPont facilities that are captive to NS.

Caustic soda, also known as sodium hydroxide or NaOH, is a clear to slightly turbid odorless liquid that is used as a neutralizing agent, as an industrial cleaner, for pulping and bleaching, and for manufacturing soap.[105] It is a Class 8 hazardous material that is extremely corrosive. Caustic soda is sold and shipped in solutions of varying strength, with 50% solution being quite common. Caustic soda causes severe burns on contact that penetrate to deeper layers of skin, causing deep ulceration, permanent scarring, and even death.[106] The severity of injury

[104] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region and Suneet Ranganath, Sourcing Manager, Ag & Nutrition.

[105] See Dup. Op. Workpaper "Caustic Soda MSDS," at 1, 8, in the "Sodium Caustic" folder.

[106] Id. at 2.

depends upon the concentration of the caustic soda solution and the duration of exposure.[107] The risk of severe burns is enhanced due to the fact that the solution is odorless and burns may not be immediately painful and could be delayed from minutes up to hours.[108] Caustic soda also reacts violently with certain metals and water to generate enough heat to ignite nearby combustible materials.[109] Personal protective equipment is needed to load or unload caustic soda.[110] Liquid caustic soda is shipped hot at 100-180° F.

Caustic soda is a widely used chemical that can be transported by truck, rail, or barge. However, trucks typically are used only for very short distances or for expedited deliveries. Rail is the preferred method of transporting caustic soda over land because it has the lowest risks. Railcars also double as storage containers for caustic soda at the destinations. In addition, as noted below, trucks are not practical because of the volume of caustic soda received at each destination.

Direct Trucking. Direct trucking is only an alternate form of transportation for Lane A-22 because that is the only issue movement for which NS provides direct rail service from the origin to the destination. Because all of the other issue movements are bottleneck segments for which the challenged NS rate applies either from origin to interchange, or from interchange to destination, direct trucking is not an alternate transportation for the movement to which the challenged NS rates apply. DMIR, 4 STB at 292 (n. 13) and 293.

For Lane A-22, direct trucking is not an effective competitive constraint upon NS because the truck rate is {{[redacted]}} higher than the NS rate.[111] Even if truck rates were not so

---

[107] Id. A 4% solution can destroy the outer layer of skin within 15 minutes and all skin layers within 60 minutes.

[108] Id.

[109] Id. at 1, 6.

[110] Id. at 5.

[111] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

much higher, direct trucking is impractical due to issues at DuPont's Lemoyne facility, which has just one truck unloading site. From 2006-2010, {{[redacted]}} trucks of caustic soda moved in this lane or even to this destination by truck.[112]

Even if the Board's DMIR decision did not foreclose direct trucking alternatives for the eight Complaint Exhibit B lanes, the direct trucking rates are {{[redacted]}} higher than the through rail rates for five of those eight movements.[113]

Furthermore, nearly all of the case destinations receive very large volumes of caustic soda, for which it simply would not be practical to deliver by truck. A rail tank car has a caustic soda capacity of 98 net tons, and a tank truck has a capacity of 22 net tons. To illustrate the large volumes of caustic soda received by the issue DuPont facilities, DuPont has calculated the net tons received at each facility in 2010 from its SAP data.[114] Because these volumes are in dry tons, they must be doubled to reflect shipment weights for 50% caustic solution:

- Woodstock (Memphis), TN, which is the destination in Lanes B-47 and 81, received {[redacted]} net tons of dry caustic soda by rail, which would require {[redacted]} trucks annually.
- Delisle, MS, which is the destination in Lane B-79, received {[redacted]} net tons of dry caustic soda by rail, which would require {[redacted]} trucks annually.[115]
- Sabine (Orange), TX, which is the destination in Lane B-80, received {[redacted]} net tons of dry caustic soda by rail, which would require {[redacted]} trucks annually.
- Danville, VA, which is the destination in Lane B-108, received {[redacted]} net tons of dry caustic soda by rail, which would require {[redacted]} trucks annually.

---

[112] See Dup. Op Workpaper "Sodium Caustic Truck Shipments" in the "Sodium Caustic" folder.

[113] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder). Those are Lanes B-47, 81, 108, 112, and 114.

[114] See Dup. Op. Workpaper "2010 Caustic Volumes" in the "Sodium Caustic" folder. Rail shipments are indicated by the abbreviations "TKR" and "BRL"; truck shipments by "TKT."

[115] Although Dup. Op. Workpaper "2010 Caustic Volumes" shows a barge delivery to Delisle, Delisle in fact does not have any barge docks. This particular shipment was ordered by DuPont on behalf of {{[redacted]}}.

- Edge Moor, DE, which is the destination in Lane B-114, received {[redacted]} net tons of dry caustic soda by rail, which would require {[redacted]} trucks annually.

Although Lanes B-79, 80 and 107 have direct truck rates that are {{[redacted]}} less than the through rail rate,[116] these lower truck rates are due to recent NS extraordinary rate increases that have reversed the historical relationship between truck and rail rates for these movements. Indeed, all of the issue movements have experienced substantial rail rate increases in recent years that reflect the exercise of market power by NS, even in the lanes where there still are significant truck premiums after the NS rate increases. Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder), shows the change in rates for the issue movements from the later of 2007 or the first DuPont rail movement in each lane. Since 2007, the combined through rate for each caustic soda issue movement has increased between {[redacted]}. Since 2009 (or 2008 for some lanes), when NS and its connecting carriers began pricing on a Rule 11 basis, the NS rate has increased between {[redacted]}, while the connecting carrier rates have {{[redacted]}}. The specific details for each caustic soda issue movement are summarized in the following chart:

Lane #	Through Rate Increase since …	NS Rule 11 Rate or Local Rate Increase Since …	Connecting Carrier Rule 11 Rate Increase Since…	Truck Premium
A-22	NS Direct	{[redacted]}	NS-Direct	{{[redacted]}}
B-47	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-79	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-80	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-81	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-107	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-108	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-112	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-114	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}

[116] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

Clearly, most of the through rate increases since 2007 have occurred in the last two years as a consequence of extraordinary NS rate increases. Moreover, these extraordinary NS rate increases have dramatically reversed the historical pattern of higher truck rates for three of the caustic soda issue movements without any loss of traffic to trucks, which is strong evidence of market dominance.[117] Furthermore, the fact that most of the issue movements still have sizeable truck premiums even after such rapid and steep rail rate increases underscores how little of a competitive constraint trucks truly exert upon NS rates for caustic soda transportation.

The only issue destination for caustic soda that has any history of large truck volumes is Belle, WV, in Lane B-107.[118] Those volumes are deceptive, however, because DuPont has four different businesses at Belle that unload caustic soda. These businesses are referred to as SLM, Vazo, F3455, and Amines. The SLM and Vazo facilities cannot unload railcars, and therefore, must purchase caustic soda in trucks. In contrast, Amines cannot unload trucks, and therefore, must purchase caustic soda in railcars. Only the F3455 business has the capability to unload caustic soda by both truck and rail. The large truck volumes in Lane B-107 were received almost entirely by the SLM and Vazo businesses at Belle, and thus, do not demonstrate that trucks are competitive constraints upon rail rates for transporting caustic soda.

Finally, DuPont cannot unilaterally switch from railcars to trucks; its suppliers also would have to agree to ship caustic soda by trucks. Trucks would increase their costs and risks by requiring them to load four times more trucks than railcars. This means more opportunities for spills and more employees needed for loading operations and to coordinate truck loading

---

[117] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

[118] See Dup. Op. Workpaper "Sodium Caustic Truck Shipments" in the "Sodium Caustic" folder.

schedules with motor carriers. Yet, these suppliers would not realize any freight cost savings for their efforts, since DuPont pays the freight, which raises the question why they would voluntarily assume these greater risks and costs. If they were willing to do so, surely they would demand some compensation, which would reduce or eliminate any freight savings to DuPont.[119]

Transloading. Transloading is undesirable because it would significantly increase the handling of this extremely corrosive chemical. Moreover, transloading rates range from {{ }} higher than rail rates for all but two of the caustic soda issue movements.[120] The two exceptions are Lanes B-80 and 107, where transload rates are {{ }}, respectively, below the rail rates.[121] In both lanes, however, the savings from direct trucking are greater. The reasons why direct trucking over these lanes does not constitute effective competition apply equally to transloading. Transloading has added complications for Lanes B-47, 79, 80, and 81, because it is DuPont's suppliers who are captive to NS at the origins. They, therefore, would have to agree to ship by trucks to a bulk terminal, with the attendant extra costs and risks, but without any offsetting benefit from lower freight rates.

Barges. Although 7 of the 9 issue movement origins can load caustic soda into barges (the exceptions are Lanes B-112 and 114 at Niagara Falls), the destinations cannot unload caustic soda from barges, if they can receive barges at all. Due to differences among the issue movements, barge options, including both direct and transloading, are reviewed on an individual lane basis below.

---

[119] {{ }}

[120] See Exhibit II-B-2 (Dup. Op. Workpaper "Transload Cost Analysis" in the "Rates" folder). DuPont has not calculated transload rates for Lane A-22 because that lane would require transloading at both the origin and destination to by-pass NS.

[121] Id.

In Lane A-22, barge is not an option because DuPont's Lemoyne facility, although located on the water, does not have any barge docks. Nor is DuPont permitted to construct any barge docks because the waterfront property is covered by an Archaeological Exploration Easement in favor of the Archaeological Conservancy.[122] There are active archeological digs on the property, which is the original site of the City of Mobile from the 1700's. Pursuant to paragraph 8 of the easement, DuPont must "refrain from any activities which have not been undertaken in the past and which would disturb the integrity of the SITE."

For Lanes B-47 and B-81, because the destination, Woodstock, is not located on a navigable waterway, DuPont would have to transload from barges into trucks. DuPont currently procures barge terminal services from {[redacted]} in Memphis for commodities received at the Woodstock facility, which is approximately 7 miles away. Therefore, DuPont has evaluated the cost of a barge-truck transload through that terminal for both of these issue movements. The barge transportation alone would cost {{[redacted]}} per net ton for Lane B-47 and {{[redacted]}} per net ton for Lane B-81.[123] The truck transportation from the terminal to Woodstock would add {{[redacted]}} per net ton to both movements.[124] The combined barge and truck costs for Lane B-47 of {{[redacted]}} per net ton is {{[redacted]}} higher than the rail cost of {{[redacted]}} per net ton.[125] The combined barge and truck costs for Lane B-81 of {{[redacted]}} per net ton is {{[redacted]}} higher than the rail cost of {{[redacted]}} per net ton.[126]

---

[122] See Dup. Op. Workpaper "Archaeological Conservancy Easement" in the "Sodium Caustic" folder.

[123] See Dup. Op. Workpaper "ACL e-mail" in the "Sodium Caustic" folder.

[124] {{[redacted]}}

[125] {{[redacted]}} The through rail rate is the 12/1/11 rate in Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

[126] {{[redacted]}} The through rail rate is the 12/1/11 rate in Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

Clearly, barge transportation is not a competitive constraint upon NS rates for these movements even before adding the terminal costs, which were {{[redacted]}} in 2011.[127]

For Lane B-79, Delisle is not located on a navigable waterway. DuPont searched for barge transload options through the ports of Gulfport, MS and Mobile, AL. Chemicals are not among the cargo handled by the Port of Gulfport, which in any event is not a proper barge destination under the DMIR decision.[128] The Port of Mobile, which is a proper barge destination under DMIR because it is the actual NS interchange location, also does not handle hazardous materials.[129] Regardless, this option is not practical because it would require DuPont to unload over 1400 trucks annually at Delisle.

For Lane B-80, direct barging to the DuPont facility in Orange, TX is not an alternative to the issue movement, which is to the UP interchange in New Orleans, LA.[130] Even if DMIR did not apply, DuPont's Orange facility does not currently have the infrastructure to unload barges. Although DuPont has barge docks at Orange, it does not have the storage or piping needed to receive caustic soda by barge. Existing storage is less than one-fifth the capacity of the smallest barge and 2-3 miles of heated piping would be required to connect a new barge storage tank with the 4 DuPont businesses at Orange that use caustic soda. The total estimated cost of this infrastructure would be {{[redacted]}} of capital plus {{[redacted]}} in costs

---

[127] {[redacted]} DuPont has a contract for the receipt, storage and handling of five commodities destined for Woodstock. {[redacted]} Although this terminal can handle caustic soda, it cannot do so in addition to the five commodities that it already handles for DuPont because it does not have an empty storage tank. Therefore, caustic soda would have to displace one of these other commodities for which DuPont would have to secure alternative storage and transportation. DuPont also has used the {[redacted]} terminal as an alternative for caustic potash in Lane B-125. If this terminal were used as an alternative for both caustic soda and caustic potash, they would displace 2 of the 5 commodities that DuPont currently routes through that terminal.

[128] See http://shipmspa.com/cargo.htm

[129] See Dup. Op. Workpaper "Port of Mobile Info" in the "Sodium Caustic" folder.

[130] DMIR, 4 STB at 292 (n. 13) and 293.

associated with capital.[131] Furthermore, a transload alternative would require DuPont to unload over 650 trucks of caustic soda annually.

For Lane B-108, the destination, Danville, is not located on a navigable waterway and is not near any river terminals. The closest river terminal is Charleston, WV, which still requires a 250 mile truck haul to Danville, compared with a direct truck distance of 380 miles. In other words, DuPont still would be trucking for 66% of the distance. But, on top of the truck costs, DuPont would incur barge transportation costs and terminal charges for leasing a storage tank year-round and handling fees. In any event, because the NS interchange is Lynchburg, VA, there is no barge alternative that satisfies DMIR.

For Lane B-107, although the destination, Belle, has barge docks, it does not have the infrastructure to unload caustic soda. DuPont estimates that the additional piping and associated equipment needed to enable barge unloading would cost {{[redacted]}}.[132] The barge rate from Natrium to Belle is {{[redacted]}} per net ton,[133] and the rail rate is {{[redacted]}} per net ton.[134] Clearly, DuPont would have ample incentive to take advantage of a rate savings of {{[redacted]}} if it were able to do so. Moreover, as noted above, the fact that NS has increased its rate for this movement by {[redacted]} since just 2009 demonstrates that it does not feel constrained by barge competition for this traffic. In any event, because the NS interchange is Cincinnati, OH, a barge-truck alternative that complies with DMIR would require a 210 mile truck haul, which would be 36% longer than a 145 mile direct truck alternative.

---

[131] See Dup. Op. Workpaper "Sabine DOME Estimate" in the "Sodium Caustic" folder. The cost associated with capital is estimated as 20% of the capital cost.

[132] See Dup. Op. Workpaper "Belle DOME Estimate" in the "Sodium Caustic" folder.

[133] See Dup. Op. Workpaper "ACL e-mail" in the "Sodium Caustic" folder.

[134] {{[redacted]}} The through rail rate is the 12/1/11 rate in Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

In summary, NS possesses market dominance over all the issue Caustic soda movements because:

- Charleston, TN; Edgemoor, DE; McIntosh, AL; Lemoyne, AL; Belle, WV; and Danville, VA are rail captive to NS.
- Because caustic soda is an extremely corrosive hazardous material that should be handled as little as possible during transport, transloading is not feasible, practical, or warranted.
- Because caustic soda is an extremely corrosive hazardous material that should be handled as little as possible, rail is preferable to trucks so as to minimize the number of connections required to load and unload.
- Direct truck rates are substantially higher than the through rail rates for six of the nine issue caustic soda movements.
- Transload truck rates are substantially higher than the through rail rates for all but two of the issue caustic soda movements.
- The high volume of caustic soda received by the issue destinations makes the receipt of trucks, either via direct shipment or transload, infeasible, unpractical and unwarranted.
- NS's recent extraordinary rate increases have not had any impact on NS retaining the predominant market share of the traffic, and have reversed the historical relationship between truck and rail rates for three of the issue movements.
- The Niagara Falls, NY, origin in Lanes B-112 and 114 cannot load barges.
- The following issue destinations cannot unload caustic soda from barges: Woodstock, TN; Delisle, MS; Danville, VA; Edgemoor, DE; Belle, WV; Lemoyne, AL; and Orange, TX.
- Barge-truck transload rates are significantly higher than rail rates for Lanes B-47 and 81, even before adding terminal charges.
- DMIR precludes the Board from considering alternative transportation options to origins and destinations other than the issue destinations or origins covered by the challenged rates. Therefore, the only lane where direct trucking or barging may be considered is Lane A-22.

j. Chlorine[135]

DuPont has challenged the NS rate for transportation of chlorine in four lanes:

Lane #	Origin	Interchange	Destination	Supplier
A-10	Charleston, TN	NS Direct	Edgemoor, DE	Olin
B-78	McIntosh, AL	Mobile, AL	Delisle, MS	Olin
B-87	Beauharnois, PQ	Buffalo, NY	Edgemoor, DE	PPG
B-113	Niagara Falls, NY	Buffalo, NY	Edgemoor, DE	Occidental Chemical

Lane A-10 is captive to NS at the origin and destination. Lane B-78 is captive to NS at the origin and is interchanged to CN at Mobile, AL. Lanes B-87 and B-113 are captive to NS at the destination and are interchanged from CSXT at Buffalo, NY.

Chlorine is a compressed liquefied gas that is an essential element used as a process chemical, water treatment chemical, and in plastic manufacturing. Chlorine is classified as a Class 6.1 poison gas under 49 C.F.R. § 172.101, and is a TIH material. Chlorine is not flammable but it enhances the combustion of other substances. DuPont has very stringent safety rules for handing chlorine within its facilities.[136]

Direct Truck. Direct trucking of chlorine does not provide effective competition to NS rail service. DuPont seldom trucks chlorine at all because of its hazardous properties. When it does do so, DuPont trucks chlorine only in small volumes and over very short distances. In other cases before the Board, the parties agreed that intermodal competition from trucks does not exist for chlorine. See E.I. du Pont de Nemours and Company v. CSX Transportation, Inc., NOR No. 42100 (STB served June 30, 2008).

Direct truck can only be an alternative for Lane A-10 because it is the only movement where the challenged NS rate applies to the same origin and destination as the direct truck rates

[135] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region and Suneet Ranganath, Sourcing Manager, Ag & Nutrition.

[136] See Dup. Op. Workpaper "Chlorine Safety Rules" and "Chlorine Safety Manual", both in the "Chlorine" folder.

would apply. See DMIR, 4 STB at 292 (n. 13) and 293. Lanes B-78, 87, and 113 are bottleneck rates that apply only to or from an interchange.[137]

Furthermore, the distances involved are longer than DuPont is willing to truck chlorine for safety reasons. Lane A-10, the only movement where direct trucking is a true alternative to the challenged rate, is a movement of nearly 700 miles by road. Lanes B-78, 87 and 113 are approximately 125, 500 and 400 miles, respectively. Even when DuPont does truck chlorine, it does so in containers, not bulk trucks. All of the above factors render direct trucking of chlorine infeasible, impractical and unwarranted.

Transloading. For the three joint line movements, the risk of a spill and its accompanying consequences renders transloading of chlorine infeasible, impractical, and unwarranted. DuPont does not transload chlorine anywhere in the United States and is unaware of any facility that does so in bulk quantities that is not itself a chemical plant.

The process required to transload chlorine simply is not practical or cost-effective. The process of loading chlorine into railcars creates vapor that accumulates above the liquid. During transloading, this vapor must be scrubbed in a caustic solution as it is released from the railcar. This scrubbing process, in turn, creates bleach. Therefore, a bulk terminal must bring in caustic solution for scrubbing and it must have a means to capture the resulting bleach that is created and dispose of that bleach. In essence, the bulk terminal would become a mini-chemical production plant. This explains why chlorine is not transloaded in the transportation chain.

Barge. DuPont receives chlorine by barge only at its New Johnsonville, TN facility. However, none of the issue movements are to New Johnsonville. Three of the issue chlorine movements are to DuPont's Edgemoor, DE facility and the other is to Delisle, MS.

---

[137] DMIR also precludes direct barge alternatives for all issue movements except Lane A-10.

At Delisle (Lane B-78), barge is not an option because neither the origin, at McIntosh, AL, or the destination, at Delisle, have barge loading/unloading facilities capable of handling chlorine. A barge cannot get within 20 miles of the Delisle facility. Although DuPont's supplier at McIntosh has barge docks, those docks are not capable of loading chlorine.[138] Moreover, the fact that Delisle is not barge accessible means that transloading would be required. As discussed above, chlorine simply is not transloaded because of its hazardous properties and the complications associated with scrubbing.

At Edgemoor (Lanes A-10, B-87, and B-113), DuPont also does not have barge unloading facilities. Although Edgemoor is located along the banks of the Delaware River, its only dock facility is an abandoned dock that once was used to load iron chloride onto barges for offshore dumping. This dock, which was never configured for unloading any commodity, is in a state of disrepair. Also, the dock is located nearly a quarter mile from the part of the facility that utilizes the chlorine. This would require an extensive infrastructure investment at Edgemoor to rehabilitate the dock, retrofit it for unloading chlorine, and build piping and storage to connect the dock with the DuPont facility. There is no need to even consider whether those infrastructure investments are warranted, however, because there remain two highly significant practical hurdles.

First, the Delaware River is only accessible to barges from the issue origins via the Atlantic Ocean. Because barges cannot traverse the open ocean, chlorine would have to be transferred between barges and ocean-going vessels twice for each issue movement. DuPont has already stated that it does not transload chlorine between transportation modes. Furthermore, transloading is even less practical on the open water than it is on land because the transloading

[138] See Dup. Op. Workpaper "Olin email" in the "Chlorine" folder.

operation is, in essence, a mini chemical plant for the production of bleach. The barge routes also would be highly circuitous. Lane A-10, from Charleston, TN, would have to barge the chlorine south to the Gulf of Mexico, transfer the chlorine onto ships that would sail around Florida and up the East Coast, and then transfer the chlorine onto river barges for transportation up the Delaware River to Edgemoor. Lanes B-87 and 113 would have to sail north up the St. Lawrence Seaway, transfer into ocean vessels in the Atlantic Ocean, sail south to the Delaware River, and transfer back into barges for transportation up the river to Edgemoor.

Second, even assuming that the above-described barge-ship-barge transportation was both feasible and economical, DuPont also must overcome multiple regulatory hurdles in order to upgrade the dock facility at Edgemoor to receive chlorine by barge. Under Delaware's Coastal Zone Act ("CZA"), the construction and extension of docking facilities and piers that serve a single manufacturing facility in Delaware's coastal zone, like Edgemoor, is allowable by permit only.[139] In addition, any new use of the Edgemoor docking facilities requires a permit.[140] Obtaining a permit is a difficult, expensive, and time consuming process for which there are no guarantees of success. A permit application requires an environmental impact statement and detailed descriptions of the proposed use, the aesthetic and economic effects, and impact on neighboring land uses.[141] In addition, any application that will result in a negative environmental impact must contain an offset proposal, which must more than offset the negative environmental impacts associated with the proposed activity.[142]

---

[139] Del. Code tit. 7, §§ 7002(b), 7003, 7004(a); Del. Admin. Code tit. 7, § 101-6.1.

[140] Del. Admin. Code tit. 7, § 101-6.3.

[141] Id. § -8.1.

[142] Id. § -9.1.1. Because the primary medium at risk is the river environment and subaqueous soil, any DuPont offset would need to target spawning fish populations, benthic invertebrates, and submerged vegetation in the Delaware River.

Approval of a permit application is in the discretion of the Secretary of the Delaware Department of Natural Resources and Environmental Control ("DNREC").[143] When evaluating a permit application, the Secretary must consider economic effect, aesthetic effect, the supporting facilities required, effect on neighboring land uses, and local land use and conservation plans.[144] While the Secretary has 90 days to rule on an application, the 90-day clock does not start until the Secretary has determined that the application is complete.[145] Accordingly, DuPont's environmental counsel anticipate that it would take 8 months for the Secretary to rule on an application to rehabilitate and use the dock facilities at Edgemoor and cost at least $50,000 to $75,000 in legal, consulting, and application fees. Despite these efforts, there is a high likelihood that the Secretary could deny a permit to use the Edgemoor dock facilities to unload chlorine from barges due to many different reasons, including the potential for spills of chlorine into the Delaware River, the need for extensive dredging, increased ship and barge traffic close to the riverbank, and the 1/2 mile separating the Edgemoor dock facilities from a recreation area on the riverbank at Fox Point State Park.

Even if DuPont could obtain a permit, additional regulatory hurdles remain. DuPont must obtain subaqueous land leases and permits,[146] certify that refurbishment or expansion of docking facilities is consistent with Delaware's coastal zone management program, obtain water quality certification,[147] and obtain permits from the U.S. Army Corps of Engineers ("USACE").[148] USACE permits are needed for the rehabilitation and any expansion of the dock

---

[143] Del. Code tit. 7, § 7005(a).

[144] Id. § 7004(b).

[145] Id. § 7005(a).

[146] Del. Admin. Code tit. 7, § 7500-2.3.3, -2.4.2.

[147] 33 U.S.C. § 1341(a)(1).

[148] 33 C.F.R. §§ 322.3(a), 323.3(a).

facilities as well as the discharge of dredge or fill material.[149] Because this does not fall under nationwide permits for minimal impact activities,[150] DuPont would need to obtain an individual permit. The burden of obtaining an individual permit is "not trivial[;]. . . the average applicant for an individual permit spends 788 days and $271,596 in completing the process."[151] Moreover, there is no guarantee that a permit will be issued.

In order to obtain the USACE permits, DuPont must also certify to USACE and DNREC that any proposed activity affecting water use in the coastal zone complies with Delaware's approved coastal management program and will be conducted in a manner consistent with such program.[152] The certification must include a detailed description of the project and its associated facilities, a copy of the federal permit application package, an assessment of the effects of the project on any land or water use or natural resource of the coastal zone, findings that the proposed activity and associated facilities are consistent with the Delaware Coastal Zone Management Program ("DCMP").[153] DNREC's review of the certification includes twenty-five policy areas.[154] If DNREC finds that the proposed activity is inconsistent with the DCMP, it may object to the certification, thereby precluding USACE from issuing a permit unless the Secretary of Commerce, on appeal, overrides DNREC's objection.[155]

---

[149] Id.

[150] See 33 C.F.R. Part 330.

[151] Rapanos v. United States, 547 U.S. 715, 721 (2006)

[152] 16 U.S.C. § 1456(c)(3)(A). See also DNREC, Delaware Coastal Management Program: Comprehensive Update and Routine Program Implementation §3.2 (2011).

[153] DNREC, supra note 17, § 3.2.2.

[154] Id. § 5.

[155] Id. § 3.2.6.

To obtain the necessary water quality certification, which is a prerequisite to obtaining the USACE permits,[156] and subaqueous land leases and permits, DuPont must submit a combined application containing engineering drawings and a wetlands delineation to the Wetlands and Subaqueous Lands Section ("WSLS") of DNREC, which will evaluate the application using a multitude of criteria, including: environmental impact, erosion control, impact on public use, impact on ecosystems, serviceability, impact of dredge or fill activities, and impact on Delaware surface water quality.[157] Applications for subaqueous lands permits and leases are subject to a public notice requirement and, if a meritorious request for hearing is received or WSLS finds a public interest in the project, a public hearing before a hearing officer.[158] Given the scope of any dock facility rehabilitation and expansion and its implication of the CZA, a hearing is likely. If the permit application is denied, there is no right of appeal.[159]

The presence of so many regulatory obstacles, the cost of pursuing the multiple required permits, and the potential that any single permit denial can block the entire project substantially eliminates any potential constraint that the possibility of barge competition might have on rail rates. See General Electric Co. v. The Baltimore and Ohio R.R. co., 1984 ICC LEXIS 206, *6 (served Oct. 12, 1984) ("[W]hether such a dock and unloading facility could actually be constructed is far from certain, since the record shows that environmental requirements of several jurisdictions would have to be met, and the government agencies involved might not permit construction for the handling of such a hazardous substance."). All of this is before investing the millions of dollars required to build the infrastructure that is necessary to make

---

[156] 33 U.S.C. § 1341(a)(1).

[157] Id. § 4.0

[158] Del. Code tit. 7, § 7207, 7208.

[159] Id. § 7210.

barge transportation a physical possibility at Edgemoor. DuPont has estimated that it would cost {{[redacted]}} dollars to rehabilitate its dock to unload chlorine by barge and another {{[redacted]}} to install the piping, pumps, tanks, and other infrastructure necessary to store the chlorine and pipe it from the dock to the plant.[160] This is just the capital expense estimate. The non-capital expenses are estimated to add 15% to the total cost, which would amount to {{[redacted]}}.

In summary, NS possesses market dominance over all the issue chlorine movements because:

- The Charleston, TN and McIntosh, AL origins are captive to NS.
- The Edgemoor, DE destination is captive to NS.
- Trucking and transloading of chlorine is not feasible, practical, or warranted.
- Barging to Edgemoor would require circuitous routes and transfers to and from ocean-going vessels in order to access the Delaware River.
- DuPont's suppliers in Lanes B-78 and 113 do not have barge loading facilities for chlorine. Nor are the destinations barge accessible.
- DuPont lacks barge unloading capability at Edgemoor without significant infrastructure investments. The Delaware CZA inhibits the feasibility of such investment because of the numerous permits that must be obtained, any one of which could block the project. If such permits were granted, the cost of the necessary investments would be nearly {{[redacted]}}.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segments.

[160] See Dup. Op. Workpapers "Chlorine DOME Estimate" and "Chlorine Barge Estimate", both in the "Chlorine" folder.

k. Dimethyl Ether[161]

DuPont has challenged the NS rates for Dimethyl Ether ("DME") from Belle, WV to seven destinations in the following case lanes:

Lane #	Origin	Interchange	Destination	Customer
A-3	Belle, WV	NS-Direct	Danville, IL	KIK
B-1	Belle, WV	Chicago, IL	Anaheim, CA	Diversified CPC
B-23	Belle, WV	Chicago, IL	Lorenzo, IL	Diversified CPC
B-30	Belle, WV	Chicago, IL	San Dimas, CA	Aeropress
B-42	Belle, WV	Meridian, MS	Winford Spur, LA	Aeropress
B-89	Belle, WV	Cincinnati, OH	Gainesville, GA	KIK
B-120	Belle, WV	Pine, IN	Divine, IL	Technical Propellants

Although there are seven destinations, there are only five NS rates, because three lanes are the same NS segment from Belle to an interchange at Chicago. DuPont is captive to NS at the origin in all of these lanes, and also at the destination in Lane A-3.

DME is a flammable, liquefied compressed gas. It is colorless and has only slight odor. If inhaled, DME can affect the heart and central nervous system. It also causes cold burns and frost bite when it contacts the skin. Fire protective clothing with antistatic control is recommended when handling DME. DuPont has provided the MSDS for DME at DuPont Op. Workpaper "DME MSDS" in the "DME" folder. Although not a TIH material, NS classifies DME as a Highly Hazardous Material ("HHM"), which is an intermediate category used by NS to distinguish commodities that are not a TIH material, but that NS considers more than simply hazardous. It is not clear to DuPont, however, exactly what criteria NS uses to distinguish between a hazardous material and a HHM.

DME is a water soluble propellant that is used in consumer products, such as hair spray, which accounts for {[redacted]} of DuPont's DME sales. DuPont originally developed DME for

[161] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and John Leuszler, U.S. Account Manager.

use as a propellant. But, DuPont soon recognized DME as a potential solution to air quality regulations. In North America, DuPont produces DME at just its Belle, WV plant. Belle produces approximately {[redacted]} tons per year.

The transportation of DME is dominated by rail. Only about 5% of all DuPont shipments of DME move by truck. For each of the issue movements, there have been as few as {{[redacted]}} and at most {{[redacted]}} truck shipments in each of the last five years.[162] This captivity is due to a combination of factors, including the nature of the commodity, the nature of the distribution network, and infrastructure constraints.

DuPont cannot ship DME by barge. No water carrier can legally transport DME by barge because the U.S. Coast Guard has not classified DME for inland water transportation.[163] Before anyone could transport DME by barge, the Coast Guard would have to adopt standards and specifications for the construction of such barges, which is a time consuming process. Then, it is highly likely that new barges would have to be built to meet those specifications. For example, most barges in existence today are dedicated to handling just a single commodity, or at most 2-3 commodities, because of narrow specification requirements. DME also must be shipped under pressure and there are no barge terminals with the special equipment required to transload DME, as discussed in the next paragraph.

DME cannot be transloaded except at facilities with specialized equipment. There are very few commercial bulk terminals that can handle compressed liquefied gases, such as DME, because they are both flammable and shipped under high pressure. A bulk terminal also must have special electrical and fire safety classifications in order to handle compressed liquefied gases.

---

[162] See Dup. Op. Workpaper "DME Truck Shipments" in the "DME" folder.

[163] See Dup. Op. Workpaper "Kirby E-mail" in the "DME" folder.

Although some terminals exist that can handle compressed liquefied gases such as propane, those gases do not have the quality control issues associated with transloading DME. Specifically, transloading picks up non-condensable gases (such as nitrogen) from air in the pipes, along with moisture and residue from previous materials. The non-condensable gases can over-pressurize the aerosol cans in which DME is used and the moisture can throw DME out of specification with customer requirements. These quality issues are of less concern for propane, and other compressed liquefied gases, because those gases are burned as fuels. Also for quality control reasons, DME is not transloaded directly between a railcar and a truck; instead, it is transferred from one transportation vessel into an intermediate container (*i.e.* storage tank) before it is loaded into another transportation vessel.

When transloading does occur, it is performed at highly specialized facilities with the equipment and trained personnel to ensure product integrity. In fact, the customer for each issue movement, except KIK in Lanes A-3 and B-89, is such a specialized transload facility, rather than the end-user. The operators of these specialized facilities are intermediate distributors in DuPont's DME supply chain. DuPont sells DME directly to the distributor, which resells it to an end-user.[164] Distributors unload the railcars of DME into storage tanks at the destinations. When they have a sale to an end-user, the distributors will load the DME into trucks or smaller containers for shipment to their customers. Distributors use dedicated trailers for this transportation to avoid cross-contamination with other products.

DuPont sells DME through distributors because its ability to truck directly to customers is severely constrained by the infrastructure at Belle. The Belle facility was designed to use railcars as the primary mode of transportation. Consequently, Belle has only one truck loading

[164] { [redacted] } The distributor, however, not DuPont, has the primary commercial relationship with the end-user.

rack for DME, which also is used to load another issue commodity, anhydrous methylamines. Moreover, it takes 4-6 hours to load a single truck of DME.[165] Approximately 4.5 trucks are required to transport the same volume of DME as a single railcar. Therefore, it would take up to 24 hours to load enough trucks to replace a single railcar of DME. That is far too little capacity to handle even a portion of the issue movements by truck, especially if two or more customers place orders within the same time frame. Nor would that leave any capacity to load the other commodities that also share this truck loading facility at Belle.

The DME truck loading process is long because DME shipments must be pressurized and strict quality controls maintained. As noted above, non-condensable gases, such as nitrogen, are contaminants. Therefore, both the trailer and the hoses must be vented before, during, and after the loading process. The loading and the venting must be carefully balanced. During the loading process, one person must constantly watch the control board and another person must monitor the temperature and pressure.[166] Because the venting process is via a flare, some DME is actually burned during venting. The faster that DME is loaded, the more product that is lost in the flare. In order to minimize this product loss, DME must be loaded at a very measured pace. Once the trailer is loaded, a sample is taken to a laboratory on-site for quality testing, which typically takes 2-3 hours. During this time, the trailer remains hooked up to the loading rack in case multiple samples are needed. Otherwise, the trailers and hoses would have to be vented down to be unhooked, and if a new sample was required, the trailer would get back in line to use the single loading rack and then go through the entire process of re-hooking, venting, testing and unhooking just to obtain the sample.

---

[165] Although the physical loading process takes 3-4 hours, as discussed below, the truck continues to occupy the loading rack until quality testing of the samples are completed.

[166] See Dup. Op. Workpaper "DME Truck Loading Procedures" in the"DME" folder for an overview of the complete loading process.

By using distributors, DuPont minimizes the costs associated with serving customers that purchase DME in truckload quantities or smaller.[167] The distributor provides the storage capacity, dedicated trailers, loading racks, mixing facilities, and personnel to service the end-users. In order to by-pass distributors, and also bypass NS at the Belle origin for the issue movements, DuPont would need to re-create its own distribution terminal at Belle, purchase significantly more dedicated trailers, hire up to eight additional employees, add at least two new truck loading racks, and change its entire approach to marketing DME. Because DuPont does not have adequate space to do this within the existing DME facilities at Belle, DuPont also would need piping and compressors to connect the newly-constructed storage and loading facilities with the existing production facilities.

{{[redacted]}} This is many times greater than DuPont's total freight spend for these commodities.

When DuPont does ship DME by truck from Belle, it uses specialized trailers. DuPont currently owns just three such trailers, which are dedicated solely to DME service. The cost to acquire additional trailers would be approximately $255,000 per trailer, based upon price quotes that DuPont obtained in 2009.[169] DuPont currently uses these trailers to meet the short-term, emergency needs of its customers. DuPont would need {[redacted]} trailers to handle current rail

[167] See Dup. Op. Workpaper "Supply Chain Risk Mitigation Project" at 2, in the "DME" folder.

[168] See Dup. Op. Workpaper "Supply Chain Risk Mitigation Project" at 3, 8, 10, in the "DME" folder.

[169] See Dup. Op. Workpaper "Swoboda e-mail" in the "DME" folder.

volumes. When DuPont does ship DME by truck, it always uses its private motor carrier, Sentinel, because of special handling requirements.

For each of the issue DME movements, the Board must consider market dominance for the transportation to which the challenged rates apply. See 49 U.S.C. § 10707(a). Consequently, when evaluating the reasonableness of bottleneck rates where the connecting carrier rates are in contracts, the Board evaluates market dominance only for transportation over the bottleneck segment. DMIR, 4 STB at 292 (n. 13) and 293.

Because Lane A-3 is the only issue DME movement that is not a bottleneck segment, but involves single-line NS rail transportation, it is the only movement where alternative direct truck transportation from Belle to the destination may be considered. {{[redacted]}}.[171] Moreover, the ability of NS to increase this rate by {[redacted]} on this 400-mile truck movement just since 2009 shows that NS pricing is not constrained by direct truck competition from a higher cost, long-distance truck alternative.

Lanes B-1, 23, 30, 42, 89, and 120 are joint line movements where DuPont has contracts with the connecting carriers. Therefore, alternate transportation must be from Belle to the NS interchange with the connecting carrier.[172] However, that would require a transload at the interchange point, which simply is not an option for the reasons described above. Moreover, because the destination for each lane, except B-89, is itself a distribution terminal where transloading occurs, it would not make sense to transload DME at the rail interchange in order to

---

[170] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[171] The rail volumes for this lane were 83 in 2009 and 69 in 2010. See Dup. Op. Workpaper "2009-10 Rail Shipments" in the "Shipment Data" folder.

[172] Direct trucking to the destination, even if permissible, is not economical for Lanes B-1 and B-30, which are destined to California distribution facilities. For both lanes, the direct truck rate is at least {{[redacted]}} higher than the through rail rate. See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

reach a destination where transloading would occur again. Regardless, as discussed above, DuPont lacks the loading capacity at Belle to originate the issue movements via truck, and the cost of adding that capability far outweighs the potential freight savings from using trucks.

Finally, the rate history for each of the DME issue movements verifies that NS is exercising its market dominance. Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder), shows the change in rates for the issue movements from the later of 2007 or the first DuPont rail movement in each lane. Since 2007, the combined through rate for each DME issue movement has increased between {[redacted]} and the NS local rate for Lane A-3 increased {[redacted]}. Since 2009, when NS and its connecting carriers began pricing joint line movements on a Rule 11 basis, the NS rate has increased between {[redacted]}, while the connecting carrier rates have increased just {{[redacted]}}. Since 2008, the NS rate on Lane B-89 has increased {[redacted]}, while the connecting carrier rate increased just {{[redacted]}}The specific details for each DME issue movement are summarized in the following chart:

Lane #	Through Rate Increase since …	NS Rule 11 Rate or Local Rate Increase Since …	Connecting Carrier Rule 11 Rate Increase Since…	Truck Premium
A-3	NS Direct	{[redacted]}	NS-Direct	{{[redacted]}}
B-1	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-23	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-30	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-42	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-89	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-120	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}

Clearly, most of the through rate increases since 2007 have occurred in the last two years as a consequence of extraordinary NS rate increases. Moreover, these extraordinary NS rate increases, which have dramatically reversed the historical pattern of higher truck rates for several of the DME issue movements, have not been accompanied by any loss of traffic to trucks, which

is strong evidence of market dominance.[173] Furthermore, the fact that NS has increased rates significantly in lanes where its rates already were higher than truck rates (Lanes B-1 and 30) is compelling evidence that NS is not constrained by truck competition.

In summary, NS possesses market dominance over all of the issue DME movements because:

- DuPont is captive to NS at the Belle, WV origin.
- In order to ship by trucks, DuPont would have to modify its distribution network for direct shipping to end-users, rather than distributors, by adding significant infrastructure, equipment, and personnel, at a cost exceeding {{[redacted]}}.
- DME is not authorized by the U.S. Coast Guard for barge transportation and special barges would need to be constructed after the Coast Guard adopted standards.
- DME is a highly hazardous material that requires highly specialized handling procedures and should be handled as little as possible while in transit.
- DME cannot be transloaded, except at facilities that are especially equipped to handle both pressurized and flammable products, and have the training and equipment necessary to preserve product integrity. Very few commercial facilities exist that can or will handle DME. Because the destination for all but two of the issue DME movements is such a specialized facility operated by a distributor that purchases the DME and resells it to end-users, it would not make sense to inject another such facility between DuPont and its customer, even if such a facility existed.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

[173] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

l. Difluorethane[174]

DuPont has challenged the NS rates for Difluoroethane ("DFE") from Gregory, TX to two destinations in the following case lanes:

Lane #	Origin	Interchange	Destination	Customer
B-71	Gregory, TX	New Orleans, LA	Dragon, MS	Diversified CPC
B-73	Gregory, TX	E. St. Louis, IL	Royce, NJ	Aeropress

The DuPont customers are captive to NS at both destinations.

DFE is a propellant gas that is also referred to as "152A." It is flammable, may cause frost bite when contacting skin, and affects both the heart and central nervous system if inhaled. DuPont has provided the MSDS for DFE at DuPont Op. Workpaper "DFE MSDS" in the "DFE" folder. NS classifies DFE as a Highly Hazardous Material ("HHM"), which is an intermediate category used by NS to distinguish commodities that are not a TIH material, but that NS considers more than simply hazardous. It is not clear to DuPont, however, exactly what criteria NS uses to distinguish between a hazardous material and an HHM.

DuPont produces DFE for use in aerosol sprays; it is an alternative to DME, which is another issue commodity. DFE has many of the same commodity characteristics as DME, including product integrity concerns, and a similar distribution network. Thus, the ability to use alternate transportation modes is similarly limited.[175] Most significantly, DFE is a flammable liquefied gas, which means it cannot be transloaded, except at specialized facilities. Like DME, DuPont sells DFE through distributors which operate these specialized terminals for the purpose of storing and reselling DFE in truckload or smaller quantities. Both of the issue DFE movements are to distributors, which are the same distributors that receive issue movements of

[174] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and John Leuszler, U.S. Account Manager.

[175] See Part II-B-2.k. DuPont incorporates its DME evidence into this discussion of DFE, rather than repeat that evidence here.

DME. These distributors use dedicated truck fleets to transport DFE to end-users in order to avoid cross-contamination. Their DFE dedicated fleets are separate from their DME dedicated fleets. Moreover, like DME, all transloading of DFE should occur through an intermediate storage container.

{{ }} This is many times greater than DuPont's total freight spend for these commodities.

The principal difference in the market dominance analysis between DFE and DME is that all of the DFE issue movements are captive to NS at the destination, whereas all of the DME issue movements are captive at the origin. However, this is a distinction without significance because the inability to transload DFE eliminates the only potential form of alternative transportation.

Per the Board's DMIR decision, direct trucking to the customer is not alternative transportation for the movement to which the challenged NS rates apply, which is just the transportation segment from the interchange to the destination. Moreover, even if direct trucking did constitute alternative transportation, the direct trucking rates range from {{ }} higher than the through rail rates.[177]

Finally, the rate history for Lane B-73 reveals extensive abuse of NS market power. Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder), shows the

[176] See Dup. Op. Workpaper "Supply Chain Risk Mitigation Project" at 3, 8, 10, in the "DME" folder.. The title of this document refers to "152A," which is DFE.

[177] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

change in rates for the issue movements from the later of 2007 or the first DuPont rail movement in each lane. Since 2007, the through rate on Lane B-73 has increased {[redacted]}. Since 2009, when NS and UP began pricing on a Rule 11 basis, the NS rate has increased by {[redacted]}, while the UP rate has increased just {{[redacted]}}. These extraordinary NS rate increases have not been accompanied by any loss of traffic to trucks,[178] which is strong evidence of market dominance.[179]

In summary, NS possesses market dominance over all of the issue DFE movements because:

- DuPont is captive to NS at the issue destinations.
- In order to ship by trucks, DuPont would have to modify its distribution network for direct shipping to end-users, rather than distributors, by adding significant infrastructure, equipment, and personnel, at a cost exceeding {{[redacted]}}.
- DFE is not authorized by the U.S. Coast Guard for barge transportation; there are no barge terminals capable of transloading DFE; and no barges currently exist for transporting DFE.
- DFE is a highly hazardous material that requires highly specialized handling procedures and should be handled as little as possible while in transit.
- DFE cannot be transloaded, except at facilities that are especially equipped to handle both pressurized and flammable products, and have the training and equipment necessary to preserve product integrity. Very few commercial facilities exist that can or will handle DFE. Because the destinations for both of the issue DFE movements are such specialized facilities operated by distributors that purchases the DFE and resell it to end-users, it would not make sense to inject another such facility between DuPont and its customer, even if such a facility existed.
- Direct trucking costs from origin to destination are significantly higher than rail costs.
- DMIR precludes the Board from considering direct trucking alternatives because the DuPont plant origin is different from the NS interchange, which is the origin covered by the challenged rates.

---

[178] See Dup. Op. Workpaper "DFE Truck Shipments" in the "DFE" folder.

[179] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

m. Dimethyl Formamide[180]

DuPont has challenged three NS rates for Dimethyl Formamide ("DMF") from Belle, WV to five destinations in the following case lanes:[181]

Lane #	Origin	Interchange	Destination	Customer
B-4	Belle, WV	E. St. Louis, IL	Brownsville, TX	Quimica Delta
B-9	Belle, WV	Streeter, IL	City of Commerce, CA	Univar USA
B-21	Belle, WV	E. St. Louis, IL	Laredo, TX	Quimica Delta
B-29	Belle, WV	Chicago, IL	St. Paul, MN	Univar USA
B-35	Belle, WV	E. St. Louis, IL	Strang, TX	South Coast Terminal

DuPont is captive to NS at the origin in all of these lanes. Lanes B-4 and B-21 are shipments to the same DuPont customer location in Mexico; the different destinations in the above chart reflect different border crossings. The challenged NS rate, however, is the same from Belle to the East St. Louis interchange regardless of the connecting rail segment route.

DMF is a Class 3 flammable hazardous material.[182] It is a highly versatile solvent that is used in applications such as pharmaceuticals, electronics, and films.[183] DMF is hygroscopic, which means that it absorbs moisture from the atmosphere.[184] The less it is handled, the drier it stays. In addition, DMF must be handled and stored using a closed nitrogen system to maintain standard technical grade specification.

DuPont is the last producer of DMF in North America. All of its competition is from foreign imports, especially from Saudi Arabia. DuPont has significant opportunities to sell DMF to purchasers in the Gulf Coast region and Mexico, but needs cooperation from its rail partners to

---

[180] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Jeff Jirak, Global Business Manager Methylamines.

[181] There are just three rates for five movements because three movements are NS bottleneck segments from the same origin to the same rail interchange point.

[182] See Dup. Op. Workpaper "DMF MSDS" in the "DMF" folder.

[183] See Dup. Op. Workpaper "DMF PUSH" at 3-14.

[184] Id. at 3, 32.

compete against imported DMF. {[redacted]}

DuPont produces DMF at Belle, WV, in production campaigns that alternate with the production of monomethyl formamide ("MMF"), which is the issue commodity in Lane B-37. DuPont can produce either DMF or MMF, but not both simultaneously. DuPont has storage facilities for DMF at Belle in order to maintain an inventory during MMF production campaigns. More time is dedicated to DMF production campaigns than to MMF campaigns, because DMF is sold in greater volumes.

DuPont has just a handful of customers that receive DMF by rail, and all of those destinations are in this case. DuPont currently operates a dedicated rail fleet of 22 tank cars to handle this issue traffic. Although the vast majority of DMF is shipped from Belle by truck, trucks are not cost-effective for the issue movements.

Lanes B-4 and B-21 are cross-border shipments to the same customer in Mexico, but over different border crossings. As noted above, {[redacted]} NS has increased its rates so high {[redacted]}[185] that direct trucking from Belle, WV all the way to Mexico actually has become less costly, even though the distance from Belle just to the Mexican border is 1500 miles. Although DuPont tried shipping DMF to this customer by truck, it could not compete and the customer did not like receiving trucks.[186] This is a perfect example of NS pricing up to a much higher cost alternative, not to an effective competitive alternative. See DuPont (Plastics), slip op. at 7-8 ("A carrier

[185] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

[186] See Dup. Op. Workpaper "DMF Truck Shipments" in the "DMF" folder.

possessing market power might set its rates so high that it would begin to lose business to a higher-cost alternative (such as a trucking company)."). See also FMC, 4 STB at 718.

Similarly, trucks are not competitive with rail for transportation of DMF on the remaining issue movements. Lane B-9 has a truck rate that is {{[redacted]}} higher than rail; Lane B-29 has a truck rate that is {{[redacted]}} higher; and Lane B-35 has a truck rate that is {{[redacted]}} higher.[187] This differential is substantial even after NS rate increases of {[redacted]} since just 2009.[188] Finally, per the Board's DMIR decision, directly trucking the issue movements from the Belle origin to the various destinations is not alternative transportation for the movements to which the challenged NS rates apply, which is from Belle to various interchanges with connecting carriers. DMIR, 4 STB at 292 (n. 13) and 293.

Transloading around the NS at Belle is not a practical alternative. {{[redacted]}}[189] The impracticality of transloading also is evidenced by the fact that, as discussed above, DuPont attempted to truck directly to its customer in Mexico, rather than transload, when NS rates for Lanes B-4 and 21 first became non-competitive, despite a distance of more than 1500 miles just to reach the Mexican border.

Furthermore, transloading would require DuPont to load four trucks into a single railcar. Where it takes 2-3 hours to load/unload a single truck (depending on whether using a pressure or pump transfer system), a single railcar requires just 4 hours. Thus, it would take 8-12 hours to load four trucks with DMF at Belle and another 8-12 hours to transload DMF from those four

---

[187] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[188] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder). While NS has taken these sizeable rate increases since 2009, the connecting carriers have increased their rate factors by {{[redacted]}}.

[189] {{[redacted]}}

trucks into a single railcar, for a total of 16-24 hours. Contrast that with just 4 hours to directly load a single railcar.

Moreover, the bulk terminal must have the proper pumps and a nitrogen blanketing system.[190] Because of the hygroscopic nature of DMF, transloading is difficult during periods of high humidity and precipitation, especially without a closed nitrogen system. This means that trucks could incur demurrage charges at a bulk terminal if they are unable to promptly discharge their DMF loads and that customer deliveries could be delayed. Furthermore, because a key raw material in DMF is anhydrous di-methylamine, DMF has a fish-like odor that makes transloading undesirable.[191]

Finally, barge is not an option because Belle does not have a transfer system or storage capacity to load barges with DMF. Nor would it make economic sense for DuPont to invest over {{[redacted]}} to build that infrastructure for the issue traffic.[192] The smallest barges hold approximately 2.2 million pounds. The largest volume issue movement, Lane B-29, would fill approximately {[redacted]} barges annually. But the customer in this lane is in St. Paul, MN, which cannot receive barges. Nor does the customer have the storage capacity to receive a full barge at one time. The same facts are true of the other issue destinations that purchase substantially smaller volumes of DMF from DuPont. Therefore, in addition to building additional infrastructure at Belle to load barges, DuPont also would have to invest in barge terminal facilities for unloading the barges into storage tanks, and holding the DMF until purchased in smaller volumes by each case customer.

---

[190] This equipment includes a stainless steel pump (centrifugal or diaphragm), Teflon or EPR gaskets and elastomers, Teflon lined or Stainless Steel hoses, and a Nitrogen system to prevent oxygen from entering the container during transfer operation.

[191] See the discussion of Anhydrous Methylamines in Part II-B-2.p.

[192] See Dup. Op. Workpaper "Barge-Truck Infrastructure Estimates" in the "AHM" folder.

After quite a lengthy search, DuPont has identified a barge terminal, operated by {[redacted]} in Joliet, IL, that is able and willing to handle DMF and that arguably might satisfy the DMIR requirements for the bottleneck segments in Lanes B-9 and 29. NS interchanges the Lane B-9 issue movement with BNSF at Streator, IL, and the B-29 issue movement with BNSF at Chicago, IL. The {[redacted]} terminal is served by BNSF and, because it is about 60 miles, in opposite directions, from both Chicago and Streator, it arguably could be sufficiently close to both interchanges to be considered the same destination as the issue movements.[193] Also, the {[redacted]} terminal is the only location where the smaller volume on Lane B-9 can be combined with the larger volume on Lane B-29 to justify even considering a barge alternative for Lane B-9.

DuPont has obtained rates from {[redacted]}, and BNSF for handling DMF over Lanes B-9 and 29. The round-trip barge rate from Belle to Joliet would be {{[redacted]}}, which is {{[redacted]}} per net ton.[194] {[redacted]} has provided DuPont with a "rough estimate" for handling DMF at Joliet.[195] The storage tank rental would be {{[redacted]}} and there would be a security surcharge of {{[redacted]}} per year. Assuming 3 barge shipments annually at 1250 tons per barge, that equates to {{[redacted]}} per net ton, plus additional services that would be provided {{[redacted]}}, which cannot be reduced to a predictable value per net ton because DuPont has no actual experience with barging or transloading DMF. Because the interchange locations with the connecting rail carriers are not exactly the same, the BNSF rates also are different, which is a significant reason why the Board

---

[193] By presenting cost evidence of this barge alternative for Lanes B-9 and 29, DuPont does not concede that a rail-barge interchange that is 60 miles from the actual destination of the issue movement comports with DMIR. DuPont submits that it does not because, as explained below, the connecting carrier's rate is different.

[194] {{[redacted]}}

[195] {{[redacted]}}

should reject this alternative under the DMIR precedent. The BNSF rate is {{[redacted]}} on Lane B-9, and {{[redacted]}} on Lane B-29, which translates to {{[redacted]}} per net ton, respectively, based upon 96 tons per railcar.[196]

The combined barge and rail rate for Lane B-9 is {{[redacted]}} per net ton, which is {{[redacted]}} less than the through rail rate of {{[redacted]}}.[197] The combined barge and rail rate for Lane B-29 is {{[redacted]}} per net ton, which also is {{[redacted]}} less than the through rail rate of {{[redacted]}}.[198] Although the rates for a barge-rail transload alternative are below the through rail rates, this is before considering the {{[redacted]}} of infrastructure investments required in order to load DMF into barges at the Belle, WV origin or the various pass-through terminal costs, {{[redacted]}}, that cannot be adequately determined because DuPont has no actual experience with barging or transloading DMF.

In summary, NS possesses market dominance over all of the issue DMF movements because:

- DuPont is captive to NS at the Belle, WV origin.
- Direct trucking costs are prohibitively expensive.
- Transloading from trucks into railcars is not practical because of the much longer loading times, the need for specialized equipment, the fish-like odor, and the lack of a bulk terminal near Belle that will handle DMF.
- In order to load barges at Belle, DuPont would have to construct {{[redacted]}} of infrastructure.

---

[196] See Dup. Op. Workpaper "BNSF Rates" in the "DMF" folder. The rate per net ton is based on a 96 ton railcar capacity.

[197] {{[redacted]}}. The through rail rate is the 12/1/11 rate in Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

[198] {{[redacted]}}. The through rail rate is the 12/1/11 rate in Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

- Only when combined, Lanes B-9 and 29 have sufficient volume to justify consideration of a barge alternative. But because the combined barge-rail rates are just {{[redacted]}} below the through rail rate before considering the additional infrastructure investment required at Belle and the various pass-through terminal costs {{[redacted]}}, the barge-rail alternative is not an effective constraint upon NS rates.

- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

n. Dimethyl Sulfate[199]

DuPont has challenged two NS rates for Dimethyl Sulfate ("DMS") from Belle, WV to three destinations in the following case lanes:[200]

Lane #	Origin	Interchange	Destination	Customer
B-20	Belle, WV	Chicago, IL	Janesville, WI	Evonik
B-22	Belle, WV	E. St. Louis, IL	Laredo, TX	Quimikao
B-27	Belle, WV	Chicago, IL	Millsdale, IL	Stepan Co.

DuPont is captive to NS at the origin in all of these lanes. The destination in Lane B-22 is the border crossing for rail shipments ultimately destined to Guadalajara, Mexico. All three of the case lane customers use DMS to produce fabric softener. DuPont, which is the only producer of DMS in North America, produces {[redacted]} million pounds annually.

DMS is a Class 6.1, Subclass 8, TIH material.[201] It is one of the most hazardous materials that DuPont produces at Belle. According to the MSDS,:

> This compound is extremely hazardous because of its lack of warning properties and delayed biological effects. It may cause burns of the skin, eyes, and mucous membranes. Eye damage may be permanent. Effects may be delayed occurring hours after exposure. Skin permeation may occur in toxic amounts. Both the fumes and the liquid may produce severe irritation. Inhalation may cause irritation of the nose, throat and lungs. Death may occur from overexposure. Prolonged exposures may cause liver and kidney effects. DuPont controls this compound as a potential carcinogen.[202]

Its hazardous properties are compounded by the fact that DMS has no odor, looks like water, and has analgesic effects, which means that someone may not know they have been exposed until

---

[199] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Jeff Jirak, Global Business Manager Methylamines.

[200] There are just two rates for three movements because two of the movements are NS bottleneck segments from the same origin to the same interchange point.

[201] See Dup. Op. Workpaper "DMS MSDS" and "DMS PUSH" at 16, both in the "DMS" folder.

[202] Id. at 2.

several hours after the fact.[203] Therefore, DMS must be handled with chemical suits, hoods, and breathing equipment.[204]

Because of these significant hazards, DuPont has special loading facilities for DMS at Belle. All DMS is handled in a secured area with restricted access. There is one truck loading spot and one railcar loading spot in a covered loading area. DuPont can load a truck in approximately 2 hours and a railcar in about 8 hours.

The U.S. Department of Transportation only permits DMS to be transported by truck pursuant to a special permit.[205] When transporting by truck, DuPont uses highly specialized dedicated equipment. The type MC-312, which are currently designated as DOT-412, trailers are stainless steel, contain internal pumps, have special electrical systems, and must carry decontamination material and breathing apparatus. The cost to purchase each trailer is approximately $245,000, plus $25,000 for the internal pump.[206] DuPont currently owns five such trailers that it uses to transport DMS. All bulk truck transportation of DMS is performed by Sentinel Transportation using team drivers, in order to ensure adequate safety precautions. Sentinel is a private motor carrier, co-owned by DuPont and ConocoPhillips, that provides trucking services only for them.

DuPont conducts routine safety inspections of its customers' facilities to ensure that they are trained and equipped to handle DMS safely. Before DuPont will ship DMS to a customer by truck, it verifies that the customer has the ability to receive DMS by truck.[207] Stepan Co., in

---

[203] See Dup. Op. Workpaper "DMS MSDS" at 2, and "DMS PUSH" at 9, in the "DMS" folder.

[204] See Dup. Op. Workpaper "DMS MSDS" at 6-7, and "DMS PUSH" at 10-11, in the "DMS" folder.

[205] See Dup. Op. Workpaper "DMS Special Permit" in the "DMS" folder.

[206] See Dup. Op. Workpaper "DMS Trailer Quote" in the "DMS" folder.

[207] See Dup. Op. Workpaper "DMS PUSH" at 5, 21-22, in the "DMS" folder.

Lane B-27, cannot unload trucks.[208] This is validated by the fact that this customer has never received a single truck shipment from DuPont.[209] While the other two case lane customers are capable of unloading trucks, {{[redacted]}}[210] Regardless, direct trucking to the customer is not alternate transportation for the movement to which the challenged NS rates apply, which is transportation from the origin to the interchange with connecting contract rail carriers. DMIR, 4 STB at 292 (n. 13) and 293.

Even if the DMIR constraint did not apply, direct trucking rates are not competitive constraints upon NS rail rates despite being lower than rail rates for two of the three issue movements. As noted above, the customer in Lane B-27 cannot receive trucks despite a {{[redacted]}} lower truck rate.[211] The truck rate in Lane B-22 is {{[redacted]}} higher than the rail rate.[212] Finally, although the direct truck rate is {{[redacted]}} lower in Lane B-20, that is for a 579-mile road movement of this TIH commodity that is clearly a higher cost alternative because of the distance.[213]

Indeed, to the extent that there are alternative transportation options to NS that are comparably-priced or even less costly, the most effective way for NS to avoid its common carrier obligation is to price itself out of the transportation market for TIH materials. That appears to be what NS is doing by increasing its rates in these lanes by {[redacted]} since just 2009, while the

---

[208] See Dup. Op. Workpaper "Stepan e-mail" in the "DMS" folder.

[209] See Dup. Op. Workpaper "DMS Truck Shipments" in the "DMS" folder. Although this workpaper shows 1 truck each in January 2007 and March 2008, those were shipments of portable tanks that were miscoded as tank truck shipments.

[210] {{[redacted]}}

[211] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[212] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[213] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

connecting carriers on these routes have increased their rate factors by just {{[redacted]}}.[214] The specific details for each DMS issue movement are summarized in the following chart:

Lane #	Through Rate Increase Since …	NS Rule 11 Rate Increase Since …	Connecting Carrier Rule 11 Rate Increase Since…	Truck Premium
B-20	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-22	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}
B-27	{{[redacted]}}	{[redacted]}	{{[redacted]}}	{{[redacted]}}

Clearly, most of the through rate increases since 2007 have occurred in the last two years as a consequence of extraordinary NS rate increases. These extraordinary NS rate increases, which have reversed the historical relationship between truck and rail rates by making trucks less expensive than rail in Lanes B-20 and B-27, have not been accompanied by any loss of traffic to trucks, which is strong evidence of market dominance.[215] Furthermore, the fact that truck rates are still {{[redacted]}} higher, after NS has increased its rate in Lane B-22 by {[redacted]} since 2009, is compelling evidence that NS does not feel constrained by truck competition.

Although DuPont ships DMS by both truck and rail, it never transloads DMS, because of the handling requirements and the consequences of a spill. Moreover, there are no non-NS bulk terminals that will transload TIH commodities anywhere in the vicinity of Belle.[216] Therefore, transloading around NS at the origin is not an option.

Finally, barge is not an option because DuPont does not have the infrastructure (*e.g.* piping and storage tanks) to load barges. Also, DuPont would have to obtain U.S. Coast Guard review and approval before transporting by barge since DMS is not currently approved for barge

---

[214] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

[215] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

[216] {{[redacted]}}

transportation. Moreover, because the issue destinations are not on navigable waterways, barges would have to be transloaded. Because DMS is not currently barged, there are no terminals equipped for transloading and it is highly questionable whether any terminal would be willing to do so for the same reasons bulk truck terminals will not transload DMS. Furthermore, because DMS is a TIH material, DuPont would not transload it.

In summary, NS possesses market dominance over all of the issue DMS movements because:

- DuPont is captive to NS at the Belle, WV origin.
- DMS is a TIH material.
- The case customers either cannot receive bulk truck shipments or prefer rail shipments because of the hazardous nature of DMS.
- Transloading from trucks or barges does not occur because of the hazardous nature of DMS and the lack of bulk terminals able or willing to transload it.
- Truck rates are much higher for Lane B-22.
- Recent substantial rate increases by NS indicate that it is pricing up to higher cost alternatives in all three lanes.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

o. Lime[217]

DuPont has challenged the NS rate for lime shipments on Lane B-96 from Danville, Virginia to Ampthill, Virginia. NS transports the lime from Danville to Petersburg, Virginia, where it interchanges the railcars with CSX Transportation, Inc. ("CSXT"), which delivers the lime to Ampthill. DuPont is captive to NS at the Danville origin.

Lime is calcium hydroxide {{[redacted]}}

Lime has multiple characteristics that pose transportation challenges. First, it is hygroscopic and will calcify and bridge when it absorbs water, like concrete. Once lime calcifies and bridges, it must be chiseled free of the container in which it sits. Second, packing occurs naturally during shipment, even outside of the presence of moisture. If dense packing occurs, special equipment is necessary to unload the lime. DuPont does not have the equipment necessary to unload calcified or densely-packed lime {{[redacted]}}. {{[redacted]}}

[217] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Michael Faciszewski, Contract Manufacturing Manager.

[218] {{[redacted]}}

[redacted]}}, depending on the severity of the calcification and packing, the lime may no longer meet the specifications for its grade and may not be useable in the applications for which it was produced.

DuPont's lime is produced at Danville {{[redacted]}}. Upon production, the lime is placed into a storage silo that holds approximately {{[redacted]}}, or the capacity of {{[redacted]}}. {{[redacted]}}.

From the storage silo, the lime is conveyed {{[redacted]}}, to the loading facilities. The loading facilities comprise {{[redacted]}}. Although the origin facility is not designed for loading trucks, in emergency situations, trucks can be backed through the site and into the railcar loading spot, where one railcar loading silo is specially configured to also load trucks. DuPont has engaged Sentinel Transportation {{[redacted]}} and provide transportation for the infrequent emergency truck shipment. Truck loading at the silo that is specially-configured for trucks takes approximately {{[redacted]}}. {{[redacted]}} cannot increase the volume of trucks that could be loaded at the facility by also configuring the other railcar loading silos for use with trucks. For a truck to load at any one of the silos, it must park in an orientation that places it underneath all of the silos, blocking other trucks from loading simultaneously. Even if simultaneous truck loading

could occur at the origin, the facility is too small to accommodate additional truck traffic, which must back through the site to the loading spot. Neither can DuPont require {{[redacted]}} to make the necessary modifications to support simultaneous truck loading.

Truck. Trucks are impractical for the movement of lime on Lane B-96. Direct trucking is impractical because the destination, Ampthill, has limited storage capacity and must store its lime inventory in the bulk containers in which it was shipped. DuPont strives to maintain {{[redacted]}} of inventory at Ampthill and unloads a railcar {{[redacted]}} on average. However, DuPont's Ampthill facility only has {{[redacted]}} storage for {[redacted]} of lime, {{[redacted]}} to support its daily consumption of approximately {{[redacted]}},[219] of lime per day. To store the remaining {{[redacted]}} of inventory, DuPont uses its dedicated fleet of {{[redacted]}} railcars that operate in rotation over Lane B-96.[220] If DuPont were to use trailers for storage, it would need to maintain a fleet of approximately {{[redacted]}} trailers in addition to those used for transporting the lime. At a lease cost of {{[redacted]}} per trailer per month,[221] that would amount to {{[redacted]}} per month. Considering that DuPont owns its railcars outright, using trailers for storage would cost a significant premium over railcars and strand DuPont's railcar investment.

Trucking to Ampthill also suffers from other obstacles. DuPont cannot truck {{[redacted]}}. Reconfiguration would require alterations to the process equipment already in place and would cost {{[redacted]

[219] The average truckload of lime is {{[redacted]}}. See Dup. Op. Workpaper "Direct Truck Costs" in the "Lime" folder.

[220] In 2008, 2009 and 2010, DuPont shipped just {{[redacted]}}, respectively, over Lane B-96, which is {{[redacted]}} of the total volume transported in each year. Dup. Op. Workpaper "Lime Truck Shipments" in the "Lime" folder.

[221] Dup. Op. Workpaper "Sentinel Transportation Contract Exhibit B," at 6, in "Lime" folder.

[redacted]}}. In addition, {{[redacted]}} would need to upgrade its {{[redacted]}}. As mentioned above, DuPont cannot {{[redacted]}} make this modification. Moreover, direct trucking to Ampthill is not alternative transportation per the Board's DMIR decision because the challenged NS rate applies only from the Danville origin to the interchange point.

It is also impractical to truck from the Danville origin because the facility does not have the infrastructure to support a switch to trucks. As previously mentioned, it takes approximately {{[redacted]}} to load a truck and trucks must be backed into the facility. Further, dedicated truck loading spots do not exist—the truck will have to be loaded at a converted rail spot. Also, a switch to trucks would require {{[redacted]}} to upgrade its facilities to load trucks; and require DuPont to strand its railcar investment and make a new investment in four trailers for every railcar.

Transloading. Even if truck loading at {{[redacted]}} was feasible, the lime would have to be transloaded to CSX for delivery to Ampthill in railcars, since Ampthill has minimal storage capability. {{[redacted]}}. Thus, any trucking on Lane B-96 is limited to emergency bulk truck shipments.

The emergency nature of truck shipments and the impracticality of transporting the lime by truck are illustrated by the lack of truck movements of the lime. From 2006-2010, DuPont moved {[redacted]} lime shipments, of which only {{[redacted]}}.[222]

[222] Dup. Op. Workpaper "Lime Truck Shipments" in the "Lime" folder.

In summary, NS possesses market dominance over the lime movement because:

- DuPont is captive to NS at the Danville, Virginia origin.
- DuPont's supplier would have to modify its infrastructure at its Danville facility to support trucks.
- Lime cannot be transloaded, {{ [redacted] }}.
- DuPont's Ampthill facility does not have adequate fixed-storage; the cost of storing lime at Ampthill in bulk trucks exceeds the cost of storing the lime in railcars; and the cost of building fixed storage at Ampthill exceeds the cost of storing the lime in railcars.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

p. Anhydrous Methylamines[223]

DuPont has challenged eight NS rates for transporting Anhydrous Methylamines ("AHM") from Belle, WV to 19 destinations in the following case lanes:[224]

Lane #	Origin	Interchange	Destination	Customer
A-9	Belle, WV	NS-Direct	Wyandotte, MI	Taminco
B-5	Belle, WV	Chicago, IL	Burley, ID	Tessenderlo Kerley
B-6	Belle, WV	E. St. Louis, IL	Cadet, MO	Buckman Labs
B-10	Belle, WV	E. St. Louis, IL	Youens (Conroe), TX	Huntsman
B-11	Belle, WV	E. St. Louis, IL	Corsicana, TX	Corsicana Technologies
B-14	Belle, WV	E. St. Louis, IL	Ethyl, AR	Albemarle
B-15	Belle, WV	Chicago, IL	Finley, WA	GemChem f/k/a Amvac
B-18	Belle, WV	New Orleans, LA	Garyville, LA	Nalco Company
B-19	Belle, WV	New Orleans, LA	Geismar, LA	BASF
B-24	Belle, WV	Chicago, IL	Los Angeles, CA	GemChem f/k/a Amvac
B-32	Belle, WV	New Orleans, LA	St. Gabriel, LA	Taminco
B-36	Belle, WV	E. St. Louis, IL	Strang, TX	DuPont (internal movement)
B-39	Belle, WV	E. St. Louis, IL	Texas City, TX	Int'l Specialty Products
B-40	Belle, WV	E. St. Louis, IL	Verona, MO	BCP Ingredients
B-41	Belle, WV	Kansas City, MO	W. Memphis, AR	BASF
B-43	Belle, WV	E. St. Louis, IL	Wichita, KS	Air Products
B-90	Belle, WV	Atlanta, GA	Port Bienville, MS	Polychemie, Inc.
B-91	Belle, WV	Cincinnati, OH	Theodore, AL	SKW Quab Chemicals
B-121	Belle, WV	Logansport, IN	Mapleton, IL	Lonza, Inc.

DuPont is captive to NS at the origin for each of these movements, and also at the destination for Lane A-9.

AHMs are a Class 2.1 flammable gas.[225] They are both corrosive and flammable and they have a very strong fish-like odor.[226] Although AHMs are not a TIH material, NS classifies them as a Highly Hazardous Material ("HHM"), which is an intermediate category used by NS to

---

[223] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Jeff Jirak, Global Business Manager Methylamines.

[224] Although there are 19 lanes, there are only eight challenged rates because the NS segment for many of the movements is from the same origin to the same interchange point.

[225] See Dup. Op. Workpapers "AHM MSDS" and "Methylamines Handling and Storage" at 5, both in the "AHMs" folder.

[226] See Dup. Op. Workpaper "Methylamines Handling and Storage" at 4, in the "AHMs" folder.

distinguish commodities that are not a TIH material, but that NS considers more than simply hazardous. It is not clear to DuPont, however, exactly what criteria NS uses to distinguish between a hazardous material and a HHM.

DuPont produces mono-, di-, and tri-methylamines, which all have the same transportation characteristics and STCC, and for which NS applies the same rate. DuPont addresses market dominance for all three anhydrous methylamines under the single category of AHM. AHMs are used in herbicides, pesticides, solvents, explosives, and pharmaceuticals.[227] AHMs are interchangeable with another case commodity, Aqueous Methylamines, with the only difference being that aqueous methylamines are a diluted form of AHMs.

DuPont's Belle facility is one of just three domestic producers of both anhydrous and aqueous methylamines. The other producers are Taminco at Pensacola, FL, and BASF at Geismar, LA. The product also is imported into the U.S. from Mexico and China.

For transportation, AHM's are compressed into clear, water-white liquid and shipped in pressurized railcars, tank trucks, or ISO tanks. Before DuPont will ship AHMs to a customer by truck or ISO tank, however, DuPont verifies that the customer has the ability to receive trucks. In 2010, approximately {[redacted]} was shipped via rail and just {[redacted]} by truck. Thus, trucks accounted for just 15% of total shipments in a year with an unusually large number of truck shipments.[228] Moreover, nearly half of those truck shipments

[227] See Dup. Op. Workpaper "Methylamines Handling and Storage" at 2, in the "AHMs" folder.

[228] In 2010, DuPont experienced a 23% spike in AHM truck shipments from Belle due to production shutdowns caused by four separate force majeure events: (1) barge supply deliveries of raw materials were disrupted by flooding; (2) DuPont had an accidental release of methanol into the river; (3) steam issues and thunderstorms disrupted production in the Summer; and (4) a fatality at the plant resulted in a month-long shut down to conduct safety reviews. Because of these production disruptions, DuPont had to ration its production across its customer base, which entailed shipping to customers on an expedited basis using faster truck service whenever a customer was threatened with a plant shut down due to an AHM shortage.

were to a single destination, {[redacted]}, which does not have rail access.[229] None of the DuPont truck shipments are transloaded; they are all either direct rail or direct truck shipments.

DuPont has dedicated fleets of 124 railcars and 12 tank trailers for AHM shipments. DuPont will not use trailers provided by commercial motor carriers. Both the rail and motor carrier equipment is special pressurized tanks. DuPont uses DOT specification 105 and 112 tank cars with thermal protection and DOT specification MC-330 and 331 tank trucks with special gaskets and safety systems to meet HM-225A requirements.[230] Due to the hazardous traits of AHMs and equipment constraints, DuPont uses team drivers for all AHM truck shipments.

Direct Trucking. The magnitude of NS rate increases over the past few years has made direct trucking cheaper than rail for 14 of the 19 issue AHM movements.[231] In other words, NS is pricing up to a higher cost competitor. The single most significant illustration of this fact is the distance at which trucks are less expensive for the issue movements. Except for Lane A-9 (which is 344 miles), the distance for all of the lower priced AHM truck movements range from a low of 520 up to 1058 road miles.[232] Indeed, 6 of the 14 AHM movements with lower truck rates involve distances above 900 miles.[233] Just as telling, all 5 of the AHM movements with higher truck prices exceed 1100 road miles, and two of those lanes have truck rates that are higher by less than 2%.[234] In other words, NS has priced the issue AHM movements so high that there is a clearly delineated threshold of 1100 miles in the NS rate structure where trucks are the

---

[229] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHMs" folder.

[230] See Dup. Op. Workpaper "Methylamines Handling and Storage" at 5, in the "AHMs" folder.

[231] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder). Those are Lanes A-9 and B-6, B-11, 14, 18, 19, 32, 36, 40, 41, 43, 90, 91, and 121.

[232] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder). Those are Lanes B-6, 11, 14, 18, 19, 32, 36, 40, 41, 43, 90, 91, and 120.

[233] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder). Those are Lanes B-11, 18, 19, 32, 36, and 43.

[234] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder). Those are Lanes B-5, 10, 15, 24, and 39.

lower priced option. It simply is not credible for NS to claim that truck shipments, which require more labor and equipment and have higher fuel costs than rail, are an effective competitive alternative to rail over such long distances.

The anomaly of lower truck rates is a recent phenomenon attributable to very significant NS rate increases over just the past few years. Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder), shows the change in rates for the issue movements from the later of 2007 or the first DuPont rail movement in each lane. Since 2007, the combined through rate for all but one AHM issue movement has increased between {{ }}, with 13 of those lanes experiencing increases greater than 100%. Since 2009, when NS and its connecting carriers began pricing on a Rule 11 basis, the NS rate has increased between { } on all but two lanes, while the connecting carrier rates have increased by no more than {{ }}. The specific details for each AHM issue movement are summarized in the following chart:

Lane #	Through Rate Increase Since …	NS Rate Increase Since …	Connecting Carrier Rule 11 Rate Increase Since…	Truck Premium
A-9	NS Direct	{ }	NS-Direct	{{ }}
B-5	{{ }}	{ }	{{ }}	{{ }}
B-6	{{ }}	{ }	{{ }}	{{ }}
B-10	{{ }}	{ }	{{ }}	{{ }}
B-11	{{ }}	{ }	{{ }}	{{ }}
B-14	{{ }}	{ }	{{ }}	{{ }}
B-15	{{ }}	{ }	{{ }}	{{ }}
B-18	{{ }}	{ }	{{ }}	{{ }}
B-19	{{ }}	{ }	{{ }}	{{ }}
B-24	{{ }}	{ }	{{ }}	{{ }}
B-32	{{ }}	{ }	{{ }}	{{ }}
B-36	{{ }}	{ }	{{ }}	{{ }}
B-39	{{ }}	{ }	{{ }}	{{ }}
B-40	{{ }}	{ }	{{ }}	{{ }}
B-41	{{ }}	{ }	{{ }}	{{ }}
B-43	{{ }}	{ }	{{ }}	{{ }}
B-90	{{ }}	{ }	{{ }}	{{ }}
B-91	{{ }}	{ }	{{ }}	{{ }}
B-121	{{ }}	{ }	{{ }}	{{ }}

Clearly, most of the through rate increases since 2007 have occurred in the last two years as a consequence of extraordinary NS rate increases. These extraordinary NS rate increases, which have reversed the historical relationship of truck and rail rates by making trucks less expensive than rail for most of the AHM issue movements, have not been accompanied by any loss of traffic to trucks, which is strong evidence of market dominance.[235] Furthermore, the fact that NS has increased rates significantly in lanes where its rates already were higher than truck rates is a strong indicator that NS does not feel constrained by truck competition.

Trucks have not been used significantly, if at all, for any of the issue AHM movements. , For each year from 2006-2010, 13 of the 19 issue destinations did not receive a single truck of AHM from DuPont.[236] The other 6 issue destinations received *de minimis* trucks, consistent with a few emergency movements where rail could not deliver the product fast enough for the customers' needs.

Regardless of the foregoing facts, direct trucking is not an option for any of the issue AHM movements, except Lane A-9, because DuPont has challenged NS bottleneck segment rates from Belle to various interchange points. Pursuant to the Board's decision in DMIR, 4 STB at 292 (n. 13) and 293, direct trucking to the customer is not alternate transportation for the movements to which the challenged NS rates apply.

Finally, direct trucking is not feasible due to the lack of truck loading capacity at Belle, as described in the following discussion of transloading.

---

[235] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

[236] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHM" folder.

Transloading. In order to by-pass NS at the Belle origin for each issue movement of AHMs, DuPont would have to load its AHMs into trucks at Belle and transport them to a nearby bulk terminal on another railroad. There are two principal reasons why this is not a viable option. Belle lacks the capacity to load sufficient trucks and there is no bulk terminal in the vicinity of Belle that is able or willing to transload AHMs.

The principal and dispositive factor is the absence of any bulk terminal near Belle that would handle AHMs.[237] Indeed, DuPont is not aware of any bulk terminal in the country that will transload AHMs. A bulk terminal must provide a closed transfer system and a large capacity spill recovery system to ensure that none of the product escapes. During the transload process, the tank also must be vented or scrubbed. Even with these precautions, the product will omit a strong fish-like odor that is environmentally unacceptable.[238] The extensive precautions and requirements associated with handling AHMs and the noxious odor are a major reason why commercial bulk terminals will not transload these commodities.[239] This is especially true if the terminal is located near any population center.

DuPont truck shipments of AHMs to Moses, WA exemplify the extreme challenge with transloading. This is a customer without rail access. Therefore, DuPont currently trucks AHMs to this customer across the country from Belle, WV, because there simply is no other alternative. These truck shipments account for nearly half of all DuPont's truck shipments of AHM. In an effort to reduce transportation costs, DuPont searched in vain for a transloading facility that

---

[237] {{ [redacted] }}

[238] In fact, anhydrous tri-methylamine is so pungent that just two drops on the 50-yard line of a major football stadium could be smelled by everyone in the stadium. A DuPont employee was ordered to leave a commercial aircraft after spending the day around anhydrous tri-methylamine because his clothes reeked of the commodity. Many DuPont employees have complained that they had to throw away clothing after exposure to AHMs.

[239] See Dup. Op. Workpaper "Methylamines Handling and Storage" at 5-16, in the "AHM" folder, for an overview of the precautions and requirements associated with handling AHMs.

would permit DuPont to rail most of the distance to Moses and then truck from the bulk terminal to this customer.[240] Because DuPont could not locate such a bulk terminal that would or could handle AHMs, DuPont was forced to continue trucking directly from Belle.

Even if a bulk terminal would handle AHMs, Belle has only one truck loading rack for AHMs that also is used to load dimethyl ether ("DME"), which is another issue commodity in this proceeding. The total time to load a truck with AHMs is 4-6 hours. Although the actual transfer of product requires 2.5-3.0 hours, there is a significant amount of pre- and post-loading work that occurs while the truck occupies the loading bay. On average, Belle can load five trucks in 24 hours, roughly the equivalent volume of a single railcar. But this loading bay also is shared with DME, which has similar loading requirements, as explained in DuPont's DME market dominance evidence.

At just 38,000 pounds per truck, DuPont's {[redacted]} million pounds of AHM rail shipments in 2010 would have required almost {[redacted]} additional truck shipments to handle. That equals over {[redacted]} additional trucks of AHMs per day, every day of the year. Therefore, DuPont would have to construct an additional loading rack for AHMs, including a truck scale and concrete pads, at a cost of approximately {{[redacted]}}.[241] DuPont also would need to hire at least 5 additional personnel to operate the new truck loading facility 24/7 at an annual cost of {{[redacted]}} per operator.[242] Finally, DuPont would need to purchase approximately {{[redacted]}} additional trucks for its dedicated fleet at a cost of {{[redacted]}} per truck.[243]

---

[240] See Dup. Op. Workpaper "Moses Transload" in the "AHMs" folder.

[241] See Dup. Op. Workpaper "BargeTruck Infrastructure Estimates" in the "AHMs" folder. This is based upon recent experience when DuPont upgraded an existing truck loading bay at Belle.

[242] See Dup. Op. Workpaper "Personnel cost" in the "AHMs" folder.

[243] See Dup. Op. Workpaper "AHM Truck Purchase Estimate" in the "AHMs" folder.

Barge. DuPont does not ship AHMs by barge because Belle does not have the infrastructure to load AHMs into barges. Specifically, it lacks both piping and storage. The capacity of even the smallest barge is approximately 2.2 million pounds. Belle has just {{[redacted]}} pounds of storage for anhydrous mono-methylamine; {{[redacted]}} pounds of storage for anhydrous dimethylamine; and less than {{[redacted]}} pounds of storage for anhydrous trimethylamine. This is sufficient to handle current truck and rail volumes, with supplemental storage in railcars, but it is woefully inadequate to store AHMs for barge shipments. The cost of constructing additional storage tanks and piping would be approximately {{[redacted]}}.[244]

Even after adding the necessary infrastructure at Belle, DuPont still must find a way to get AHMs from the barges to the ultimate destinations, which are not barge accessible. None of DuPont's customers purchase AHMs in barge-sized volumes. While some may purchase the equivalent of a barge over the course of a year, they do not receive barge quantities in single shipments, nor would they have the storage capacity in which to unload an entire barge at once. Therefore, DuPont would have to transfer the AHMs from barges into tanks at barge terminals, where DuPont would have to store the AHMs until its customers order smaller quantities for either rail or truck delivery. This adds even more costs to barge transportation and requires DuPont to carry an inventory of AHMs that it does not currently maintain. But, all of the above is moot because DuPont would face the same issues finding barge terminals that would transload AHMs as it has encountered with truck terminals.

[244] See Dup. Op. Workpaper "BargeTruck Infrastructure Estimates" in the "AHMs" folder.

Lane Specific Requirements. In addition to the multiple general factors discussed above, the following customers expressly require rail delivery in their purchase contracts with DuPont:

Case Lanes	Customer Name	Contract Requirement
{{[redacted]}}	{{[redacted]}}	The section titled "Containers" specifies DuPont railcars.[245] There has not been a single truck shipment to these destinations from 2006-10.[246]
{{[redacted]}}	{{[redacted]}}	The sections titled "Quantity" and "Container" specify DuPont railcars.[247] Except for a handful of trucks in 2009 and 2010 due to production issues at Belle, there have been no trucks to this destination from 2006-10.[248]
{{[redacted]}}	{{[redacted]}}	The section titled "Containers" specifies DuPont railcars.[249] There has not been a single truck to this destination from 2006-10.[250]
{{[redacted]}}	{{[redacted]}}	The section titled "Base Price" specifies a railcar price. There is provision for a freight premium for truck shipments, which reflects the fact that trucks historically have been more expensive than rail. The section titled "Containers" refers only to rail.[251] This customer receives all of its tri-methylamine by rail, but its di-methylamine by truck, because it purchases di-methylamine in smaller volumes and has only a small holding tank in which to unload tri-methylamine.[252]
{{[redacted]}}	{{[redacted]}}	The section titled "Base Price" specifies a railcar price for DMA (Dimethylamine, Anhydrous) {{[redacted]}}.[253] This destination received between 0 and 9 truck shipments in each year from 2006-10.[254]
{{[redacted]}}	{{[redacted]}}	The section titled "Base Price" specifies a railcar price for MMA (Monomethylamine, Anhydrous) {{[redacted]}}.[255] There has not

[245] {{[redacted]}}

[246] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHM" folder.

[247] See Dup. Op. Workpaper Folder "AHMs," "Customer Contracts", {{[redacted]}}

[248] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHM" folder.

[249] See Dup. Op. Workpaper Folder "AHMs," "Customer Contracts", {{[redacted]}}

[250] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHM" folder.

[251] See Dup. Op. Workpaper Folder "AHMs," "Customer Contracts", {{[redacted]}}

[252] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHM" folder.

[253] See Dup. Op. Workpaper Folder "AHMs," "Customer Contracts", {{[redacted]}}

[254] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHM" folder.

[255] See Dup. Op. Workpaper Folder "AHMs," "Customer Contracts", {{[redacted]}}

		been a single truck shipment to these destinations from 2006-10.[256] The destination in {{ }} physically cannot receive trucks.[257]
{{ }}	{{ }}	The section titled "Containers" specifies railcars.[258] There has not been a single truck to this destination from 2006-10.[259]
{{ }}	{{ }}	The section titled "Containers" specifies railcars.[260] There has not been a single truck to this destination from 2006-10.[261]
{{ }}	{{ }}	The section titled "Base Price" specifies a railcar price for the issue destination.[262] {{ }}.
{{ }}	{{ }}	The section titled "Base Price" specifies a railcar price.[263] There has not been a single truck to this destination from 2006-10.[264]

Although some contracts that price only in railcars refer to trucks in the "Containers" section, that is recognition that DuPont has the flexibility to use trucks when necessary due to exceptional circumstances, but not as a regular matter. In addition to the above lanes that have explicit contract requirements for rail delivery, none of the remaining lanes has received a single truck delivery of AHMs from 2006-10, except Lane B-39, which received just two trucks in 2007.[265] This is compelling evidence that trucks are not an option for DuPont for any of the issue AHM movements.

Most of DuPont's AHM customers also rely upon DuPont railcars for storage. Despite the fact that nearly all of the issue customers have AHM storage tanks at their facilities, their

---

[256] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHM" folder.

[257] See Dup. Op. Workpaper {{ }} in the "AHM" folder.

[258] See Dup. Op. Workpaper Folder "AHMs," "Customer Contracts", {{ }}

[259] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHM" folder.

[260] See Dup. Op. Workpaper Folder "AHMs," "Customer Contracts", {{ }}

[261] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHM" folder.

[262] See Dup. Op. Workpaper Folder "AHMs," "Customer Contracts", {{ }}

[263] See Dup. Op. Workpaper Folder "AHMs," "Customer Contracts", {{ }}

[264] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHM" folder.

[265] See Dup. Op. Workpaper "AHM Truck Shipments" in the "AHM" folder. Although the data shows four trucks in 2007 on Lane B-91, this customer cannot receive trucks. See Dup. Op. Workpaper "SKW e-mail." Those trucks were used to depressurize and clean a leaking railcar.

average hold time for the loaded railcars generally ranged from a few weeks up to as many as 15 weeks in 2009 and 2010.[266] If these customers were able to unload AHM from railcars into their own storage tanks promptly upon receipt of loaded railcars, the average hold times should be much lower.

In summary, NS possesses market dominance over all of the issue AHM movements because:

- DuPont is captive to NS at the origin.
- Most DuPont customers in the issue lanes require rail delivery and need railcars for storage.
- DuPont lacks the capacity to load substantially more trucks at Belle without a significant infrastructure investment.
- There are no bulk terminals for transloading AHMs by truck.
- Lower direct trucking rates on movements up to 1100 miles is indicative of NS pricing up to higher cost alternatives.
- DuPont would have to construct additional piping and storage at a cost of {{ [redacted] }} in order to load AHMs into barges at Belle.
- DuPont would have to find barge terminals that would be willing to store and transload AHMs. For the same reasons that DuPont has been unable to find truck transload terminal, barge terminals also would not accept AHMs.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

[266] See Dup. Op. Workpaper "Customer Hold Time" in the "Shipment Data" folder.

q. Aqueous Methylamines[267]

DuPont has challenged NS rates for transporting Aqueous Methylamines ("AQMs") from Belle, WV to 5 destinations in the following case lanes:

Lane #	Origin	Interchange	Destination	Customer
B-8	Belle, WV	E. St. Louis, MO	Channelview, TX	Lyondell Chemical
B-13	Belle, WV	Chicago, IL	East Billings, MT	Loveland
B-17	Belle, WV	E. St. Louis, MO	Freeport, TX	Nalco Company
B-25	Belle, WV	Chicago, IL	Los Angeles, CA	Polychemie, Inc.
B-33	Belle, WV	Kansas City, MO	St. Joseph, MO	Albaugh Chemical

DuPont is captive to NS at the origin for each of these movements.

AQMs are anhydrous methylamines ("AHMs"), which are another issue commodity, diluted in water. For that reason, DuPont often refers to AQMs as "solutions." As with AHMs, DuPont produces aqueous mono-, di- and tri-methylamines. All three AQMs have the same handling requirements, except that aqueous mono-methylamine receivers (including any transload operators) must have permits from the Drug Enforcement Administration under the Chemical Diversion and Trafficking Act. Therefore, DuPont addresses market dominance for all three aqueous methylamines under the single category of AQMs.

AQMs have the same uses as AHMs. Because AQMs are a diluted form of AHMs, however, AQMs are safer to handle than AHMs. Specifically, AQMs have lower vapor pressure and flammability. Nevertheless, AQMs are still corrosive, highly flammable, and exude a strong odor.[268] Because AQMs are diluted, they are more costly to transport since more AQM shipments are needed to transport an equivalent amount of AHMs. Because of the similarity between AQMs and AHMs, AQMs have most of the same limitations upon alternative transportation as AHMs. The principal exception is that, unlike AHMs, AQMs do not require

[267] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Jeff Jirak, Global Business Manager Methylamines.

[268] See Dup. Op. Workpaper "Methylamines Storage and Handling" at 5-6, in the "AHMs" folder.

pressurized transport vehicles. The design of the Belle facility also creates other constraints upon the use of alternative transportation for AQMs.

Direct Trucking. Even after the significant NS rate increases over the past few years, Lanes B-8, B-13, B-17, and B-25 have direct truck rates that are {{[redacted]}} higher than direct rail rates, respectively.[269] This is not surprising because the road distance for each lane ranges from 1160 to over 2300 miles.[270] What is surprising is that, for Lane B-33, where the direct truck rate is {{[redacted]}} lower than the direct rail rate, the road distance is still a staggering 800 miles. This is compelling evidence that NS is pricing up to a higher cost competitor. It simply is not credible for NS to claim that truck shipments, which require more labor and equipment and have higher fuel costs than rail, are an effective competitive alternative to rail at such long a distance.

This conclusion is reinforced by Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder), which shows the change in rates for the issue movements from the later of 2007 or the first DuPont rail movement in each lane. Since 2007, the combined through rate for all of the AQM issue movements has increased between {[redacted]}, with 3 of those lanes experiencing increases greater than 100%. Since 2009, when NS and its connecting carriers began pricing on a Rule 11 basis, the NS rate has increased between {[redacted]} on all of the issue lanes, while the connecting carrier rates have increased by just {{[redacted]}}. The specific details for each AQM issue movement are summarized in the following chart:

---

[269] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[270] Id.

Lane #	Through Rate Increase Since …	NS Rule 11 Rate Increase Since …	Connecting Carrier Rule 11 Rate Increase Since…	Truck Premium
B-8	{{ [redacted] }}	{ [redacted] }	{{ [redacted] }}	{{ [redacted] }}
B-13	{{ [redacted] }}	{ [redacted] }	{{ [redacted] }}	{{ [redacted] }}
B-17	{{ [redacted] }}	{ [redacted] }	{{ [redacted] }}	{{ [redacted] }}
B-25	{{ [redacted] }}	{ [redacted] }	{{ [redacted] }}	{{ [redacted] }}
B-33	{{ [redacted] }}	{ [redacted] }	{{ [redacted] }}	{{ [redacted] }}

Clearly, most of the through rate increases since 2007 have occurred in the last two years as a consequence of extraordinary NS rate increases. These NS rate increases have not been accompanied by any loss of traffic to trucks, which is further evidence of market dominance.[271] Furthermore, the fact that NS has increased rates significantly in lanes where its rates already were higher than truck rates is compelling evidence that NS is not constrained by truck competition.

Regardless of the foregoing facts, direct trucking is not an option for any of the issue AQM movements, because DuPont has challenged NS bottleneck segment rates from Belle to various interchange points. Pursuant to the Board's decision in DMIR, 4 STB at 292 (n. 13) and 293, direct trucking to the customer is not alternate transportation for the movements to which the challenged NS rates apply. Finally, direct trucking is not feasible due to the lack of truck loading capacity at Belle, as described in the following discussion of transloading.

Transloading. In order to by-pass NS at the Belle origin for each issue movement of AQMs, DuPont would have to load its AQMs into trucks at Belle and transport them to a nearby bulk terminal on another railroad. There are two principal reasons why this is not a viable option. First, there is no bulk terminal within a 200 mile radius of Belle that is able or willing to transload AQMs. Second, Belle lacks the capacity to load sufficient trucks.

[271] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

The principal and dispositive factor is the absence of any bulk terminal near Belle that would handle AQMs.[272] Indeed, DuPont is aware of just two facilities in the country that will transload AQMs. Both are in Texas and neither is currently transloading any AQMs.[273] A bulk terminal must provide a closed transfer pumping system, a spill containment system, and a vapor recovery system. Even with these precautions, the product will omit a strong fish odor that is environmentally unacceptable. Moreover, as noted above, DEA permits are required for any facility that handles aqueous mono-methylamines. The extensive precautions and requirements associated with handling AQMs, DEA permitting, and the noxious odor are a major reason why commercial bulk terminals will not transload these commodities.[274]

Transloading also is not practical because Belle has just two truck loading racks for AQMs that it shares with inbound raw materials. If AQMs did not have to share these truck loading racks, Belle would have the physical capacity to load {[redacted]} trucks with AQMs in a 24 hour period. {{[redacted]}}. Furthermore, DuPont has just a single storage tank at Belle for mono-AQM with a capacity that is equivalent to {{[redacted]}} trucks, and a single storage tank for di-AQM with a capacity of {{[redacted]}} trucks. Consequently, DuPont would have to produce AQMs constantly in order to serve customers regularly by truck because it must continuously refill the

[272] {{[redacted]}}

[273] Those facilities are operated by Third Coast and Delta.

[274] See Dup. Op. Workpaper "Methylamines Storage and Handling" at 5-8, 16-18, in the "AHM" folder for an overview of the precautions and requirements associated with handling AQMs.

storage tanks with new production. Since DuPont cannot load and produce AQMs simultaneously, this is a physical impossibility with the current infrastructure at Belle. The cost of adding storage capacity for AQMs and reconfiguring the piping would be {{[redacted]}}.[275]

Barge. DuPont does not ship AQMs by barge, and has been informed by Kirby Marine that it is unaware of anyone who barges AQMs. Belle does not have the piping or storage infrastructure to load AQMs into barges. A barge's capacity is over 1 million tons, and as noted above, DuPont can only store the equivalent of {{[redacted]}} truckloads of AQM, depending upon the type of AQM. The cost of constructing additional storage tanks and piping adequate for barge volumes would be approximately {{[redacted]}}.[276]

Furthermore, barges would have to be unloaded at river terminals with adequate storage and transload capabilities. None of DuPont's customers purchase AQMs in barge-sized volumes. While some may purchase the equivalent of a barge over the course of a year, they do not receive barge quantities in single shipments, nor would they have the storage capacity in which to unload an entire barge at once, as described in the next paragraph. Therefore, DuPont would have to transfer the AQMs from barges into tanks at barge terminals, where DuPont would have to store the AQMs until its customers order smaller quantities for either rail or truck delivery. This adds even more costs to barge transportation and requires DuPont to carry an inventory of AQMs that it does not currently maintain. Moreover, just as bulk terminals do not transload AQMs between trucks and railcars, barge terminals do not like to handle AQMs either.

Lane Specific Requirements. In addition to the multiple general factors discussed above, four of the five case customers that receive AQMs rely upon railcars to store their AQM purchases from DuPont. The customer in Lane B-13 does not have any storage tanks at all for

---

[275] See Dup. Op. Workpaper "BargeTruck Infrastructure Estimates" in the "AHMs" folder.

[276] See Dup. Op. Workpaper "BargeTruck Infrastructure Estimates" in the "AHMs" folder.

AQM, which is consistent with no truck shipment history for this lane.[277] The customers in Lanes B-8, B-17, and B-25 have very small storage tanks that hold less volume than a single railcar. Over the 5-year period from 2006-2010, Lane B-8 received just {{[redacted]}} trucks (spread across 2006-08); Lane B-17 received just {{[redacted]}} trucks (all in 2010 when DuPont had production problems at Belle), and Lane B-25 received just {{[redacted]}} trucks (all in 2008).[278] The fact that these customers rely upon DuPont railcars for storage is evidenced by average railcar hold times in 2009 and 2010 of up to {[redacted]}.[279]

In summary, NS possesses market dominance over all of the issue AQM movements because:

- DuPont is captive to NS at the origin.
- Most DuPont customers in the issue lanes require railcars for storage.
- Direct trucking rates are much higher than rail rates for four of the issue AQM movements. Slightly lower rates for the fifth movement, which is 800 miles, is indicative of NS pricing up to higher cost alternatives.
- DuPont lacks the capacity to load substantially more trucks at Belle without a significant infrastructure investment.
- There are no bulk terminals near Belle for transloading AQMs.
- Belle lacks the infrastructure to barge AQMs, the case customers cannot receive barge quantities of AQMs, and there are no barge terminals that will transload AQMs.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

---

[277] See Dup. Op. Workpaper "AQM Truck Shipments" in the "AQMs" folder.

[278] Id.

[279] See Dup. Op. Workpaper "Customer Hold Times" in the "Shipment Data" folder.

r. Monomethyl Formamide[280]

DuPont has challenged the NS rate for transporting Monomethyl Formamide ("MMF") in a single lane, B-37, from Belle, West Virginia to Strang, Texas. DuPont is captive to NS at the origin. NS interchanges this movement with UP at East St. Louis, IL for delivery to the destination. This movement is between two DuPont facilities. DuPont produces the MMF at Belle and consumes it at Strang in the production of pesticides. DuPont consumes all of its MMF production internally. Until recently, DuPont also exported MMF to Korea, but has since discontinued that business because DuPont production could not fulfill its internal needs.

MMF is not classified as a hazardous material. However, because carbon monoxide accumulates in the space above MMF within a transportation vessel, DuPont requires that its employees wear a self-contained breathing apparatus when handling MMF.[281] Additionally, because MMF reacts poorly with carbon steel, railcars must have a placite lining and truck trailers must be constructed of stainless steel.

DuPont produces MMF at Belle, WV, in production campaigns that alternate with the production of dimethyl formamide ("DMF"), which is an issue commodity in Lanes B-4, 9, 21, 29, and 35. DuPont can produce either DMF or MMF, but not both simultaneously. Because DuPont does not have any storage facilities for MMF at Belle, it relies upon railcars for storage in between MMF production campaigns, which are shorter than DMF campaigns because DMF is sold in greater volumes. DuPont operates a dedicated rail fleet of 15 tank cars to store and transport MMF.

---

[280] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Jeff Jirak, Global Business Manager Methylamines.

[281] See Dup. Op. Workpaper "MMF-MSDS" in "MMF" folder.

Trucking. DuPont only ships MMF by truck in emergency situations. The cost of trucking directly from Belle to Strang is {{[redacted]}} higher than rail transportation.[282] In 2008 and 2010, DuPont experienced spikes in the number of truck shipments due to a string of emergencies.[283] In the second half of 2008, Belle had an unscheduled outage and equipment reliability issues that required trucks to supplement rail service. In 2010, DuPont had a fatality at the plant that resulted in a month-long shutdown to conduct safety reviews. Because of this month-long shutdown, DuPont depleted its inventory of MMF. MMF production still had not caught up with demand when DuPont experienced a plant failure in 2010, which caused DuPont to declare a force majeure event to its customers.[284] Because of these plant shutdowns, DuPont had to transport MMF more expeditiously by faster truck service, on a just-in-time basis. Finally, aside from the economic and practical difficulties with shipping trucks over Lane B-37, direct trucking from the origin to destination is not alternate transportation for the bottleneck NS segment to which the challenged rate applies, which is Belle to East St. Louis. See DMIR, 4 STB at 292 (n. 13) and 293.

Transloading. Transloading around the NS at Belle is neither practical nor cost-effective. First, because DuPont needs railcars at Belle to store its MMF production, DuPont literally would have to double its fleet of dedicated railcars so that there would be a railcar at Belle and at the bulk terminal. Current railcar lease costs range from {{[redacted]}} per month for either a 5 or 7 year lease term.[285] Second, transloading would cost {{[redacted]}} more than direct rail service even before considering the additional railcar expenses.[286]

---

[282] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[283] See Dup. Op. Workpaper "MMF Truck Shipments" in the "MMF" folder.

[284] See Dup. Op. Workpaper "Force Majeure Letter" in the "MMF" folder.

[285] See Dup. Op. Workpaper "Trinity Quote" in the "MMF" folder.

[286] See Exhibit II-B-2 (Dup. Op. Workpaper "Transload Cost Analysis" in the "Rates" folder).

Barges. Finally, barge is not an option because DuPont does not have the transfer systems or storage capacity at Belle to load MMF into barges or at La Porte to unload barges. The volume of MMF in Lane B-37, which is DuPont's only MMF movement from Belle, does not warrant investing in this barge infrastructure. It would take DuPont {{[redacted]}} consecutive days to produce enough MMF to fill even a small barge. As noted above, because Belle does not have any MMF storage, DuPont relies upon railcars for that purpose. Therefore, DuPont would have to build storage tanks to hold MMF for barge shipments. The same storage issue exists at La Porte, which has only enough storage capacity to unload a single railcar.

At Belle, DuPont estimates the cost of constructing a 400,000 gallon carbon steel storage tank, a transfer system of piping and pumps capable of transferring MMF at 1,000 gallons per minute through a 3- or 4-inch pipe approximately 2 miles, and a nitrogen blanket or air drying system would require an investment of approximately {{[redacted]}}.[287] At La Porte, the cost of constructing a 400,000 gallon storage tank, a barge unloading facility, and a transfer system of pipes and pumps is estimated to be {{[redacted]}}.[288]

In summary, NS possesses market dominance over the issue MMF movements because:

- DuPont is captive to NS at the Belle, WV origin.
- Direct trucking costs are prohibitively expensive.
- Transloading from trucks into railcars is neither practical nor cost-effective.
- Belle and La Porte do not have the infrastructure to load/unload barges with MMF, and it would be uneconomical to build such infrastructure for a single movement at current volumes.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

---

[287] See Dup. Op. Workpaper "Barge Infrastructure Estimates" in the "AHMs" folder.

[288] See Dup. Op. Workpaper "MMF Barge Estimate" in the "MMF" folder.

s. Coke Petroleum CA[289]

DuPont has challenged the NS rates for calcined petroleum coke ("Pet Coke") to DuPont's facility at Edge Moor, Delaware on the following case lanes:

Lane #	Origin	Interchange	Destination	Supplier
B-48	Cresap, WV	Hagerstown	Edge Moor, DE	Rain CII
B-69	Enid, OK	East St. Louis	Edge Moor, DE	Oxbow Calcining International LLC
B-75	Lemont, IL	Chicago	Edge Moor, DE	Oxbow Calcining International LLC
B-98	Enid, OK	East St. Louis	Edge Moor, DE	Oxbow Calcining International LLC
B-123	Lemont, IL	Chicago	Edge Moor, DE	Oxbow Calcining International LLC

Lanes B-69 and B-98 are identical movements, but the rate for B-69 is for transportation of Pet Coke in private cars and for B-98 is in railroad-owned cars. The same is true for Lanes B-75 and B-123, respectively. DuPont is captive to NS at Edge Moor.

Pet Coke is a solid by-product of the crude oil refining process. During refining, a distillation process is used to separate the different weights of carbon product within the crude. As a result, the heavier carbon product within the crude settles and solidifies into a high-carbon solid, known as Pet Coke. The solid mass is then milled into pellets, which is the form taken by the issue commodity. Pet Coke is used in a variety of processes—it is used to produce aluminum products and is a fuel for cement producers. The issue Pet Coke movements are all inbound to DuPont's Edge Moor facility, where DuPont uses the Pet Coke as a raw material in the production of titanium dioxide.

Truck. Direct truck is not an effective alternative to rail service for the Pet Coke issue movements. The absence of any truck shipments of Pet Coke at Edge Moor between 2006 and

[289] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Paul Kostrzewski, Senior Buyer—Petroleum Coke.

2010 illustrates this.[290] Furthermore, the direct truck rates for transporting Pet Coke on the case lanes exceed the direct rail rates for all but one case lane. Direct truck rates are {{[redacted]}} higher than rail on Lane B-123 and at least {{[redacted]}} higher than rail on Lanes B-69, B-75, and B-98,[291] even after substantial rate increases by NS on these lanes.[292] Only on Lane B-48 is the truck rate lower—by {{[redacted]}}[293]— than the direct rail rate, and then only because recent, substantial NS rate increases have caused the rail through rate to surpass the truck rate. Since 2009, the NS Rule 11 rate for Lane B-48 has increased by {[redacted]}, more than {{[redacted]}} the differential between rail and direct truck, while the connecting carrier rate only increased {{[redacted]}}.[294] The fact that NS has been able to surpass truck rates in just two years without losing any traffic to trucks underscores NS's market dominance.[295]

In order to receive a substantial volume of Pet Coke by truck, DuPont must reconfigure its Edge Moor facility. At present, Pet Coke is unloaded from railcars by spotting the railcars over a conveyor system and opening the railcar from underneath so the Pet Coke can fall through a floor grate onto conveyors that carry the Pet Coke into storage silos. Only bottom-unloading trucks are compatible with this system, but they are not readily available.[296] Although dump trucks are more readily available, they cannot unload at the current unloading spot because it is

---

[290] Dup. Op. Workpaper "Pet Coke Truck Shipments" in the "Pet Coke" folder.

[291] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[292] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder). NS has increased its rates on these lanes by {[redacted]} since 2009.

[293] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder). The differential is {{[redacted]}}.

[294] Compare Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder) with Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder). The differential is {{[redacted]}}.

[295] FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

[296] See Dup. Op. Workpaper "Trucking McKee's Rocks to Edgemoor" in the "Pet Coke" folder.

located within a covered shed that does not provide adequate clearance. When DuPont receives the occasional dump truck, it must unload the Pet Coke onto the ground outside the shed and push it onto the conveyor system. Even then, space constraints and overhead hazards restrict trucks to unloading only when facing South.[297] For regular truck shipments, DuPont must reconfigure the unloading spot by increasing the vertical clearance within the shed. DuPont estimates that this will cost {{[redacted]}}.[298]

In addition, direct trucking is not alternative transportation for any of the issue Pet Coke movements because DuPont is only challenging the NS rate from the interchange point to the destination on each lane. See DMIR, 4 STB at 292 (n. 13) and 293.

Transloading. Transloading from railcars to trucks does not provide effective competition. On Lane B-48, transloading increases the transportation cost by {{[redacted]}} above the direct rail rate. Although transloading costs are {{[redacted]}} less than rail for the other four issue movements, this is a product of NS's aggressive rate increases, which have caused the rail through rate to eclipse transloading costs within only the past two years, as indicated by the following table:

Lane #	Through Rate Increase Since …	NS Rule 11 Rate Increase Since …	Connecting Carrier Rule 11 Rate Increase Since…	Transload Premium
B-48	{{[redacted]}}	{{[redacted]}}	{{[redacted]}}	{{[redacted]}}
B-69	{{[redacted]}}	{{[redacted]}}	{{[redacted]}}	{{[redacted]}}
B-75	{{[redacted]}}	{{[redacted]}}	{{[redacted]}}	{{[redacted]}}
B-98	{{[redacted]}}	{{[redacted]}}	{{[redacted]}}	{{[redacted]}}
B-123	{{[redacted]}}	{{[redacted]}}	{{[redacted]}}	{{[redacted]}}

[297] Dup. Op. Workpaper "Coke Unloading" at 10, in the "Pet Coke" folder (noting that utility lines, overhead piping, and the low building clearance prevent truck beds from being raised completely).

[298] Dup. Op. Workpaper "Coke Unloading Study" in the "Pet Coke" folder.

NS's ability and willingness to raise its rates so dramatically and so swiftly above transload costs without losing traffic indicates that transloading Pet Coke is not effective competition to NS rail service on these lanes.[299]

Moreover, as explained above, Edge Moor is not able to accept regular truck shipments of Pet Coke. Transloading would require DuPont to make extensive modifications at Edge Moor to receive trucks.

Barge. DuPont's Pet Coke supplier at Lemont, IL, in Lanes B-75 and B-123, can originate Pet Coke on barges. But, because there is no direct waterway route from Lemont to Edge Moor, barge is only an option as a barge-to-truck transload, with the truck transfer occuring at McKees Rocks, PA, or a rail-to-barge transload, with the transfer to barges occuring on the Delaware River.

A barge-to-truck transload option is not practical or feasible. This option requires DuPont to receive 1600 tons of Pet Coke at Edge Moor, delivered over 300 miles by a caravan of 80 trucks over a period of approximately 5 days. Bottom-unloading trucks, which are necessary to deliver this volume of Pet Coke to Edge Moor, are not readily available to support such a large-scale trucking operation.[300] DuPont's inventory carrying costs for Pet Coke also would be sizeable due to longer barge transit times and the fact that it would be purchasing a substantial portion of its Pet Coke long before it otherwise would be needed. In contrast, DuPont is able to space rail shipments of Pet Coke over time, which allows it to maintain a smaller inventory.

Rail-to-barge transloading is also not practical and requires overcoming significant obstacles. Before Edge Moor can receive barge shipments of any commodity, DuPont must

---

[299] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition").

[300] See Dup. Op. Workpaper "Trucking McKee's Rocks to Edgemoor" in the "Pet Coke" folder.

refurbish its abandoned dock facilities at Edge Moor, which is costly, and must satisfy onerous regulatory requirements. Clearing the regulatory hurdles alone will cost at least $300,000 and take at least 2 years. These and other obstacles to receiving barges at Edge Moor are addressed in substantial detail in the Titanium Dioxide and Chlorine evidence.[301] Rather than repeat that evidence and argument here, DuPont incorporates them by reference. Moreover, if DuPont also switches to barge transportation at Edge Moor for other case commodities, such as titanium dioxide, titanium tetrachloride, and chlorine, new docks would have to be constructed, further increasing costs and the likelihood of permit denials due to the increase in potential harm to the environment.

Even assuming that DuPont could secure the permits to rebuild the Edge Moor docks, the infrastructure costs alone for dock construction would be prohibitively expensive. Using DuPont's estimates for chlorine barging at Edge Moor, less the equipment specific to handling chlorine, it would cost over {{[redacted]}} dollars just to rehabilitate the dock.[302] This does not even include the facilities that would be required to transport the pet coke from the docks to plant.

In summary, NS possesses market dominance over all of the issue Pet Coke movements because:

- DuPont is captive to NS at the Edge Moor, Delaware destination.
- On Lanes B-69, B-75, B-98, and B-123, the direct truck rate exceeds the direct rail rates by {{[redacted]}}.
- On Lane B-48, although the direct truck rate and rail rate {{[redacted]}}, that is the result of NS pricing to match the rates of higher cost truck transportation, as evidenced by dramatic NS rate increases over just two years.

---

[301] See Parts II-B-2.j., supra, and II-B-2.w, infra.

[302] See Dup. Op. Workpaper "Chlorine Barge Estimate," cell K4, in the "Chlorine folder.

- On Lane B-48, the transloading rate is {{[redacted]}} higher than the direct rail rate.
- On Lanes B-69, B-75, B-98, and B-123, although the transloading rates are lower than the rail rates, NS has demonstrated its market dominance by increasing its rail rates by upwards of {[redacted]} over just two years, thereby surpassing the rates of a higher cost alternative.
- DuPont's Edge Moor facility is not configured for the high-volume dump truck unloading that is necessary to support large-scale truck deliveries of Pet Coke either by direct truck or transloaded shipments.
- Bottom-unloading dump trucks are not readily available to support large-scale truck deliveries of Pet Coke by trucks either directly or as part of a transload operation.
- Barge transportation would increase DuPont's inventory costs.
- Barging to Edge Moor requires more than {{[redacted]}} to rehabilitate Edge Moor's abandoned dock facilities, plus additional infrastructure investment to store the Pet Coke and convey it from the dock to the plant. Moreover, it would take at least 2 years and $300,000 to obtain the necessary permits to begin construction, and it is highly improbable that the permits would be granted.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

t. Polyethylene[303]

DuPont has challenged two NS rates for low density polyethylene ("Polyethylene") over the following four case lanes comprised of two origins and two destinations:

Lane #	Origin	Interchange	Destination	Customer
B-44	Bloomington, TX	New Orleans, LA	Greenville, SC	Rexam
B-45	Bloomington, TX	E. St. Louis, IL	Washington, NJ	Albea f/ka Twist Beauty Packaging
B-82	Orange, TX	New Orleans, LA	Greenville, SC	Rexam
B-83	Orange, TX	E. St. Louis, IL	Washington, NJ	Albea f/k/a Twist Beauty Packaging

The two origins are DuPont production facilities in Texas. Each plant ships to both customer destinations, which are captive to NS. NS handles each movement from an interchange point with the origin carrier to the destination. Thus, although there are four issue movements, there are only two issue rates: one for the NS bottleneck segment from the New Orleans interchange to Greenville, SC and the other for the NS bottleneck segment from the East St. Louis interchange to Washington, NJ.

Rail is the overwhelmingly dominant mode for transporting bulk polyethylene in the United States, not just for DuPont but for the entire plastics industry. The industry produces polyethylene in batches that are equivalent in volume to the capacity of a single railcar, loads polyethylene into railcars for storage until sold to a customer, and then ships the polyethylene in the same railcar to the customer. Moreover, polyethylene customers rely extensively upon railcars for storage until the polyethylene is used in the customers' production process. This minimizes the need for large storage silos both at the polyethylene production plants and the customer plants.

[303] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Travis Bond, Global Supply Chain Manager.

The lack of effective truck competition from either direct trucking or transloading for the issue movements is evidenced by the almost non-existent truck volumes to each of the issue destinations. From 2006-2010, Rexam, at Greenville, SC (Lanes B-44 and 82), received a total of {{[redacted]}} Similarly, Albea, at Washington, NJ (Lanes B-45 and 83), received a total of {{[redacted]}}.[304] Because effective competition "may be deduced from...the amount of the product in question that is transported by motor carrier where rail alternatives are available," this historical data is highly relevant evidence of market dominance. Market Dominance Determinations, 365 I.C.C. at 133. See also, Product & Geographic Competition, 2 I.C.C.2d 1, 21 (1985).

Rail has a dominant market share because it is a far superior cost alternative to trucks in most transportation scenarios. Trucks are used mostly for short distances, to serve customers without access to rail, and to expedite shipments to rail-served customers in order to prevent production shut-downs. These scenarios are few and far between, which accounts for the very small proportion of polyethylene truck shipments.

The predominance of rail transportation was summarized best over 15 years ago by a former railroad employee testifying on behalf of the Society of the Plastics Industry ("SPI") in the Union Pacific/Southern Pacific merger proceeding.[305] As part of its Comments, SPI presented the Verified Statement of Larry D. Ruple, a 17-year employee of the Southern Pacific ("SP") and its predecessor companies, whose responsibilities included "the development production and implementation of market based strategic initiatives and overall market plan to

---

[304] See Dup. Op. Workpaper "Polyethylene Truck Shipments" in the "Polyethylene" folder.

[305] See, "Comments of the Society of the Plastics Industry, Inc.," Verified Statement of Larry D. Ruple, filed March 29, 1996 in Union Pacific Corp. et al.—Control and Merger—Southern Pacific Rail Corp. et al., Finance Docket No. 32760 ("Ruple V.S."). DuPont has included a complete copy of Mr. Ruple's verified statement as Dup. Op. Workpaper "Ruple V.S." in the "Polyethylene" folder.

enhance Southern Pacific's position and market share of transportation and logistic needs relative to [plastics]".[306]

At pages 12-15, Mr. Ruple presents an overview of modal competition for the transportation of plastics. First, Mr. Ruple described the logistics hurdles faced by plastic producers:

> To meet the demand for customer product specifications, resins producers may in any given period of time have to produce multiple grades of each resin. A producer's customer base usually consist [sic] of large amount of customers usually requiring a relatively small volume of product per year. Therefore, to avoid continual production changeover as to product makeup and the high costs associated with plant idling, producers forecast the demand/sales or amount of each specific product anticipated during a specific period of time, usually 90 to 120 days, and produce in what is referred to as product runs. These product runs are usually at a minimum of 6 to 10 cars and can go much higher in volume. To produce such a variety of products, with varying characteristics, to eliminate or reduce the large cost of plant shutdown or change over from one product to another, an attempt to find an economical way to store each product individually became very apparent. It was obvious that construction of multiple storage silos that could meet and maintain the high product integrity standards was economically not feasible, not to mention the requirement to shuttle product from production to each silo and then establish a network allowing access to load from these silos.

Ruple V.S. at 12-13.

Having identified the challenge faced by plastic producers, Mr. Ruple described both the significant role of rail in providing the solution and the limited role of trucks:

> To accomplish these tasks, to insure product integrity, minimize the need for multiple storage silos or facilities, along with provide the producers with a vehicle to effectively transport their product to the end users, the rail car was adopted as the primary means of not only transportation but storage. Producers are almost totally reliant on the rail car for loading production, storage track for both

[306] Id. at 1-2.

> loaded and empty cars, and movement to final destination and return of empty cars.
>
> * * *
>
> [W]hile there is a relatively small share of product moving via truck, most likely it first began its journey via rail and subsequently is transferred from a rail car in order to service a non-rail customer, to meet an emergency shipment need (often due to the failure to achieve timely delivery of a rail car), or packaged and loaded into containers needing to be shuttled to the port.
>
> * * *
>
> No other form or combination of transportation alternatives can provide the services currently offered by rail. Rail is the most economical and efficient means of providing product storage, minimization of product degradation and contamination, and effective long haul transportation.

Id. at 13-14 (underline added).

Next, Mr. Ruple proceeded to describe the end users' dependence upon rail. First, he stressed the importance of product integrity:

> Assuring product integrity and minimizing handling to insure purity and product performance are of utmost important [sic]. Customers require specific product compositions to meet production standards along with timely delivery to maintain operations.

Id. at 12. Then, Mr. Ruple describes the many needs of end-users that are satisfied by rail:

> Each product purchased must have exacting requirements in order to meet final product performance expectations. End users…are usually characterized by requiring each product be produced with a specific chemical composition designed to meet specific performance needs; have limited on-site storage capability; require just in time inventory supply, are located on rail in order to receive the advantages of rail transportation; universally accept a rail car load as the industry standard order quantity, and utilize the rail car as their "rolling silo/warehouse".

Id. at 14-15 (underline added). These are not needs that are sporadic or that apply to just a few customers. These needs are pervasive throughout the polymer industry.

Mr. Ruple's final conclusion affirms the prevalence of rail in polymer transportation:

> From both the producer/shipper and the end user/receiver standpoint, rail continues as the dominant means of resin storage and transportation. No other means can be substituted or supply the multitude of logistics characteristics that rail represents.

Id. at 15 (underline added). This statement remains as true today as it was 15 years ago. Indeed, the polymer industry's dependence upon rail transportation today is even greater.

Direct trucking is not an economically feasible option for any of the issue movements. The cost of direct trucking ranges from {{[redacted]}} than rail transportation for each issue movement.[307] Where there is at least a 10% rate difference after a substantial rail rate increase, the Board has found market dominance. DuPont (Plastics), slip op. at 7. Moreover, per the Board's DMIR decision, directly trucking the issue movements from the origins to the destinations is not alternate transportation for the movements to which the challenged NS rates apply, which is from various interchanges with connecting carriers to the destinations. DMIR, 4 STB at 292 (n. 13) and 293.

When DuPont does deliver polyethylene to a customer by truck, it most often is via a rail-to-truck transload operation. From 2006-10, over {{[redacted]}} of DuPont's polyethylene truck shipments were from a bulk terminal to a customer.[308] DuPont uses carefully selected bulk terminals to serve its non-rail customers, because transloading is more economical than direct trucking to these customers over long distances. DuPont has used five bulk terminals since 2006, at {[redacted]}. When shipping through a bulk terminal, DuPont must maintain an inventory of railcars loaded with polyethylene at the terminal in order to respond promptly to a customer's truck order, because

---

[307] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[308] See Dup. Op. Workpaper "Polyethylene Truck Shipments" in the "Polyethylene" folder. The number of shipments with a "YES" in Column Q (1819) divided by the total number of records (3291).

customers expect DuPont to fill truck orders within 48 hours. This is because, in contrast to railcars which can be used by the customer to store polyethylene until needed in the customer's production process, trucks cannot be used for storage and thus are ordered closer to when actually needed by the customer.

DuPont's customers at both destinations have only limited storage of approximately {[redacted]}.[309] This is slightly more than {[redacted]}. Thus, both customers clearly are dependent upon railcars to store their polyethylene inventory.

If DuPont were to transload the issue movements, it most likely would serve Greenville, SC through the {[redacted]} terminal that already is used by DuPont to serve other customers, and Washington, NJ through a {[redacted]}. Currently DuPont only stages {[redacted]}, which is the polyethylene grade purchased by both case customers, at the {[redacted]} bulk terminals. Therefore, DuPont would have to establish additional {[redacted]} inventory at the {[redacted]} facilities.

DuPont has estimated the transload costs for the issue movements through these terminals would be {{[redacted]}} higher for Lane B-44; {{[redacted]}} higher for Lane B-45; {{[redacted]}} higher for Lane B-82; and {{[redacted]}} higher for Lane B-83.[310] Where there is at least a 10% rate difference after a substantial rail rate increase, the Board has found market dominance. DuPont (Plastics), slip op. at 7. Although these rate premiums alone establish NS's market dominance, there are additional costs associated with transloading that would further increase these premiums. FMC, 4 STB at 719 ("substantial rate disparity" sufficient to show lack of effective competition).

---

[309] See Dup. Op. Workpapers "Albea E-mail" and "Rexam E-mail," both in the "Polyethylene" folder.

[310] See Exhibit II-B-2 (Dup. Op. Workpaper "Transload Cost Analysis" in the "Rates" folder).

The above transload rate premiums are before considering additional inventory carrying costs that are attributable to the time lag between when DuPont is able to invoice customers for rail shipments and truck shipments. Although DuPont invoices rail and truck shipments upon loading, a truck purchase will be later in time than a railcar purchase because a customer does not purchase a truck until it is ready to use the contents in its production process. Thus, inventory that DuPont's customer typically would maintain in the railcars on its own premises after a railcar purchase must now be maintained by DuPont at the bulk terminal until the truck purchase occurs.

In summary, NS possesses market dominance over all of the issue Polyethylene movements because:

- The DuPont customers are captive to NS at the issue destinations.
- Direct trucking costs are prohibitively expensive.
- Transloading is neither practical nor cost-effective.
- The customers need railcars for storage.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

u. Sodium Methylate[311]

DuPont has challenged the NS rate for transporting sodium methylate from DuPont's facility at Strang, TX to DuPont's facility at Lemoyne, AL on lane B-86. DuPont is captive to NS at Lemoyne.

DuPont produces sodium methylate in campaigns at its facility in Strang, TX, which is synonymous with La Porte, TX and referred to herein as La Porte. The campaigns last for approximately 3 months and produce up to 8 railcars of sodium methylate. DuPont ships sodium methylate to its Lemoyne, Alabama facility where it uses the sodium methylate as an intermediate in the manufacture of insecticides.

Sodium methylate is produced as a 25% or 30% solution in methanol and is classified as a class 3 flammable liquid. It is both flammable and corrosive. When it comes into contact with water, including humidity, sodium methylate degrades to sodium hydroxide and methanol, increasing flammability. Because of sodium methylate's corrosive characteristics, a railcar or truck must be lined or made of stainless steel.[312]

Truck. DuPont's ability to truck sodium methylate from La Porte to Lemoyne is very limited. DuPont's La Porte facility only has 1 truck loading spot which can be used to load sodium methylate. However, this spot is dedicated to DuPont's Velpar business unit, which uses the spot extensively to load and unload other commodities. In fact, Velpar's use of the loading spot has been so extensive since the spot was built, approximately 40 years ago, that DuPont only recently, approximately 10 years ago, installed piping to enable the loading of sodium methylate at the spot. The piping, however, was only designed to support limited loading

[311] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Greg Rupert, Senior Process Engineer.

[312] See Dup. Op. Workpaper "Sodium Methylate MSDS" in the "Sodium Methylate" folder.

operations. Consequently, the La Porte facility can only load 1 to 2 trucks of sodium methylate per month, which is less than one railcar.

Further, trucking from La Porte is impractical because the La Porte facility does not have any sodium methylate storage tanks, and therefore, must load directly into railcars, which double as transportation and storage containers. Accordingly, a switch to direct trucking on lane B-86 would require loading trucks from railcars. However, this loading operation is still limited by the availability of 1 loading spot. Due to environmental regulations, DuPont cannot simply pull a truck up to a railcar and transload—it must vent the railcar and truck to a vapor abatement device[313] that is approved by the Environmental Protection Agency ("EPA") and the truck must be loaded on a concrete pad equipped with a sump system. The only spot available to perform this operation is the same spot that would be used to load directly into trucks. Accordingly, DuPont could still only load 1 to 2 trucks of sodium methylate per month even if it loaded trucks from railcars. The difficulties of trucking sodium methylate from La Porte are manifested in the absence of any truck shipments of sodium methylate from La Porte between 2006 and 2010.[314]

The cost of constructing a new truck loading rack dedicated to sodium methylate is approximately {{[redacted]}}.[315] These costs are not justified because sodium methylate is produced, and this infrastructure will only be used, infrequently.

Trucking is also impractical due to infrastructure limitations at the destination, DuPont's Lemoyne facility, which is also called Mobile or Axis. Because DuPont only has {{[redacted]}} tons of fixed storage capacity at Lemoyne for sodium methylate, which is less than half the capacity of a

[313] These devices usually consist of a flare or carbon-bed absorber.

[314] DuPont Op. Workpaper "Sodium Methylate Truck Shipments" in the "Sodium Methylate" folder.

[315] DuPont Op. Workpaper "La Porte Truck Loading Estimate" in the "Sodium Methylate" folder.

single railcar, it relies heavily upon railcars for storage. The cost of constructing sufficient storage to eliminate the need for railcars is approximately {{[redacted]}}.[316]

Although the cost of trucking directly to Lemoyne is less than the cost of rail, this is a function of NS increasing its rate to that of a higher-cost alternative. Currently, direct trucks cost {[redacted]} than rail between La Porte and Lemoyne.[317] However, in 2008, the last year that a contract through rate applied to this lane, this gap did not exist—the rail rate was {{[redacted]}} than today's rail rate, placing it below today's direct truck cost.[318] Since then, the rail rate has increased dramatically. The through rate was {{[redacted]}} in 2009 and increased to {{[redacted]}} in 2011.[319] Tellingly, the NS portion of the through rate increased by {[redacted]} over this period, from {[redacted]}, while the UP portion increased by only {{[redacted]}}, from {{[redacted]}}.[320] These extraordinary rate increases by NS have not been accompanied by any loss of traffic to trucks, which is strong evidence of market dominance.[321]

Finally, aside from the practical difficulties with shipping trucks over Lane B-86 and NS's ability to dramatically increase rates without losing any traffic to trucks, direct trucking from La Porte to Lemoyne is not alternate transportation for the bottleneck NS segment to which the challenged rate applies, which is New Orleans to Lemoyne. See DMIR, 4 STB at 292 (n. 13) and 293.

---

[316] DuPont Op. Workpaper "Lemoyne Storage Tank Estimate" in the "Sodium Methylate" folder.

[317] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[318] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder) {{[redacted]}}.

[319] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

[320] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

[321] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

Transloading. Although sodium methylate can be transloaded, transloading does not make economic sense. DuPont can avoid NS by transloading to trucks at {[redacted]}. However, transloading is {{[redacted]}} more expensive than the rail through rate.[322] In addition, there would be start-up costs of {{[redacted]}} for the equipment needed by the bulk terminal to handle sodium methylate.[323] Further, transloading will eliminate the delivery of sodium methylate to Lemoyne in railcars, which are needed to store the sodium methylate. Thus, DuPont would incur the cost of constructing additional storage facilities at Lemoyne if the sodium methylate is transloaded and delivered in trucks.

Barge. Barging the sodium methylate to by-pass NS on this case lane is impractical. The volume shipped in this lane during each production campaign is insufficient for barging. The smallest available barge has a capacity of 1,400 tons, which is {[redacted]} tons more than DuPont can produce in any single production campaign. Moreover, as noted above for truck shipments, Lemoyne only has fixed storage to hold {{[redacted]}} tons of sodium methylate after unloading. Accordingly, if DuPont barges to Lemoyne, DuPont will have to load the barged material into railcars for storage, build additional storage capacity, or keep the material on the barge and incur barge detention costs.

In summary, NS possesses market dominance over the issue sodium methylate movement because:

- DuPont is captive to NS at the destination.
- NS has been able to raise its rates to match the cost of trucks without losing any market share to trucks.
- DuPont can only load 1 to 2 trucks per month at the origin, unless it invests {{[redacted]}} to construct a new truck loading rack.

---

[322] See Exhibit II-B-2 (Dup. Op. Workpaper "Transload Cost Analysis" in the "Rates" folder).

[323] {{[redacted]}}

- DuPont relies on railcars for storage at the destination; fixed storage at the destination is insufficient to support trucks or barges. The cost of adding sufficient fixed storage is {{[redacted]}}.
- Transloading is more costly than rail transportation and requires an EPA-approved vapor abatement device.
- Due to the commodity's high flammability, the increased risks of release associated with trucking and transloading warrant the use of rail transportation where possible.
- The volumes on this lane are insufficient to support barging.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

v. Sulfur Trioxide (SO_3)[324]

DuPont has challenged the NS rates for transportation of SO_3 on two lanes, Lane B-102, from Miami Fort, OH to Gracewood, GA and Lane B-122 from Burnside, LA to Gracewood, GA. Both movements are destined to DuPont's customer, Solvay, which is captive to NS. The traffic in Lane B-102 originates on CSXT and is interchanged to NS in Chattanooga, TN. The traffic in Lane B-122 also originates on CSXT and is interchanged to NS in New Orleans, LA.

SO_3 is a Class 8 corrosive material. It is a clear, colorless, oily liquid that, when exposed to air, rapidly takes up moisture and gives off white clouds of sulfuric acid mist.[325] SO_3, like fuming sulfuric acid ("Oleum"), is very hygroscopic so that aqueous systems must be avoided.[326] SO_3 is an Extremely Hazardous Substance under the Superfund Amendment and Reauthorization Act and a TIH material.[327] SO_3 also reacts with carbonates to generate carbon dioxide gas and with cyanides and sulfides to form the poisonous hydrogen cyanide gas and hydrogen sulfide gas. DuPont is the only shipper of liquid SO_3 in the U.S.

SO_3, like Oleum, is shipped in dedicated equipment and utilizes specially trained personnel because of the fuming characteristics. SO_3 freezes at 90° F and boils at 112° F.[328] DuPont uses specification DOT-312 trailers that comply with DOT HM-181 regulations, are equipped with a glycol heating system, and are insulated to maintain temperatures above the product's freezing point.[329] Trailers used for SO_3 must also be equipped with canned, submerged

---

[324] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Ted Edward Morris, Operations Business Leader-Sulfur Products.

[325] See Dup. Op. Workpaper "SO3 and Oleum PUSH Manual" in the "Sulfur Trioxide" folder.

[326] Id. at 1, 10.

[327] Id. at 1.

[328] Id.

[329] Id. at 17, 19.

pumps for unloading, so that vapors are vented back to the trailer in a closed loop system.[330] Railcars used for SO_3 must be designed and built for SO_3 and equipped with external heating panels and fitted with an insulation jacket with electrical tracing.[331] If SO_3 freezes, it may form solid crystals that are difficult to melt.[332] In addition to using dedicated trucks, DuPont only delivers SO_3 using drivers who have been trained and equipped to safely handle SO_3. This ensures that the the proper controls are in place and minimizes the potential exposure to the general public.[333] There is a limited resource of these specialized trucks. DuPont owns 31 of these trailers to transport both sulfur trioxide and Oleum; no new trailers have been built for DuPont since 1994. A new truck would cost at least {{[redacted]}}.[334] Due to equipment and driver limitations, DuPont requires customers to pre-schedule truck deliveries.[335]

Because SO_3 gives off irritating and corrosive fumes or mist, handling requires full personal protective equipment including respiratory protection.[336] Venting during loading and unloading is required and is done into a scrubber, or back into the process. At DuPont's facilities, DuPont vents into its process. Off-site handling, such as transloading, requires scrubbers.[337]

Direct Truck. The Board must consider market dominance for the transportation to which the challenged rates apply. See 49 U.S.C. § 10707(a). Consequently, when evaluating the

---

[330] Id. at 17.

[331] Id. at 17, 22

[332] Id. at 1.

[333] Id. at 18.

[334] See Dup. Op. Workpaper "Sulfur Trioxide trailer email" in the "Sulfur Trioxide" folder.

[335] See Dup. Op. Workpaper "SO3 and Oleum PUSH Manual," p. 18, in the "Sulfur Trioxide" folder

[336] Id. at 11 (describing Class B protective equipment required for connecting/disconnecting hoses to/from transport vehicles).

[337] Id. at 14 (requiring "[s]uitable scrubbing facilities for venting/evacuating unloading, storage, and handling equipment"); id. at 17 ("Provisions must also be made to scrub the large volume of pressurizing gas that results from blowing the [railcar] tank empty.").

reasonableness of bottleneck rates where the connecting carrier rates are in contracts, the Board evaluates market dominance only for transportation over the bottleneck segment. DMIR, 4 STB at 292 (n. 13) and 293. Thus, direct truck alternatives are not applicable to the market dominance analysis for the issue movements, which are bottleneck segments from the interchange to the destination.

A review of the data further indicates that direct trucking is not feasible. From 2006-2010, there were {{[redacted]}} truck shipments over Lane B-122.[338] {{[redacted]}}.[339] In Lane B-102, the number of trucks shipped in a single year has ranged from {{[redacted]}}.[340] In contrast, from 2009-2010, there were {[redacted]} railcars shipped over Lane B-102 and {[redacted]} railcars over Lane B-122.[341] This data indicates that alternate modes of transportation are not effectively constraining NS's ability to increase rail rates for this traffic.

The customer in these two lanes, Solvay, prefers rail[342] and its contract with DuPont is replete with references to railcars.[343] Trucking of SO_3 requires nearly five trucks to equal one railcar. The additional handling, labor, and equipment needed for trucking increases costs and risks for the purchaser when handling this TIH material.

All of the above factors demonstrate that direct trucking is not an effective constraint upon NS rates in Lanes B-102 and 122, despite truck rates that are {{[redacted]}} less than

---

[338] See Dup. Op. Workpaper "Sulfur Trioxide Truck Shipments" in the "Sulfur Trioxide" folder.

[339] See Dup. Op. Workpaper "Burnside Truck Rack Estimate" in the "Sulfur Trioxide" folder.

[340] See Dup. Op. Workpaper "Sulfur Trioxide Truck Shipments" in the "Sulfur Trioxide" folder.

[341] See Dup. Op. Workpaper "2009-10 Rail Shipments" in the "Shipment Data" folder.

[342] See Dup. Op. Workpaper "Solvay e-mail" in the "Sulfur Trioxide" folder.

[343] See Dup. Op. Workpaper "Solvay Contract" in the "Sulfur Trioxide" folder (§§ 5.2, 6.4, 9, and Attachment A.).

rail rates, respectively.[344] Indeed, the fact that truck rates are so much lower than rail for a TIH material at distances of 536 and 671 miles, respectively, is evidence that NS is setting its rates above transportation alternatives with much higher cost structures.[345] Furthermore, this is a stark reversal of the historical relationship between rail and truck rates over these lanes. Since 2007, the through rail rate for the issue movements has risen by {{[redacted]}} in Lane B-102 and by {{[redacted]}} in Lane B-122. Since 2009, when NS and the CSXT implemented Rule 11 pricing over these Lanes, the NS rate has increased by {[redacted]} in Lane B-102 and by {[redacted]} in Lane B-122, while the CSXT rate {{[redacted]}}. Clearly, most of the through rate increases since 2007 have occurred in the last two years as a consequence of extraordinary NS rate increases, perhaps in an attempt to de-market this TIH material.

Transloading. To DuPont's knowledge, SO_3 is not transloaded anywhere in this country because it is a TIH. Every time hoses are connected to or disconnected from a transport vehicle is another opportunity for a leak. Just a cursory review of the engineering and design factors for handling SO_3 explains why no bulk terminals will transload this product. These factors include locating facilities away from densely populated areas and major highways; suitable scrubbing facilities for venting/evacuating unloading, storage, and handling equipment; and a means of isolating tank cars or trucks with remotely actuated block valves in the event of a hose failure.[346] The first factor alone is largely disqualifying because most bulk terminals, by design, are located near a major highway.

---

[344] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[345] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

[346] See Dup. Op. Workpaper "SO3 and Oleum PUSH Manual" at 14-15, in the "Sulfur Trioxide" folder.

If the above facts were not sufficient to demonstrate the infeasibility of transloading, the actual transloading process would do so. The temperature must be strictly controlled because of the narrow range between the freezing and boiling points of sulfur trioxide. Because the vapor pressure in railcars is too high to use an external pump for the transfer process, any transload would have to occur via a pressurized transfer. This process, however, creates a sulfuric acid mist that must be scrubbed using a solution of 93% sulfuric acid. The scrubbing process creates a 98% sulfuric acid solution. Thus, a transfer facility must have storage for the 93% solution used to scrub sulfur trioxide and have a means to dispose of the 98% solution created by the scrubbing process. In essence, a bulk terminal must operate as a mini chemical plant, which commercial bulk terminals are not equipped to do and have no desire to do.

In summary, NS possesses market dominance over all of the issue Sulfur Trioxide movements because:

- The customer is captive to NS at the destination.
- DuPont lacks the capability to load trucks at Burnside without significant infrastructure investment.
- Because Sulfur Trioxide is a TIH material, DuPont and its customer prefer rail shipments over truck shipments, which require five times as many hook-ups to load and unload.
- The customer has received no more than {{[redacted]}} trucks in any single year since 2006.
- NS has set its rates above higher cost truck alternatives with triple digit rate increases while retaining its predominant market share.
- This TIH material is not transloaded.
- A small fleet of specialized trucks precludes significant shifts in volume from rail to truck delivery.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

w. Titanium Dioxide[347]

DuPont has challenged the NS rates for transporting titanium dioxide slurry from DuPont production facilities at Edge Moor, DE and New Johnsonville, TN over the following 25 case lanes:[348]

Lane #	Origin	Interchange	Destination	Customer
A-11	Edge Moor, DE	NS-Direct	Chicago, IL	Superior Carriers (Carry Transit)
A-12	Edge Moor, DE	NS-Direct	Chillicothe, OH	Ph Glatfelter
A-13	Edge Moor, DE	NS-Direct	Mahrt, AL	Meadwestvaco
A-14	Edge Moor, DE	NS-Direct	Riverwood Intl, GA	Graphic Packaging International
A-15	Edge Moor, DE	NS-Direct	Wabash, IN	Paperworks Industries
B-50	Edge Moor, DE	Meridian, MS	Garland, TX	Valspar Corp.
B-51	Edge Moor, DE	Chicago, IL	Groos, MI	NewPage Corporation
B-52	Edge Moor, DE	E. St. Louis, MO	Laredo, TX	DuPont Mexico (c/o Interamerica Forwarding)
B-53	Edge Moor, DE	Rouses Point, NY	Madawaska, ME	Twin Rivers Paper
B-55	Edge Moor, DE	Buffalo, NY	Port Huron, MI	Domtar Pulp & Paper Products Inc.
B-56	Edge Moor, DE	Mechanicville, NY; Ayer, MA	Portland, ME	Monson Companies Inc.
B-57	Edge Moor, DE	Chicago, IL	Portland, OR	Bulk Transportation
B-58	Edge Moor, DE	Chicago, IL	Quinnesec, MI	Verso Paper
B-59	Edge Moor, DE	Mechanicville, NY; Ayer, MA	Rileys, ME	Verso Paper
B-60	Edge Moor, DE	Mechanicville, NY; Ayer, MA	Rumford, ME	NewPage Corporation
B-62	Edge Moor, DE	Mechanicville, NY; Ayer, MA	Shawmut, ME	SAPPI NA
B-63	Edge Moor, DE	Chicago, IL	Snoboy, CA	Truck Rail Handling

[347] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Leslie Muir, North America Logistics Planner, DuPont Titanium Technologies.

[348] Although there are 25 case lanes, there are only 16 challenged rates because the NS segment for many of the movements is from the same origin to the same interchange point.

Lane #	Origin	Interchange	Destination	Customer
B-64	Edge Moor, DE	Streeter, IL	Snoboy, CA	Truck Rail Handling
B-65	Edge Moor, DE	Chicago, IL	St Paul, MN	Rock-Tenn
B-67	Edge Moor, DE	Meridian, MS	West Monroe, LA	Graphic Packaging International
B-68	Edge Moor, DE	Chicago, IL	Wheeling, IL	Valspar Corp.
B-97	Edge Moor, DE	Cincinnati, OH	New Johnsonville, TN	DuPont
B109	New Johnsonville, TN	Cincinnati, OH	Chapman, PA	Behr Process Corp.
B-111	New Johnsonville, TN	Chattanooga, TN	Morrow, GA	Sherwin Williams Company
B-124	New Johnsonville, TN	Chattanooga, TN	McDonough, GA	Behr Process Corp.

DuPont is captive to NS at the origin for all movements from Edge Moor and at the destination for all movements from New Johnsonville. In addition, DuPont is captive to NS at the origin and destination on Lanes A-11 through A-15.

Titanium dioxide is a white, non-hazardous compound that, because of its extreme white color, is used as a pigment in a variety of products, including plastics, cosmetics, paper, paints, and coatings. It can be manufactured as either a dry powder or wet slurry and is transported in dry or slurry form. Most grades of titanium dioxide are manufactured dry, shipped dry, and combined with water upon delivery to create a slurry. However, certain high-quality grades are manufactured and shipped wet, in slurry form. The titanium dioxide that DuPont ships on the case lanes is shipped in slurry form.

Truck. Trucking directly to customers from Edge Moor and New Johnsonville does not provide effective competition to NS rail service. For 21 of the 25 issue movements of titanium dioxide, trucking cannot compete even on price. For the other four lanes, there is stark evidence that NS is pricing to match higher cost alternatives. Finally, even if trucks were price

competitive, there are multiple remaining logistical obstacles that would dramatically increase the cost to DuPont.

First, direct trucking can only be an alternative for the Complaint Exhibit A issue movements because those are the only movements where the challenged NS rates apply to the same origin and destination as the direct truck rates. See DMIR, 4 STB at 292 (n. 13) and 293. Thus, direct trucking from the origin to destination cannot constitute alternative transportation for the Complaint Exhibit B movements.

Second, for 21 of the titanium dioxide issue movements (including all 5 of the Exhibit A movements), direct trucking is not economically feasible. Rather, direct trucking on these lanes is {{[redacted]}} more expensive than rail.[349] The Board has found market dominance where the rate difference is more than 10% after a rail rate increase. E.I. DuPont de Nemours & Co. v. CSXT Transp., Inc., STB Docket No. 42099, slip op. at 7 (served June 30, 2008).

On the 4 lanes where direct trucks are not at least 10% more expensive than rail, NS has priced up to the higher cost truck alternative. On lanes B-111 and B-124, where the truck rate is {{[redacted]}} and {{[redacted]}} greater than the direct rail rate, NS has increased the rate for its portion of the movements by {{[redacted]}} from 2009 to 2011.[350] Tellingly, the connecting carrier on these lanes, CSXT, has only increased its rate by {{[redacted]}} over the same period.

Pricing up to a higher cost alternative also explains lower truck rates on lanes B-67 and B-68, which measure 1,188 and 759 road miles, respectively. It simply is not credible for NS to claim that truck shipments, which require more labor and equipment and have higher fuel costs

[349] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder). Those 21 lanes are A-11, A-12, A-13, A-14, A-15, B-50, B-51, B-52, B-53, B-55, B-56, B-57, B-58, B-59, B-60, B-62, B-63, B-64, B-65, B-97, and B-109.

[350] See id. (indicating the truck rates in each lane); Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder) (showing the change in NS and the connecting carrier's rates over time).

than rail, are an effective competitive alternative to rail at such long distances. Also, on Lane B-68, NS increased its rate by {[redacted]} from 2009 to 2011, while the connecting carrier increased its rate by only {[redacted]}.[351] This underscores that the rate differential on this lane is a result of NS price increases, not the competitiveness of truck transportation.

Direct trucking also is not practical due to the additional storage needed to replace railcars, increased risk of spills, and special equipment requirements. DuPont relies on railcars to store titanium dioxide. At Edge Moor, DuPont pipes newly-produced titanium dioxide directly into holding tanks, from which DuPont can load railcars, tank trucks, and isotanks.[352] Because the holding tanks at Edge Moor do not have sufficient capacity, DuPont also loads titanium dioxide directly into railcars, which are used for storage until the titanium dioxide is actually shipped to the customer. Also, each week, DuPont loads railcars at Edge Moor based upon titanium dioxide orders for the following week.

To support the use of railcars for storage, DuPont has made significant investments. DuPont owns storage track with a capacity to hold 53 cars (empty and loaded) of titanium dioxide. If DuPont switched to trucking on the case lanes, it must strand a sizeable portion of its fleet of 397 dedicated titanium dioxide railcars.[353] In addition, DuPont would have to build a 150 dry metric ton weigh tank, which costs {{[redacted]}},[354] and add a truck scale and loading spot, which costs {{[redacted]}}.[355]

---

[351] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

[352] An isotank is a 15 metric ton tank that is situated within a rectangular frame so that it can be used in containerized ocean transportation. DuPont uses the isotanks to ship titanium dioxide to Europe by ocean carrier.

[353] See Dup. Op. Workpaper "Railcar Leases by Lane" in "Railcars" folder.

[354] See Dup. Op. Workpaper "Slurry Storage Weigh Tank" in "Titanium Dioxide" folder.

[355] See Dup. Op. Workpaper "Truck Scale and Loading" in "Titanium Dioxide" folder.

Using trucks also increases the risk of costly spills. Because one tank car of titanium dioxide is equivalent to approximately 4.5 tank trucks, using trucks to transport titanium dioxide increases the opportunity for a spill during loading and unloading by a factor of at least four. Further, a titanium dioxide spill triggers a large, expensive response. Even though titanium dioxide is not hazardous, it is difficult and costly to clean because a full-scale excavation may be necessary if the slurry seeps into the ground.

DuPont's ability to use truck transportation for titanium dioxide also is constrained by equipment needs. Titanium dioxide must be shipped in stainless steel tank trucks without rubber lining to avoid rust contamination and discoloration. Because of this need, DuPont cannot use just any available truck to transport titanium dioxide slurry.

When DuPont does use trucks to transport titanium dioxide, it does so for reasons unrelated to transportation economics. If a customer is not rail-served, or purchases only small volumes, DuPont must use trucks. DuPont also uses trucks for expedited shipments to rail customers. For example, in July 2010, Edge Moor experienced production issues and shutdowns over a 30 day period. To avoid customer shutdowns[356] while DuPont resolved its production issues, DuPont needed to keep its customers supplied as leanly as possible. Accordingly, it used trucks to keep its customers supplied on a day-to-day basis. Similarly, in May and June 2010, DuPont increased trucking out of New Johnsonville in order to cope with rail delays and rail service cessation due to flooding.[357]

Transloading. Transloading is not an option for the five Complaint Exhibit A titanium dioxide issue movements because both the origin and destination on each movement are captive to NS. Thus, two transloads would be required on these lanes. For all 17 of the Complaint

[356] DuPont's paper mill customers cannot operate without titanium dioxide.

[357] See Dup. Op. Workpaper "Titanium Dioxide Truck Shipments" in the "Titanium Dioxide" folder.

Exhibit B issue movements that originate at Edge Moor, alternative transportation to NS would require DuPont to load trucks at Edge Moor and ship to a nearby {{[redacted]}} bulk terminal on CSXT in Wilmington, DE for transloading into railcars. The cost of doing so, however, is {{[redacted]}} more expensive than direct rail transportation for 16 of those 17 lanes.[358]

Even if transloading were cost competitive with direct rail service, it would be highly unorthodox to transload titanium dioxide from trucks into railcars and DuPont would have to make a significant infrastructure investment to do so. Although theoretically possible, DuPont does not transload titanium dioxide from trucks into railcars; it only loads railcars into trucks. Nor is DuPont aware of any other titanium dioxide producer that transloads from trucks into railcars. Because 4-5 trucks would be needed for every railcar loaded, DuPont would have to significantly increase its storage and truck loading capacity, as discussed above for direct trucking alternatives. Thus, those limitations apply in addition to the specific transloading limits discussed below.

Assuming that transloading physically is possible and the expanded truck loading infrastructure is in place, several costly logistical hurdles still remain. Today, DuPont washes its railcars after each load of titanium dioxide and performs routine inspections and maintenance at Edge Moor. DuPont also recycles the waste water from its washing facility back into the titanium dioxide production process, which is more environmentally sustainable and minimizes the cost of waste water treatment. Under a transload scenario, DuPont's railcars would not return to Edge Moor after each loaded movement. Therefore, either the bulk terminal would have to provide car-washing services for a fee, the cars would have to be switched between Edge

[358] See Exhibit II-B-2 (Dup. Op. Workpaper "Transload Cost Analysis" in the "Rates" folder). The only exception is Lane B-97, where transloading is {{[redacted]}} less costly. But as described in the subsection called "Lane Specific Rail Requirements," truck is not an option for this movement for other reasons.

Moor and the bulk terminal for washing after every movement, or the cars would have to be switched between the bulk terminal and another car washing facility after each movement.

To ensure product integrity, DuPont only uses carefully selected car washing facilities. There are only four DuPont-approved facilities in the entire country, at Altoona, PA; Victoria, TX; Cleveland, TX; and Hugo, OK. The nearest of these facilities to Edge Moor, in Altoona, PA, also is on the NS. Therefore, whether DuPont continues to wash its railcars at Edge Moor or sends them to Altoona, NS would be a participant in the movement.

Because transloading from rail to truck near the destination is more typical, the three lanes that originate at New Johnsonville have fewer obstacles to transloading. The economics, however, reveal higher transloading prices for two of those lanes. Lanes B-111 and B-124 have transloading prices that are more than {{[redacted]}} higher than direct rail.[359] Although Lane B-109 is {{[redacted]}} less, this customer prefers rail deliveries, as discussed in the subsection entitled "Lane Specific Rail Requirements." Moreover, NS rate increases totaling {[redacted]} since 2008, contrasted with the connecting carrier's {{[redacted]}}, indicate that NS is exercising market power to increase rates to match a higher cost alternative.[360]

Barge. DuPont does not barge titanium dioxide, is unaware of anyone else who does, and doubts that it ever has been done for all of the reasons presented below. Although Edge Moor and New Johnsonville are located on navigable waterways, significant obstacles to barging titanium dioxide from these origins exist.

---

[359] See id.

[360] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

At New Johnsonville, DuPont has functional barge facilities, but it does not have the infrastructure for loading titanium dioxide into barges.[361] Even if this infrastructure was present, DuPont could not use barges on the titanium dioxide case lanes originating at New Johnsonville. The customers on these lanes consume, at most, 2 barges of titanium dioxide per year. Accordingly, each barge shipment that they receive would be subject to no less than 6 months of storage. Titanium dioxide cannot be stored for such extended periods. Extended storage causes the slurry at the top of the tank and along the tank walls to dry out and form hard, undispersible pigment particles that, even in low concentrations, cause the slurry to fall outside of its specifications. In addition, during these extended storage periods, bacteria develops within the slurry, contaminating it. For these reasons, DuPont advises customers to follow strict storage procedures that involve agitating, circulating, and humidifying the slurry hourly.[362]

At Edge Moor, the dock facilities are not suitable for use and require a substantial investment to rehabilitate and renovate. These facilities have not been utilized for at least 25 years and have fallen into such a state of disrepair that DuPont has restricted access to them for safety reasons. Moreover, the Edge Moor dock facilities are not outfitted with the piping, pumps, and storage tanks necessary to load barges with titanium dioxide. To make the facilities operational, DuPont would have to build land-based infrastructure, including pipes and pumps, to transport finished titanium dioxide approximately ½ mile from the production facility to the docks, perform extensive repairs to and reinforce the docks, construct containment structures to prevent spillage into the river during loading, and complete a substantial amount of dredging to remove the 25 years of accumulated silt and mud that inhibits barge access to the docks. Using

[361] DuPont will mothball the New Johnsonville dock facilities upon completion of an adjoining chlorine production plant, because chlorine is the only commodity that uses the New Johnsonville docks.

[362] DuPont Op. Workpaper "Handling Practices" in the "Titanium Dioxide" folder.

DuPont's estimates for chlorine barging at Edge Moor, less the equipment specific to handling chlorine, it would cost over {{[redacted]}} dollars just to rehabilitate the dock.[363] Additionally, DuPont would have to construct storage tanks because DuPont does not have enough storage tank capacity to load barges, which could hold 1,600 tons of titanium dioxide. DuPont estimates that the cost of building additional storage to support barge transportation is significant given that a 150 dry metric ton weigh tank costs {{[redacted]}}.[364] In addition, approximately {{[redacted]}} in recent upgrades to DuPont's rail yard and siding at Edge Moor would be stranded.

Also at Edge Moor, DuPont must overcome multiple regulatory hurdles to shipping titanium dioxide by barge. Under Delaware's Coastal Zone Act ("CZA"), the construction and extension of dock facilities and piers that serve a single manufacturing facility in Delaware's coastal zone, like Edge Moor, is allowable by permit only.[365] In addition, any new use of the Edge Moor dock facilities requires a permit.[366] Obtaining a permit is a difficult, expensive, and time consuming process for which there are no guarantees of success. A permit application requires an environmental impact statement and detailed descriptions of the proposed use, the aesthetic and economic effects, and impact on neighboring land uses.[367] In addition, any application that will result in a negative environmental impact must contain an offset proposal, which must more than offset the negative environmental impacts associated with the proposed activity.[368]

---

[363] See Dup. Op. Workpaper "Chlorine Barge Estimate," cell K4, in the "Chlorine" folder.

[364] See Dup. Op. Workpaper "Slurry Storage Weigh Tank" in "Titanium Dioxide" folder.

[365] Del. Code tit. 7, §§ 7002(b), 7003, 7004(a); Del. Admin. Code tit. 7, § 101-6.1.

[366] Del. Admin. Code tit. 7, § 101-6.3.

[367] Id. § -8.1.

[368] Id. § -9.1.1. Because the primary medium at risk is the river environment and subaqueous soil, any DuPont offset would need to target spawning fish populations, benthic invertebrates, and submerged vegetation in the Delaware River.

Approval of a permit application is in the discretion of the Secretary of the Delaware Department of Natural Resources and Environmental Control ("DNREC").[369] When evaluating a permit application, the Secretary must consider economic effect, aesthetic effect, the supporting facilities required, effect on neighboring land uses, and local land use and conservation plans.[370] While the Secretary has 90 days to rule on an application, the 90-day clock does not start until the Secretary has determined that the application is complete.[371] Accordingly, DuPont's environmental counsel anticipate that it would take 8 months for the Secretary to rule on an application to rehabilitate and use the dock facilities at Edge Moor and cost at least $50,000 to $75,000 in legal, consulting, and application fees. Despite these efforts, there is a high likelihood that the Secretary will deny a permit to use the Edge Moor dock facilities to load titanium dioxide onto barges because of the potential for spills of titanium dioxide into the Delaware River, the need for extensive dredging, increased ship and barge traffic close to the riverbank, and the 1/2 mile separating the Edge Moor dock facilities from a picnic area on the riverbank at Fox Point State Park.

Even if DuPont could obtain a permit, additional regulatory hurdles remain. DuPont must obtain subaqueous land leases and permits,[372] certify that refurbishment or expansion of docking facilities is consistent with Delaware's coastal zone management program,[373] obtain water quality certification,[374] and obtain permits from the U.S. Army Corps of Engineers

---

[369] Del. Code tit. 7, § 7005(a).

[370] Id. § 7004(b).

[371] Id. § 7005(a).

[372] Del. Admin. Code tit. 7, § 7504-2.3.3, -2.4.2.

[373] 16 U.S.C. § 1456(c)(3)(A).

[374] 33 U.S.C. § 1341(a)(1).

("USACE").[375] USACE permits are needed for the rehabilitation and any expansion of the dock facilities as well as the discharge of dredge or fill material.[376] Because this does not fall under nationwide permits for minimal impact activities,[377] DuPont would need to obtain an individual permit. The burden of obtaining an individual permit is "not trivial[;]. . . the average applicant for an individual permit spends 788 days and $271,596 in completing the process."[378] Moreover, there is no guarantee that a permit will be issued.

In order to obtain the USACE permits, DuPont must also certify to USACE and DNREC that any proposed activity affecting water use in the coastal zone complies with Delaware's approved coastal management program and will be conducted in a manner consistent with such program.[379] The certification must include a detailed description of the project and its associated facilities, a copy of the federal permit application package, an assessment of the effects of the project on any land or water use or natural resource of the coastal zone, findings that the proposed activity and associated facilities are consistent with the Delaware Coastal Zone Management Program ("DCMP").[380] DNREC's review of the certification includes twenty-five policy areas.[381] If DNREC finds that the proposed activity is inconsistent with the DCMP, it may object to the certification, thereby precluding USACE from issuing a permit unless the Secretary of Commerce, on appeal, overrides DNREC's objection.[382]

---

[375] 33 C.F.R. §§ 322.3(a), 323.3(a).

[376] Id.

[377] See 33 C.F.R. Part 330.

[378] Rapanos v. United States, 547 U.S. 715, 721 (2006)

[379] 16 U.S.C. § 1456(c)(3)(A). See also DNREC, Delaware Coastal Management Program: Comprehensive Update and Routine Program Implementation §3.2 (2011).

[380] DNREC, supra note 379, § 3.2.2.

[381] Id. § 5.0.

[382] Id. § 3.2.6.

To obtain the necessary water quality certification, which is a prerequisite to obtaining the USACE permits,[383] and subaqueous land leases and permits, DuPont must submit a combined application containing engineering drawings and a wetlands delineation to the Wetlands and Subaqueous Lands Section ("WSLS") of DNREC, which will evaluate the application using a multitude of criteria, including: environmental impact, erosion control, impact on public use, impact on ecosystems, serviceability, impact of dredge or fill activities, and impact on Delaware surface water quality.[384] Applications for subaqueous lands permits and leases are subject to a public notice requirement and, if a meritorious request for hearing is received or WSLS finds a public interest in the project, a public hearing before a hearing officer.[385] Given the scope of any dock facility rehabilitation and expansion and its implication of the CZA, a hearing is likely. If the permit application is denied, there is no right of appeal.[386]

The presence of so many regulatory obstacles, the cost of pursuing the multiple required permits, and the potential that any single permit denial can block the entire project substantially eliminates any potential constraint that the possibility of barge competition might have on rail rates. See Gen. Elec. Co. v. Balt. & Ohio R.R., No. 38125S, 1984 ICC LEXIS 206, *6 (ICC served Oct. 12, 1984) ("[W]hether such a dock and unloading facility could actually be constructed is far from certain, since the record shows that environmental requirements of several jurisdictions would have to be met, and the government agencies involved might not permit construction for the handling of such a hazardous substance."). All of this is before

[383] 33 U.S.C. § 1341(a)(1).

[384] Del. Admin. Code tit. 7, § 7504-4.0

[385] Del. Code tit. 7, § 7207, 7208.

[386] Id. § 7210.

investing the millions of dollars required to build the infrastructure that is necessary to make barge transportation a physical possibility at Edge Moor.

For all of the issue movements, no customer purchases titanium dioxide in quantities that could take advantage of direct barge transportation. Therefore, DuPont would have to barge titanium dioxide to bulk terminals with large capacity storage tanks and ship to customers from those terminals by truck or rail. This, however, is impractical considering the susceptibility of titanium dioxide to degradation during storage. As mentioned above, extended storage causes slurry along the storage tank's extremities to dry out and clump into hard pigment particles, causing the slurry to fall outside of its specifications. In addition, bacteria propagate within the slurry and contaminate it during extended storage.

Moreover, there are significant questions as to whether titanium dioxide can be barged effectively. Unloading titanium dioxide from railcars and tank trucks is already a difficult task, because of the thick consistency of the slurry, which causes large heels to form within these containers. Barges, which would hold much larger quantities than even railcars, would magnify this unloading challenge, for which there currently is no solution.

Lane-Specific Rail Requirements. In addition to the multiple general factors discussed above, the following customers expressly require rail delivery in their purchase contracts with DuPont:

Case Lane	Contract Requirement
{{[redacted]}}	Pages 3 and 4 of the portion of the contract titled "Exhibit A, Scope of Work" specifies delivery in tank cars.[387]
{{[redacted]}}	Section 6, titled "Payment and Freight Terms" specifies railcar as the normal mode and trucks by request.[388]
{{[redacted]}}	Schedule A specifies tank cars for delivery to the case lane destination.[389]
{{[redacted]}}	Section 4, titled "Delivery and Changes," specifies tank cars, but permits the customer to make "changes in the delivery of the Product."[390]

The following customer-specific factors also favor rail shipment:

Lane #	Customer Consideration
A-12	In 2007, the customer transitioned away from trucks and toward railcars in an effort to simplify its supply chain through increased shipment size and lower frequency shipments. Accordingly, lane truck volumes dropped from {{[redacted]}} trucks in 2007 to {{[redacted]}}.
B-51	{{[redacted]}}
B-59	Customer requires truck and rail shipments. Two parts of the customer's plant use titanium dioxide but only one can accept railcar shipments and there is no way to transfer titanium dioxide that arrives by rail to the portion of the plant that cannot accept rail shipments.
B-60	Customer requires truck and rail shipments. Two parts of the customer's plant use titanium dioxide but only one can accept railcar shipments and there is no way to transfer titanium dioxide that arrives by rail to the portion of the plant that cannot

[387] See Dup. Op. Workpaper {{[redacted]}} in the "Titanium Dioxide" folder.

[388] See Dup. Op. Workpaper {{[redacted]}} in the "Titanium Dioxide" folder.

[389] See Dup. Op. Workpaper {{[redacted]}} in the "Titanium Dioxide" folder.

[390] See Dup. Op. Workpaper {{[redacted]}} in the "Titanium Dioxide" folder.

[391] See Dup. Op. Workpaper {{[redacted]}} Schedule A, in the "Titanium Dioxide" folder.

Lane #	Customer Consideration
	accept rail shipments.
B-65	Requires railcars for storage because storage tank is equivalent to only half a railcar. For this same reason, cannot receive railcars during cold winter months because the residual product that cannot be loaded into storage tank would freeze inside the railcar. Therefore, this customer has a spike in truck shipments during winter months.
B-97	This slurry product is only semi-finished and difficult to truck because its thicker consistency leads to the formation of large heels and makes the product difficult to pump out of a truck.
B-109	{ [redacted] } The customer, however, prefers railcars.

In summary, NS possesses market dominance over all of the issue titanium dioxide movements because:

- DuPont is captive to NS at the origin and destination on lanes A-11, A-12, A-13, A-14, and A-15.
- For all of the "B" lanes with an Edge Moor origin, DuPont is captive to NS at the origin.
- For all of the "B" lanes with a New Johnsonville origin, DuPont is captive to NS at the destination.
- Direct trucking rates are at least 10% higher than rail rates on 21 of the 25 lanes.
- Where direct trucking rates are below or less than 10% above rail rates, NS has priced up to higher cost truck alternatives.
- Trucks that carry titanium dioxide are specialized and must be made of stainless steel, which limits the ability of DuPont to use just any tank truck.
- Trucks are used primarily to serve non-rail destinations. For the issue movements, trucks are used in response to expedited customer requests in emergency situations caused by DuPont production issues, natural disasters, and to handle unforecasted spikes in customer consumption.
- Using trucks quadruples the risk of spills, which require costly and extensive cleanup.
- The New Johnsonville origin lanes have NS-captive destinations that do not have access to barge or vessel transportation.
- DuPont lacks the capability to load barges at Edge Moor and New Johnsonville without significant infrastructure investment at both plants and in intermediate transfer terminals.
- Storage at intermediate barge terminals, in order to serve multiple customers via barge, is not practical because of product integrity issues that arise with long-term storage.

- DuPont faces significant regulatory obstacles to obtain the permits needed to construct barge loading infrastructure at Edge Moor.

- DuPont's contracts with certain customers specify delivery in railcars.

- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

x. Titanium Tetrachloride[392]

DuPont has challenged the NS rate for transporting titanium tetrachloride ("TiCl4") from DuPont's facility at Edge Moor, DE to BASF in Pasadena, TX on Lane B-54. DuPont is captive to NS at Edge Moor.

TiCl4 is a Class 8 corrosive liquid compound that DuPont produces as an intermediate chemical during the manufacture of titanium dioxide. It is used as a catalyst in the production of coatings and as a raw material in the production of titanium sponge. When in contact with water, including normal atmospheric humidity, TiCl4 reacts violently, releasing hydrochloric acid, titanium dioxide, heat, and hydrogen chloride gas.[393] Inhalation of this vapor causes lung irritation that may result in pulmonary edema or death.[394] Accordingly, the Hazardous Materials Regulations classify TiCl4 as a material toxic by inhalation ("TIH").[395]

Direct truck. DuPont avoids trucking TiCl4 whenever possible for safety reasons. Because one railcar is equivalent to 4 trucks, trucking involves additional commodity handling and an increased risk of exposure to this TIH material. From 2006 to 2010, DuPont delivered only 3 trucks of TiCl4 to BASF's Pasadena facility and all of these shipments were rush orders occurring during a four-day period in June 2010 to prevent a plant shutdown.[396] Moreover, DuPont only shipped the trucks after performing a Transportation Route Assessment, which evaluates the safety risks along the route and identifies necessary safety precautions.[397]

---

[392] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager—NA Region, and James Kanicky, Ore Products Business Manager.

[393] See Dup. Op. Workpaper "TiCl4 Emergency Response Sheet" in the "Titanium Tetrachloride" folder.

[394] Id.

[395] Id.; see also 49 C.F.R. § 172.101.

[396] See Dup. Op. Workpaper "Titanium Tetrachloride Truck Shipments" in the "Titanium Tetrachloride" folder.

[397] See Dup. Op. Workpaper "Moore e-mail" in the "Titanium Tetrachloride" folder.

DuPont's history of TiCl4 truck shipments from 2006 through 2010 further indicate that TiCl4 moves by truck only when necessary or risk is minimal. Over this five-year period, DuPont made 1,574 truck shipments of TiCl4 and these shipments were limited to export shipments to ports in ISO tanks, which are very short distance local moves, and special needs shipments.[398] In fact, of the 1,574 truck shipments, 404 were ISO tanks for export. Of the remaining 1,170 truck shipments, 1,153 were between Edge Moor, DE and Deepwater, NJ, which are only 13 miles apart. Of the remaining 17 truck shipments, three were the expedited shipments to Pasadena, as mentioned above, six were shipments for product qualification purposes to a potential new customer in Salt Lake City, UT in 2006, and eight were to a customer that does not have rail unloading capability.

While direct truck from Edge Moor to Pasadena costs less than rail, this is a result of NS raising its prices above a higher cost alternative. Pasadena is 1,472 road miles from Edge Moor. It simply is not credible for NS to claim that truck shipments of this TIH commodity, which require more labor and equipment and have higher fuel costs and accident risks than rail, are an effective competitive alternative to rail for transportation of this TIH material over such a long distance.

Moreover, the rate history for the issue movement confirms that NS has been inflating its prices to surpass the rates of higher cost alternatives. Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder), shows the change in rates for the issue movement over the past five years. Since 2007, the through rail rate has increased by {{[redacted]}}. Since 2009, when NS and its connecting carrier on this lane began pricing on a Rule 11 basis, NS's rate has increased by {[redacted]}, which is {[redacted]}, while the connecting carrier's rate has risen {{[redacted]

[398] See Dup. Op. Workpaper "Titanium Tetrachloride Truck Shipments" in the "Titanium Tetrachloride" folder.

[redacted]}}. Thus, although the direct truck cost for this lane is {{[redacted]}}[399] less than the direct rail cost, this pricing differential is a direct result of extraordinarily large NS rate increases since 2009. Because this extraordinary rate increase has not been accompanied by any loss of traffic to trucks, it serves as strong evidence of NS's market dominance.[400]

Finally, aside from the practical difficulties with shipping trucks over Lane B-54, direct trucking from the origin to destination is not alternate transportation for the bottleneck NS segment to which the challenged rate applies, which is Edge Moor to East St. Louis. See DMIR, 4 S.T.B. at 292 n.13, 293.

Transloading. Transloading is not a viable option for by-passing NS because of the safety hazards associated with transferring a TIH material. There is no transloading facility within the vicinity of Edge Moor that will handle a TIH.[401]

Water Transportation. The potential for barge and vessel transportation on Lane B-54 is not a competitive constraint on NS's rates. Barge-to-rail transloading and direct vessel transportation is not practical and requires overcoming significant obstacles.

First, the Delaware River is only accessible to river barges via the Atlantic Ocean. Because river barges cannot traverse the open ocean, TiCl4 would have to be transferred between barges and ocean vessels at both the origin and destination. Because this is a TIH material, DuPont does not transload TiCl4.

Second, Edge Moor does not have barge loading facilities. Its only dock facility is an abandoned dock that once was used to load iron chloride onto barges for offshore dumping. This

---

[399] See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[400] E.g., FMC, 4 STB at 718 ("the fact that [a carrier] matches prices set by alternatives with significantly higher costs, while maintaining a dominant market share, is not enough to demonstrate effective competition"); Special Procedures, 353 I.C.C. at 929 ("the absence of any diversion after a reasonable time following a rate increase" is strong evidence of market dominance).

[401] See DuPont Workpaper "Transloading question e-mail" in the "Titanium Tetrachloride" folder.

dock is in a state of disrepair that would require an extensive infrastructure investment at Edge Moor to rehabilitate the dock, retrofit it for loading TiCl4, and building piping and storage to connect the dock with the DuPont facility. There is no need to even consider whether those infrastructure investments are warranted, however, because it is highly improbable that DuPont could obtain the permits required to rehabilitate the Edge Moor docks. Those obstacles, which arise under the Delaware Coastal Zone Act, are addressed in substantial detail in DuPont's evidence regarding chlorine and titanium dioxide. Rather than repeat that evidence and argument here, DuPont incorporates them by reference.[402] Moreover, if DuPont also switches to barge transportation at Edge Moor for other case commodities, such as titanium dioxide, pet coke, and chlorine, DuPont would have to construct new docks in addition to rebuilding the existing docks, further increasing costs and the likelihood of permit denials due to the increase in potential harm to the environment.

Even assuming that DuPont could secure the permits to rebuild the Edge Moor docks, the infrastructure costs alone for storage tanks, piping and pier construction would be prohibitively expensive. Using DuPont's estimates for chlorine barging at Edge Moor, which is another TIH material, it would cost {{[redacted]}} dollars to rehabilitate the dock and another {{[redacted]}} to install the piping, pumps, tanks, and other infrastructure necessary to store and pipe TiCl4 from the plant to the dock.[403]

[402] See Parts II-B-2.j. (chlorine) and II-B-2.w (titanium dioxide); see also Part I-A-2.b.(8).

[403] See Dup. Op. Workpapers "Chlorine DOME Estimate" and "Chlorine Barge Estimate", both in the "Chlorine" folder.

In summary, NS possesses market dominance over the issue titanium tetrachloride movement in Lane B-54 because:

- DuPont is captive to NS at the origin.
- TiCl4 is a TIH and the risk of a release is substantially higher for truck transportation of this movement 1,472 miles across the country.
- Lower direct truck rates over the 1,472 mile highway route indicates that NS is deliberately pricing well above its higher cost competition.
- The only truck movements on this lane illustrate that trucks have been used only in emergency situations and rail is the preferred transportation mode, even where rail is more expensive than truck, because of the safety risks.
- Using barges or vessels to transport TiCl4 from Edge Moor requires a substantial investment of approximately {{[redacted]}} to rehabilitate Edge Moor's abandoned dock facilities. In addition, it would take at least 2 years and $300,000 to obtain the necessary permits to begin construction. Also, it is highly probable that the permits would be denied under the Delaware Coastal Zone Act.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

y. Waste Flammable Liquid[404]

DuPont has challenged the NS rates for transporting waste flammable liquid ("WFL") from DuPont's facility at Lemoyne, AL (a/k/a Mobile or Axis) to two destinations:

Lane #	Origin	Interchange	Destination	Customer
A-16	Lemoyne, AL	NS-Direct	Giant, SC	Giant Cement
B-76	Lemoyne, AL	Meridian, MS	Artesia, MS	Energis (Geocycle)

DuPont is captive to NS at the origin and destination on lane A-16 and only at the origin on lane B-76.

WFL is a Hazard Class 3 flammable and combustible liquid. It is a highly flammable hazardous material, due to its extremely high methanol content, and it is a hazardous waste. DuPont does not intentionally produce WFL. Rather, WFL is a waste byproduct during the manufacture of insecticides. In order to dispose of WFL, DuPont sends it to an incinerator or to cement producers, which burn WFL as a fuel. In both cases, DuPont must pay the receiver to take the WFL. The receivers of both of the issue WFL movements are cement producers.

Truck. WFL can be shipped by rail or truck. However, direct trucking is not effective competition for direct NS rail service on Lane A-16 because the direct truck rate is {{[redacted]}} higher than the NS rate.

In contrast, the direct truck rate is {{[redacted]}} less expensive than rail on lane B-76; but, this disparity has been created by recent large rate increases from NS. Since 2008, the through rail rate has increased by {{[redacted]}}. Since the adoption of Rule 11 rates in 2009, the NS rate has increased by {[redacted]} compared with just a {{[redacted]}} increase by the connecting carrier, which strongly indicates that NS is responsible for this extraordinary rate increase.[405] Although

[404] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and Mark Mclendon, Master Scheduler at DuPont's Lemoyne facility.

[405] See Exhibit II-B-3 (Dup. Op. Workpaper "Case Lane Rate History" in the "Rates" folder).

DuPont's rail volumes have decreased in Lane B-76, that volume has not shifted to trucks,[406] which is evidence that trucks are not a competitive constraint for this movement. Moreover, notwithstanding the lower truck rate, direct trucking does not constitute alternative transportation for Lane B-76, because the challenged rate only applies to transportation from the origin to the interchange, not all the way to the destination. See DMIR, 4 STB at 292 (n. 13) and 293.

Transloading. Transloading does not makes sense for Lane A-16 because DuPont is captive to NS at both the origin and destination.

DuPont also cannot by-pass NS on lane B-76 by transloading. As mentioned above, DuPont is captive to NS at the origin, Lemoyne. DuPont has not been able to identify a bulk terminal between Lemoyne and Artesia that will transload WFL. Because WFL is a hazardous waste, bulk terminals that transload it must obtain permits from the Environmental Protection Agency ("EPA"). Moreover, under EPA regulations, WFL cannot be kept on site at a bulk terminal for more than 7 days. Because this regulatory burden is so great, most bulk terminals do not handle WFL.

In summary, NS possesses market dominance over the issue WFL movements because:

- DuPont is captive to NS at the origin and destination on Lane A-16 and at the origin on Lane B-76..
- The direct truck rate for Lane A-16 is {{[redacted]}} more expensive than the NS rail rate.
- The direct truck rate for Lane B-76 is {{[redacted]}} less than the through rail rate only after the rail rate increased by {{[redacted]}} since just 2008.
- There are no transloading facilities between Lemoyne and Artesia that handle WFL.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.

[406] See DuPont Op. Workpaper "Waste Flammable Liquid Truck Shipments" in the "WFL" folder.

z. Zircon Sand[407]

DuPont has challenged the NS rates for transporting Zircon sand ("Zircon") from DuPont's mine at Starke/Lawtey, FL to Huntsville, AL on the following lanes:

Lane #	Origin	Interchange	Destination	Customer
B-116	Starke/Lawtey, FL	Decatur, AL	Huntsville, AL	Saint Gobain
B-117	Starke/Lawtey, FL	Decatur, AL	Huntsville, AL	Saint Gobain

On both lanes, DuPont is captive to NS at the destination. Although the lanes have identical segments, B-116 applies to transportation in private railcars and B-117 applies to transportation in NS-owned railcars.

Zircon is a mineral that DuPont extracts from open-pit surface mines in Starke, Florida. In addition to Zircon, DuPont mines ilmenite and staurolite at this same location. The only other Zircon mining site in North America is in Virginia and operated by a competitor. Over 95% of DuPont Zircon is sold domestically.

Zircon is a very pure form of sand that is clean and contains very few imperfections. Upon mining Zircon, DuPont processes it to remove foreign minerals, such as titanium and staurolite. DuPont then sells the Zircon in two grades, standard and premium, both of which are shipped on Lanes B-116 and B-117. Upon processing by DuPont's customers, standard Zircon is used to make abrasive products such as grinding discs and sandpaper, and premium zircon is used in higher-end products such as jet engines and industrial turbines. Because of its very small grain size, Zircon is highly susceptible to leakage and loss whenever handled.

Lanes B-116 and B-117 involve the transportation of premium and standard Zircon from the mine in Florida to DuPont's customer, St. Gobain, in Huntsville, AL. St. Gobain melts the Zircon in a furnace to remove silica, resulting in 99% pure zirconia. Then, St. Gobain sells the

[407] The evidence and testimony in this section is jointly sponsored by Mary Pileggi, Logistics Manager-NA Region, and James R. Kanicky, Ores Business Manager.

zirconia to steel producers. {{[redacted]}}

Truck. For economic and practical reasons, direct trucking is not effective competition for NS rail service. To transport Zircon by truck, DuPont can use pneumatic bulk trucks ("pneumatic trucks") or trucks carrying bulk bags of Zircon ("bag trucks"). Although both trucks carry the same amount of Zircon, pneumatic trucks are more costly than bag trucks. Direct truck rates for pneumatic trucks are {{[redacted]}} higher than rail on the case lanes, while rates for bag trucks are {{[redacted]}} less expensive than rail.[409] Despite their cost advantage over pneumatic trucks, bag trucks suffer from significant practical disadvantages that make them unsuitable for regularly transporting Zircon.

Using bag trucks poses safety risks for St. Gobain and increases the potential for product loss, which is a significant concern because Zircon is valued at {{[redacted]}}.[410] St. Gobain's facility is designed for unloading railcars from the bottom into a chute that feeds a conveyor to the Zircon storage silos. Thus, to unload bag trucks, St. Gobain uses a forklift to hold the 4,000 pound bags over the chute and then cuts them open using a utility knife. This is a difficult and potentially dangerous process for St. Gobain's employees and also increases the potential for product loss because some of the Zircon will get caught within crevices in the bags and bags are susceptible to being punctured by the forklifts. With pneumatic trucks, product loss is minimal and no safety issues exist with unloading the Zircon into the railcar unloading chute.

[408]See contracts in Dup. Op. Workpaper "St. Gobain Contracts" folder in the "Sand Zircon" folder.

[409]See Exhibit II-B-1 (Dup. Op. Workpaper "Direct Truck Costs" in the "Rates" folder).

[410]See DuPont Op. Workpaper "St. Gobain Invoice" in the "Sand Zircon" folder.

Notwithstanding the practical disadvantages of using bag trucks, DuPont has used bag trucks to ship Zircon to St. Gobain on an expedited basis. Through most of 2011, the market for Zircon was extremely short and Zircon consumers had to scramble to meet their supply needs. Considering the lack of market supply and that DuPont's Starke mine is one of the only two locations in the U.S. where Zircon is mined, DuPont occasionally must truck Zircon to customers to help them avoid shutdowns and other production delays. Thus, DuPont's truck shipments of Zircon, including its truck shipments to St. Gobain are attributable to the need for expedited transportation of Zircon.[411]

Moreover, direct trucking is not alternative transportation for any of the issue Zircon movements because DuPont has only challenged the NS bottleneck segment rates from the interchange point to Huntsville, AL. See DMIR, 4 S.T.B. at 292 n.13, 293.

Transloading. Transloading Zircon is not practical because it is more expensive than rail transportation and the extra handling would result in unacceptable product loss, which as indicated above, would be costly. The cost of transloading using pneumatic trucks is {{[redacted]}} higher than rail transportation.[412] As mentioned above, pneumatic trucks are necessary to support regular transportation to St. Gobain.

[411] See "Zircon Sand Truck Shipments" in the "Sand Zircon" folder (showing shipments concentrated within discrete periods, which is characteristic of emergency shipments).

[412] See Exhibit II-B-2 (Dup. Op. Workpaper "Transload Cost Analysis" in the "Rates" folder). For B-116, transloading would cost {{[redacted]}} more than using only rail. For B-117, transloading would cost {{[redacted]}} more than using only rail.

In summary, NS possesses market dominance over the issue Zircon Sand movements because:

- DuPont is captive to NS at the destination.
- {{[redacted]}}
- The direct truck rates for these movements are {{[redacted]}} higher than rail, using pneumatic trucks. Although less expensive, bag trucks are unsuitable for regular transportation on the case lanes.
- Delivering Zircon in bag trucks exposes DuPont and St. Gobain to costly product loss. Shipping bags by truck has safety implications for unloading.
- There is an increased likelihood of valuable commodity loss during transloading due to Zircon's very fine grain size.
- Transloading costs are {{[redacted]}} higher than rail.
- Due to the short market for Zircon, all trucking on this lane is conducted on an exception basis, where customer supply needs require faster transit times than those available on rail.
- Because DMIR precludes the Board from considering alternative transportation options between points other than those covered by the challenged rates, direct transportation options between the origin and destination are not transportation alternatives to the NS bottleneck segment.