PUBLIC VERSION

BEFORE THE
SURFACE TRANSPORTATION BOARD

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

REPLY EVIDENCE OF NORFOLK SOUTHERN RAILWAY COMPANY

NARRATIVE SECTIONS III-C THROUGH III-D

(Volume 2 of 5)

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SHORT FORMS FOR FREQUENTLY CITED CASES

The following short form case citations are used herein:

AEPCO 2001	*Arizona Electric Power Cooperative, Inc. v. Burlington Northern & Santa Fe Railroad Co. & Union Pacific Railroad Co.*, STB Docket No. 42058 (served Dec. 31, 2001)
AEPCO 2002	*Arizona Electric Power Cooperative, Inc. v. Burlington Northern & Santa Fe Railroad Co. & Union Pacific Railroad Co.*, 6 S.T.B. 322 (2002).
AEPCO 2005	*Arizona Electric Power Cooperative, Inc. v. Burlington Northern & Santa Fe Railroad Co. & Union Pacific Railroad Co.*, STB Docket No. 42058, (served Mar. 15, 2005)
AEPCO 2011	*Arizona Electric Power Cooperative, Inc. v. Burlington Northern & Santa Fe Railroad Co. & Union Pacific Railroad Co.*, STB Docket No. 42113, (served Nov. 16, 2011)
AEP Texas	*AEP Texas North Co. v. BNSF Railway Co.*, STB Docket No. 41191, (Sub-No. 1) (served Sept. 10, 2007)
CP&L	*Carolina Power & Light Co. v. Norfolk Southern Railway Co.*, 7 S.T.B. 235 (2003)
Duke/CSXT	*Duke Energy Corp. v. CSX Transportation, Inc.*, 7 S.T.B. 402 (2004)
Duke/NS	*Duke Energy Corp. v. Norfolk Southern Railway Co.*, 7 S.T.B. 89 (2003)
Duke/NS Reconsideration	*Duke Energy Corp. v. Norfolk Southern Railway Co.*, 7 S.T.B. 862 (2004)
FMC	*FMC Wyoming Corp. v. Union Pacific Railroad Co.*, 4 S.T.B. 699 (2000)
IPA	*Intermountain Power Agency v. Union Pac. R.R. Co.*, STB Docket No. 42127 (served April 2, 2012).
M&G	*M&G Polymers USA, LLC v. CSX Transportation, Inc.*, STB Docket No. 42123 (served Sept. 27, 2012)
Major Issues	*Major Issues in Rail Rate Cases*, STB Ex Parte No. 657 (Sub-No. 1) (served Oct. 30, 2006), *aff'd sub nom. BNSF v. STB*, 526 F.3d 770 (D.C. Cir. 2008)

McCarty Farms	*McCarty Farms, Inc. v. Burlington Northern, Inc.*, 2 S.T.B. 460 (1997)
Otter Tail	*Otter Tail Power Co. v. BNSF Railway Co.*, STB Docket No. 42071 (served Jan. 27, 2006)
SAC Procedures	*Procedures for Presenting Evidence in Stand-Alone Cost Rate Cases*, 5 S.T.B. 441 (2001)
TMPA I	*Texas Municipal Power Agency v. Burlington Northern & Santa Fe Railway Co.*, 6 S.T.B. 573 (2003)
TMPA II	*Texas Municipal Power Agency v. Burlington Northern & Santa Fe Railway Co.*, 7 S.T.B. 803 (2004)
West Texas	*West Texas Util. Co. v. Burlington Northern Railroad Co.*, 1 S.T.B. 638 (1996).
WFA I	*Western Fuels Ass'n & Basin Elec. Power Cooperative v. BNSF Railway Co.*, STB Docket No. 42088 (served Sept. 10, 2007)
WFA II	*Western Fuels Ass'n, Inc. v. BNSF Railway*, STB Docket No. 42088 (served Feb. 17, 2009)
WP&L	*Wisconsin Power & Light v. Union Pac. R.R. Co.*, 5 S.T.B. 955 (2001)
Xcel	*Public Service Co. of Colorado d/b/a Xcel Energy v. Burlington Northern & Santa Fe Railway Co.*, 7 S.T.B. 589 (2004)

ACRONYMS

AAR	Association of American Railroads
ABC	Algorithmic Blocking and Classification
AEI	Automatic Equipment Identification
AEO	Annual Energy Outlook
AFE	Authorizations for Expenditure
APA	Administrative Procedure Act
AREMA	American Railway Engineering and Maintenance-of-Way Association
ARIL	Arrival at Intransit Location
ATC	Average Total Cost
B&B	Bridge & Building
BCFD	Billion Cubic Feet per Day
BCY	Bank Cubic Yard
BMP	Best Management Practices
BNSF	Burlington Northern Santa Fe Railway Company
BRC	Belt Railway of Chicago
C&S	Communications and Signals
CAGR	Compound Annual Growth Rate
CAPP	Central Appalachian
CBG	Coal Business Group
CDL	Commercial Driver's License
CFS	Commodity Flow Survey
CMA	Chemical Manufacturers Association
CMP	Aluminized Corrugated Metal Pipe

CRE	Counselors of Real Estate
CSAPR	Cross-State Air Pollution Rule
CSXT	CSX Transportation, Inc.
CTC	Centralized Traffic Control
CWA	Clean Water Act
CWR	Continuous Welded Rail
DCF	Discounted Cash Flow
DFLC	Departed From Location
DME	Dimethyl Ether
DMF	Dimethyl Formamide
DMI	Digital Mapping Index
DOT	Department of Transportation
DP	Distributed Power
DRR	DuPont Railroad
EAP	Employee Assistance Program
ECY	Embankment Cubic Yard
EIA	Energy Information Administration
EMT	Elizabeth Marine Terminal
ENS	Emergency Notification Signs
EOS	End of Siding
EPA	Environmental Protection Agency
ERP	Enterprise Resource Planning
EVA	Energy Ventures Analysis, Inc.
FAS	Financial Accounting Standards
FASB	Federal Accounting Standards Board

FED	Failed Equipment Detector
FELA	Federal Employers Liability Act
FMLA	Family and Medical Leave Act
FRA	Federal Railroad Administration
FRICS	Fellow of the Royal Institute of Chartered Surveyors
FSC	Fuel Surcharges
G&A	General & Administrative
GAO	Government Accountability Office
GDP	Gross Domestic Product
GVW	Gross Vehicle Weight
HM-1	United States Hazardous Materials Instructions for Rail
HTUA	High Threat Urban Area
ICC	Interstate Commerce Commission
ICHD	Interchange Delivery
IHB	Indiana Harbor Belt Railway
ISA	Intercarrier Service Agreement
ITMS	Integrated Transportation Management System
KCS	Kansas City Southern Railway
LARS	Locomotive Assignment and Routing System
LCY	Loose Cubic Yard
LNW	Louisiana and North West Railroad
LUM	Locomotive Unit Mile
MAI	Member of the Appraiser Institute
MATS	Mercury and Air Toxics Standards
MGT	Million Gross Ton

MMBtu	million British Thermal Units
MOW	Maintenance-of-Way
MRE	Market Research and Economics Group
MSE	Mississippi Export Railroad
MSP	Modified Straight-Mileage Prorate
N&W	Norfolk and Western
NAPP	Northern Appalachian
NARS	Non-accident Releases
NERC	North American Electric Reliability Corporation
NMC	Natural Moisture Content
NPRM	Notice of Proposed Rule Making
NRCS	Natural Resource Conservation Service
NROI	Net Railway Operating Income
NS	Norfolk Southern Railway Company
NYMEX	New York Mercantile Exchange
O/D	Origin/Destination
OMC	Optimum Moisture Content
PACT	Placed at Customer Facility
PFPS	Pulled from Patron Siding
PHMSA	Pipeline and Hazardous Safety Administration
PIH	Poisonous-by-Inhalation
PRB	Powder River Basin
PTC	Positive Train Control
R/VC	Revenue to Variable Cost
RCAF	Rail Coal Adjustment Factor

RCP	Reinforced Concrete Pipe
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-Way
RPMS	Real Property Management System
RSAM	Revenue Shortfall Allocation Method
RSC	Rail Security Coordinator
RTA	Railroad Tie Association
RTC	Rail Traffic Controller
SAC	Stand-Alone Cost
SARR	Stand-Alone Railroad
SCAN	Soil Climate Analyst Network
SCTG	Standard Classification of Transportation Goods
SFAS	Statement of Financial Accounting Standards
SIP	State Implementation Plans
SPLC	Standard Point Location Code
SSA	Shared Asset Area
SSI	Sensitive Security Information
STB	Surface Transportation Board
STCC	Standard Transportation Commodity Code
SWPPP	Stormwater Pollution Prevention Plan
T&E	Train & Engine
TBT	Thoroughbred Bulk Terminal
TCS	Triple Crown Services
TDIS	Thoroughbred Direct Intermodal Services
TIH	Toxic-by-Inhalation

TKMV	Track Move/Inventory Move
TMS	Transportation Management Services
TRANSCAER	Transportation Community Awareness and Emergency Response
TRRA	Terminal Railroad Association of St. Louis
TSA	Transportation Security Administration
TYES	Thoroughbred Yard Enterprise System
USDOT	U.S. Department of Transportation
USPAP	Uniform Standards of Professional Appraisal Practice
WQMP	Water Quality Management Plan
WSS	Web Soil Survey
WTI	West Texas Intermediate

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III. STAND-ALONE COST

C. OPERATING PLAN

INTRODUCTION

DuPont's Operating Plan fails to satisfy the Board's well established requirements for a SARR operating plan and should be rejected in its entirety. The Board's SAC decisions articulate several well-established requirements a complainant must meet to provide a "feasible" operating plan.[1] A complainant must "design[] a SARR specifically tailored to serve an identified traffic group" selected for its SARR. *AEPCO 2011*, STB Docket No. 42113, at 4.[2] "Based on the traffic group to be served, the level of services to be provided, and the terrain to be traversed, a detailed operating plan must be developed for the SARR." *Id.* (emphasis added).[3] A complainant need not replicate precisely the operations of the incumbent railroad, but it must demonstrate that the operating plan it proposes is "capable of providing the service required by the SARR's customers." *Duke/NS*, 7 S.T.B. at 99.[4] Moreover, "the assumptions used in the SAC analysis, including the operating plan, must be realistic, *i.e.*, consistent with the underlying realities of real-world railroading."[5] While a SARR may choose to "step into the shoes" of the incumbent carrier under existing trackage rights, joint facility, interchange, run-through power

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[1] *See e.g., CP&L*, 7 S.T.B. at 259 (complainant carries the burden to provide a feasible operating plan).

[2] *See also Rate Regulation Reforms*, Ex Parte No. 715 (served July 25, 2012) at 5; *Xcel*, 7 S.T.B. at 610 ("The operating plan must be able to meet the transportation needs of the traffic the SARR proposes to serve."); *TMPA I*, 6 S.T.B. at 589 ("[T]he SARR must meet the transportation needs of the traffic in the group by providing service that is equal to (or better than) the existing service for that traffic.").

[3] *See also Otter Tail*, STB Docket No. 42071, at 6; *Xcel*, 7 S.T.B. at 598; *TMPA I*, 6 S.T.B. at 586.

[4] *See also AEPCO 2011*, STB Docket No. 42113, at 28; *Xcel*, 7 S.T.B. at 610.

[5] *WFA I*, STB Docket No. 42088, at 15. DuPont itself acknowledges this essential requirement. *See* DuPont Opening I-65.

and other intercarrier agreements, complainant may not assume that the SARR would enjoy more favorable terms than the incumbent carrier under those agreements. *See AEPCO 2002*, 6 S.T.B. at 328. Nor may complainant "hypothesize" that the SARR could secure rights or agreements that are not available to the defendant carrier. *Id.* Finally, the Board has made clear that "[t]he parties must provide appropriate documentation to support their [operating plan and expense] estimates." *See Rate Regulation Reforms,* Ex Parte No. 715, at 6; *AEPCO 2011*, STB Docket No. 42113, at 4-5. The Operating Plan set forth in DuPont's Opening Evidence fails to satisfy these fundamental requirements and should be rejected in its entirety.[6] It also represents a failure by DuPont to tender a *prima facie* case on opening.

The SARR posited by DuPont is unprecedented, both in geographic scope and with respect to the volume and mix of traffic that it proposes to transport.[7] The SARRs presented in prior SAC cases have, for the most part, handled a relatively limited mix of traffic over regional rail networks, primarily in unit train service. By contrast, DuPont posits that the DRR would handle nearly 10 million rail shipments in the peak year—including approximately 3 million carloads of general freight traffic (encompassing a wide variety of commodities), 1.6 million carloads of coal, and more than 5 million intermodal units—over an 8,100-mile rail network that would serve more than 6,000 customers.

A complete operating plan for that massive and diverse traffic group must provide not only for the movement of whole trains, but also for the movement of each individual car of carload traffic from its origin (or on-SARR location) to its destination (or off-SARR junction).

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[6] *See CP&L*, 7 S.T.B. at 259 (complainant has the burden of demonstrating an operating plan would meet the needs of the traffic group).

[7] DuPont itself states that "[t]his is the largest stand-alone system yet constructed and presented to the STB, and, as far as DuPont is aware, the largest system ever simulated in the RTC Model." DuPont Opening Ex. III-C-5 at 1.

To do that properly, DuPont needed to account for the pick up of the car by local train, the switching of the car at a local serving yard into a block, movement of the car in the block to its next classification yard or yards to be classified into another block (or blocks), movement of the car to a local serving yard, and finally delivery to its actual destination (or off-SARR location).[8]

Rather than presenting a "detailed" operating plan "tailored" to the specific requirements the DRR's traffic group, DuPont proffered a skeletal plan based upon a series of "automated" data analyses and undocumented spreadsheet calculations. DuPont's "train service plan" for the DRR consists of a computerized selection of road and local trains operated by NS in the DRR's service territory during the Base Year (June 1, 2009–May 31, 2010). The flawed methodologies applied by DuPont in conducting that train selection process resulted in its failure to provide uninterrupted on-SARR train service for 725,661 cars of the DRR's selected traffic—including the vast majority of DuPont's "issue" traffic! DuPont's estimates of the DRR's yard, yard locomotive, and yard crew requirements are likewise based upon a series of unsupported spreadsheet calculations that have no discernible connection to the car inventory that the DRR would be required to classify and switch on a daily basis. Indeed, DuPont's Operating Plan contains no car blocking and classification plan for the 3 million carloads of general freight traffic in the DRR's traffic group. To the contrary, the Operating Plan reflects DuPont's simplistic assumption that "the DRR operates complete trains, including general freight, coal and

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[8] *See* Reply Exhibit III-C-1, "Carload Operations Overview" which is a video that depicts the manner in which NS, and other railroads, transport general freight traffic across the national rail network.

intermodal trains in local and interline service" despite the fact that DRR must actually serve thousands of carload shippers on its network. DuPont Opening III-C-8.[9]

DuPont asserts that the DRR's intercarrier relationships are "based on NS's joint use and interchange agreements"—indeed, it posits that the DRR "steps into NS's shoes" under those arrangements. DuPont Opening III-C-5. Yet, DuPont's Operating Plan violates the terms of NS's intercarrier agreements in numerous ways, and makes no provision whatsoever for the DRR to perform "reciprocal" services such as pre-blocking of cars, locomotive fueling and inspections and minor car repairs for connecting carriers that (DuPont assumes) would provide such services for the DRR (as they do for NS today).[10] DuPont's key assumption that every train interchanged by the DRR with another carrier would be a "run-through" train with locomotives arranged in a Distributed Power ("DP") configuration (DuPont Opening III-C-5; Ex. III-C-5 at 8, n.8) is premised on hypothetical intercarrier agreements that not only do not exist today, but are patently inconsistent with real world operating practice in the Eastern United States.

The most glaring deficiencies in DuPont's Operating Plan include the following:

- The methodology that DuPont used to develop its train service plan for the DRR failed to capture tens of thousands of NS trains in which DuPont's selected traffic moved during the Base Year. As a result, the DRR's Operating Plan fails to provide complete on-SARR train service for 725,661 cars of selected traffic—including 76% of DuPont's own "issue" traffic! *See infra* III-C-A-1-b.[11]

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[9] *See also* DuPont Opening III-C-2 (DRR's traffic group consists of "general freight, coal and intermodal traffic moving in trainload service"); I-66 ("The DRR was conceived as a railroad that would primarily handle trainload quantities of goods.").

[10] *See CP&L*, 7 S.T.B. at 255 (noting that operating plan cannot change service without evidence the "connecting carriers. . . would not object") (citing *West Texas*, 1 S.T.B. at 667).

[11] *See FMC*, 4 S.T.B. at 736 (rejecting complainant's operating plan in part for understating the number of trains).

- DuPont's train service plan also contains major "gaps" in on-SARR train service for selected traffic that DuPont rerouted from its actual route of movement over NS. That failure, by definition, makes it impossible for the DRR to provide service for rerouted traffic that is equal to or better than NS service. *See infra* III-C-A-1-c.

- The traffic group selected by DuPont includes approximately 3 million carloads of general freight traffic. DuPont Opening III-C- 3, Table III-C-1. DuPont's Opening Evidence contains no classification or "blocking" plan for handling that massive volume of "carload" traffic through the DRR network. Instead, DuPont's Operating Plan and RTC simulation assume (contrary to reality) that merchandise traffic would move in "trainload service" similar to unit train coal and intermodal shipments. DuPont's failure to account for all of the necessary elements of carload service renders its Operating Plan for general freight traffic infeasible, and its operating expense estimates invalid. *See infra* III-C-A-52-68.[12]

- The DRR's peak year traffic group includes 632,591 carloads of general freight traffic that is local to, or interline forwarded or received by, the DRR. DuPont Opening III-C- 3, Table III-C-1. However, the DRR track configuration posited by DuPont does not include the spur and industrial tracks required to perform pick-ups or set-offs at more than 6,000 customer facilities that the DRR would be required to serve. *See* DuPont Opening WP "DRR Opening Sticks errata.pdf." In other words, it is physically impossible for the DRR (as constructed by DuPont) to pick up or set off cars at customer facilities. *See infra* III-C-67.

- The DRR's selected traffic group contains 5.2 million units of intermodal traffic. DuPont's Operating Plan asserts that "[t]he DRR serves . . . . intermodal ramps." Yet, DuPont did not construct a single intermodal facility anywhere along the DRR's 7,300-mile proprietary rail system. *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx;" *see infra* III-C-172-74.[13]

- The DRR yard configurations, yard locomotive fleet and yard crew staffing posited by DuPont are based upon nothing more than mathematical calculations that are unsupported by credible evidence and utterly divorced from the requirements of the traffic group that DuPont selected for the DRR. Nowhere in its Opening Evidence or workpapers does DuPont identify—much less account for—the number of general

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[12] *See CP&L*, 7 S.T.B. 255-56 (rejecting complainant's operating plan in part for failure to account for all elements of service).

[13] *See CP&L*, 7 S.T.B. 255-56 (rejecting complainant's operating plan in part for failure to account for all elements of service).

freight cars that the DRR would have to classify and switch at intermediate yards every day. The result is an Operating Plan that undersizes almost every "major" and "medium" yard on the DRR network, and (conversely) calls for numerous smaller yards at locations where a yard is not needed to serve the DRR's traffic. *See infra* III-C-36-44.[14]

- The DRR does not have any car repair personnel or facilities. DuPont assumes that, because the DRR would acquire cars under full-service leases, its car fleet would be maintained by the lessor, making proprietary facilities and personnel unnecessary (DuPont Opening III-D-8). This assumption makes it physically impossible for the DRR to perform running repairs to foreign line cars, as required by both the AAR Car Interchange Rules and the terms of NS's intercarrier agreements (which the DRR purports to adopt). *See infra* III-C-91-95.

- The traffic group selected by DuPont includes 16,156 Base Year carloads of Toxic-by-Inhalation ("TIH") commodities, including some issue traffic as well as other hazardous shipments. Yet, nowhere in its Opening Evidence or workpapers does DuPont mention—much less account for—compliance with the myriad safety laws, regulations and best practices that apply to the transportation of hazardous commodities. *See infra* III-C-A-4.

- DuPont asserts that the DRR's interline relationships with connecting carriers "are based on NS's joint use and interchange agreements with such carriers; the DRR steps into NS's shoes under these agreements." DuPont Opening III-C- 4-5. Yet, DuPont's Operating Plan is replete with assumptions that violate the terms of NS's intercarrier agreements (which were produced to DuPont in discovery). DuPont assumes that the DRR would enjoy the benefit of those agreements (including pre-blocking of cars prior to interchange, and fueling and inspection of locomotives) without any obligation to provide "reciprocal" services to connecting carriers. DuPont also posits future agreements—including arrangements that would require that all trains be interchanged as run-through trains with locomotives in a 1/1 DP configuration—that not only do not exist today, but are fundamentally inconsistent with prevailing operating practices in the territory the DRR proposes to serve. *See infra* III-C-A-3.

- DuPont's RTC simulation—upon which DuPont explicitly relies to "confirm that the DRR's configuration, facilities and operating plan are feasible" (DuPont Opening III-C-17), is based upon DuPont's fatally

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[14] *See FMC*, 4 S.T.B. 737, n.88, 89 (discussing problems with mathematical attempts to develop an operating plan).

flawed Operating Plan. In addition, the RTC Model constructed by DuPont contains numerous modeling errors, including incorrect grade information; failure to account for delays caused by random failures and maintenance windows; failure to account for the time required for foreign trains to cross the DRR's lines; and failure to model train movements completely and accurately (thereby vastly understating the time and resources required to perform pick-ups and set-offs at customer facilities). Those glaring errors, and DuPont's reliance upon an infeasible Operating Plan in developing its RTC simulation, render the outputs of DuPont's RTC simulation meaningless.[15]

- DuPont's failure to account for the activities, facilities, equipment, and time required to serve the DRR's general freight traffic cannot be attributed—as DuPont seeks to do—to any deficiency in the data produced by NS in response to DuPont's discovery requests. Rather, as NS demonstrates, the fatal deficiencies in DuPont's Operating Plan are the direct result of methodological choices that DuPont made in utilizing various "shortcuts" to develop its operating evidence. *See* NS Reply Ex. III-C-7.

As discussed in greater detail in the following sections of this Part III-C, DuPont's computer-generated Operating Plan is not a proper substitute for expert analysis of the facilities and services required to serve the traffic that DuPont chose for its SARR. NS witnesses Johnson, Cheng, Schaub, Smith, and Rieppi developed an Operating Plan that fully accounts for the road and local train services, intermediate classification and switching, and pick-ups and set-offs at shipper facilities and interchange points required to serve the DRR's selected traffic in a manner consistent with customer needs, applicable laws and real world railroad operating practices. In designing that Operating Plan, NS did not rely upon any data regarding NS's real world traffic, facilities or equipment that was not available to DuPont. Unlike DuPont, the starting point for NS's Operating Plan was the traffic group actually selected by DuPont, rather than a collection

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[15] *See e.g. AEPCO 2011*, STB Docket No. 42113, at 30 (rejecting complainant's operating plan in part for failure to properly account for random outages); *id.* at 28 (rejecting complainant's operating plan in part for failure to account for program maintenance); *Xcel*, 7 S.T.B. at 611-12 (rejecting complainants operating plan in part for flawed grades and curves).

of trains culled from an historical database. As required by the Board's regulations, NS presents a detailed Operating Plan tailored to the needs of that specific traffic group.[16]

In short, DuPont's Opening Evidence fails to present a "feasible" operating plan—*i.e.*, one that is capable of meeting the service requirements of the DRR's customers, particularly shippers of general freight (including DuPont's own issue traffic), and intermodal traffic. For that reason, the Board must reject DuPont's Operating Plan. Indeed, DuPont's failure even to present a SARR that is capable of providing complete on-SARR train service for the vast majority of the issue traffic constitutes a failure of proof that warrants dismissal of DuPont's complaint. Moreover, because DuPont's operating expense estimates are inextricably linked to its fatally deficient Operating Plan and RTC Model simulation, there is no credible evidentiary support for those estimates. Accordingly, the Board must reject DuPont's Operating Plan and operating expense estimates in their entirety, and base its decision on the operating plan and related expense estimates set forth in NS's Reply Evidence.

A. DuPont Did Not Present A Feasible Operating Plan For Its SARR.

1. DuPont's "Automated" Operating Plan Methodologies Are Fatally Flawed And Should Be Rejected.[17]

The Board's SAC regulations and precedents make clear that a complainant is required to present—and properly document—a "detailed operating plan" that is "specifically tailored to

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[16] *See e.g., Duke/CSXT*, 7 S.T.B. at 430 (defendant need only present a "realistic alternative" that permits SAC analysis to be completed). NS provides a realistic alternative Operating Plan that corrects the numerous errors that make DuPont's Operating Plan infeasible. *See id.* NS utilized commercially available resources—MultiRail and RTC. *See Xcel*, 7 S.T.B. at 613 (noting use of commercially available resources). Having created an Operating Plan that addresses the deficiencies in the DRR Operating Plan and provides a "realistic alternative," the Board should accept the NS Operating Plan.

[17] NS's critique of DuPont's operating plan is sponsored by NS witnesses Ron Johnson, Dewey Smith, Dale Schaub, Dave Wheeler, Michael Williams, Benton Fisher and Michael Matelis.

serve an identified traffic group."[18] In order to satisfy this requirement, complainant must develop (1) a road train service plan capable of providing line-haul transportation between all origins (or on-SARR junctions) and destinations (or off-SARR junctions) between which the SARR's selected traffic moves; (2) a local train service plan to pick up and set off cars at all customer facilities and interchange points served by the SARR; (3) a yard service plan capable of supporting the SARR's road and local train operations (including, in the case of carload shipments of general freight traffic, the intermediate classification and switching necessary to move individual cars from train to train along the network);[19] and (4) adequate shops, facilities, equipment and personnel to support the SARR's train and yard operations.

a. DuPont's Automated Operating Plan Is Not Tethered to the Traffic That It Selected.

Rather than developing an operating plan specifically designed to accommodate the traffic that it selected, DuPont proffered a plan that consists primarily of "automated" tabulations of data extracted from NS train records, and a series of undocumented spreadsheet calculations. For example, DuPont's "train service plan" for the DRR is nothing more than a list of trains that NS operated in the DRR's service territory during the Base Year (June 1, 2009–May 31, 2010). As DuPont explained:

> "The [DRR] peak period train lists were then developed from NS car and train movement data provided in discovery for the June 2009 to May 2010 time period. In particular, Messrs. Fapp and Humphrey matched the DRR's revenue carloads to the NS trains that moved the relevant cars (including corresponding empty cars).

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[18] *See. e.g., Rate Regulation Reforms,* Ex Parte No. 715, at 5; *AEPCO 2011*, STB Docket No. 42113, at 4; *Xcel*, 7 S.T.B. at 598; *TMPA I*, 6 S.T.B. at 589.

[19] *See* NS Reply Ex. III-C-1, "Carload Operations Overview."

DuPont Opening Ex. III-C-5 at 14.[20] NS trains identified by this computerized data matching process were "adopted" by DuPont as a surrogate for DRR trains, adjusted in length and/or number to reflect peak year (2018) traffic volumes, and input into DuPont's RTC Model to "confirm" the feasibility of DuPont's Operating Plan. *Id.* In short, DuPont's train selection methodology is untethered to the traffic it actually selected, which dooms DuPont's Operating Plan right out of the gate. But it gets worse.

b. DuPont's "Automated" Train Service Plan Failed To Capture Tens Of Thousands Of Trains That Are Necessary To Provide Complete On-SARR Service.

Even assuming that DuPont's train selection methodology were tethered to the actual traffic, DuPont's train selection process is fatally flawed. There is no indication that DuPont's operating expert, Mr. McDonald, played any role whatsoever in "designing" this computer-generated train service plan.[21] Rather, the road and local trains upon which DuPont's Operating Plan is based were compiled by witnesses Fapp and Humphrey of L.E. Peabody & Associates—neither of whom has any railroad operating experience—through a computerized search of NS train records.[22] DuPont's decision to rely upon "automated programming" (DuPont Opening

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[20] *See also* DuPont Opening III-C-2 ("The peak traffic volume and train movements were developed by DuPont Witness Fapp using the 2009 and 2010 traffic and car/train movement data provided by NS in discovery."); III-C-15 ("DuPont Witnesses Fapp and Humphrey developed DRR's trains moving during the peak-ten day simulation period in the DRR's 10-year DCF life, based on the NS trains carrying traffic in the DRR's traffic group.").

[21] The operating inputs sponsored by witness McDonald are listed in DuPont Opening Ex. III-C-5, at 2. The listed inputs do not include a specification of the train services that the DRR would need to operate in order to meet customer requirements. While the list of witness McDonald's inputs includes a reference to "train size" (*id.*), DuPont's narrative evidence describes yet another computer-based methodology pursuant to which DuPont determined the maximum size of DRR trains by identifying the longest train (by train symbol) found in NS's train event data. DuPont Opening III-C-9, n.7.

[22] Mr. Humphrey is a computer programmer. DuPont Opening IV-79. Mr. Fapp once worked for BHP Copper, Inc. (which owns three proprietary railroads), but did not serve in any operating

Ex. III-C-1 at 4) to develop the DRR's train service plan, rather than applying actual rail operations expertise—even to verify the results of its computerized processes—resulted in a monumental error that is fatal to its Operating Plan.

The methodology that DuPont employed to develop the DRR's train service plan failed to capture tens of thousands of trains that are needed for the DRR to provide complete origin-to-destination (or on-SARR junction to off-SARR junction) train service. In developing its traffic and revenue evidence, DuPont performed a multi-step analysis using the data sources provided by NS in discovery.[23] That process involved, among other things, identifying waybill information for cars that DuPont considered for selection as part of the DRR's traffic group, linking that waybill information to NS's car event data (to determine where and how those cars moved on the DRR network), and identifying the NS trains associated with those car events. During that process, DuPont developed a highly detailed database that linked each NS waybill with the NS trains and car events that defined the movement of each car over the DRR system. That database—which DuPont submitted as WP "ttWaybill_Leadt_Unit_full_NS_Event"—is referred to in this Reply Evidence as the "DuPont Car/Train Database."

DuPont identified a total of 247,178 trains drawn from the NS data that were associated with the movement of the DRR's traffic in the Base Year. As Figure III-C-1 indicates, the

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capacity with those railroads. Mr. Fapp states that he held "operations management positions" with Arizona Lithographers (in Tucson, AZ) and MCA-Universal Studios in Universal City, CA, where, as "Tour Operations Manager" his duties included "vehicle routing and scheduling, personnel scheduling, forecasting facilities utilization, and designing and performing queuing analyses." DuPont Opening IV-65-66. Managing the operation of Universal Studios' legendary tour trolley hardly qualifies Mr. Fapp to design a train service plan for an 8,100-mile Class I freight railroad.

[23] The methodology employed by DuPont in performing its traffic selection and revenue calculation analysis is summarized in DuPont Opening WP "DRR Traffic Selection Methodology v8 ADDED LANES.docx" a copy of which is reproduced as NS Reply Ex. III-C-2.

computer-generated train list upon which DuPont's Operating Plan and RTC simulation are based (set forth in DuPont WP "Base Year Train Statistics_Open_Errata") correctly accounted for 185,568 of those trains. However, DuPont eliminated the remaining 61,610 trains (including 6,987 road trains and 51,316 local trains) from the final DRR train list.

Figure III-C-1
Base Year Trains Missing From DuPont's Operating Plan

	Road	Local	Total
Trains Accounted For In DRR Operating Statistics	138,694	46,874	185,568
Trains Eliminated by DuPont	6,987	51,316	61,610
Categorically Excluded	-	-	3,307
Trains With No Selected Revenue Cars	616	5,242	5,858
Trains With Only One On-SARR Train Event	3,469	13,097	16,746
Other Dropped Trains	2,722	32,977	35,699

Source: DuPont Car/Train Database; NS Reply Ex. III-C-3 "DRR_Trains_Analysis.xlsx"[24]

Neither DuPont's Opening Evidence nor its workpapers provides a clear explanation of the process that Messrs. Fapp and Humphrey followed in compiling the final DRR train list.[25] However, NS's analysis of DuPont's workpapers indicates that the trains "dropped" by DuPont from the final DRR train list fall into several categories. First, it appears that DuPont categorically excluded, either manually or via computer programming instructions, a total of

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[24] NS Reply Exhibit III-C-3, "DRR_Trains_Analysis.xlsx," analyzes the trains found in DuPont's Car/Train Database, and identifies the categories of trains that were ultimately excluded from DuPont's "Base Year Train Statistics_Open_Errata.xlsx" (as shown in Figure III-C-1). NS Reply workpaper "DuPont_Car/Train_Database _Missing_Trains" identifies the 61,610 trains that were captured in DuPont's Car/Train Database but omitted from DuPont's final DRR train list.

[25] DuPont states only that "witnesses Fapp and Humphrey developed DRR's trains moving during the peak—ten day [RTC] simulation period . . . . based on the NS trains carrying traffic in the DRR's traffic group that moved during the peak simulation period in the 2009-2010 Base Year, forecast to the same period in the June 1, 2018 through May 31, 2019 peak year." DuPont Opening III-C-15.

3,307 work trains, NS haulage trains and light helper engine movements.[26] In addition, DuPont dropped 5,858 trains that traversed the DRR's lines but did not contain revenue shipments that DuPont ultimately included in its DRR traffic group.[27] NS does not challenge the exclusion of those 9,165 trains from the DRR's train list.[28] However, it appears that DuPont also made a methodological decision to exclude 16,746 trains for which the NS train data contained only one on-SARR "train event."[29] NS's review of that category of "dropped" trains indicates that it includes road and local trains that originate near the periphery of the DRR network and move off-SARR.[30] While DuPont does not explain its rationale for dropping those trains, it may have decided to do so on the assumption that their impact was *de minimis* because a portion of their movement occurred off-SARR. However, because those 16,746 trains performed a portion of the on-SARR movement of DuPont's selected traffic, DuPont should have included those trains both to present a "complete" operating plan and to estimate accurately the DRR's locomotive, car and crew requirements.

In any event, the majority of the 61,610 trains missing from the DRR's train list -- 35,699 trains (including 2,722 road trains and 32,977 local trains) -- both transported DuPont's selected

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[26] *See* Figure III-C-1, Line 3, "Categorically Excluded."

[27] *See* Figure III-C-1, Line 4, "Dropped Trains With No Selected Revenue Cars."

[28] As a technical matter, the exclusion of all work trains was incorrect. It is not unusual for a work train, during a return movement to its home terminal, to encounter a loaded car that has gone "bad order" and been set out by a road train. The work train often picks up the defective car and carries it to the terminal. In such instances, the work train may report a "train event" to document its handling of the revenue car.

[29] *See* Figure III-C-1, Line 5, "Dropped Trains With Only One On-SARR Train Event."

[30] Analysis of the 16,746 trains excluded on that basis reveals that a number of those trains originate on the DRR's lines, travel off-SARR, then move back onto the DRR. DuPont's Operating Plan does not reflect the "interchange" of those trains back and forth between the DRR and NS.

traffic and moved between multiple points (or traveled entirely) on the DRR.[31] The omission of those 35,699 essential trains from DuPont's Operating Plan created major "gaps" in DRR train service that affected 725,661 carloads of general freight traffic. DuPont's failure to account for so many trains that are necessary to provide uninterrupted on-SARR service renders its Operating Plan incapable of "meeting the needs of its customers," and results in a substantial understatement of the DRR's facility, locomotive, car and crew expenses.[32]

Amazingly, DuPont's failure to account for all of the trains needed to provide complete on-SARR train service affects the vast majority of DuPont's own issue traffic! For example, as Figure III-C-2 below illustrates, {{

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[31] *See* Figure III-C-1, Line 6, "Other Dropped Trains." Those trains that DuPont failed to include in its Operating Plan are identified in NS Reply Ex. III-C-3, "DRR_Trains_Analysis.xlsx."

[32] *See FMC*, 7 S.T.B. at 739 (rejecting complainants operating plan in part because FMC "understated the number of trains, and in turn the locomotive and crew requirements").

[33] The event type "PFPS" listed on Line 1, column 10 of Figure III-C-2 means "Car Pulled from Patron Siding." The events listed in Lines 2 and 3, "DFLC" and "ARIL" mean ""Departed from Location" and "Arrival at Intransit Location," respectively. A glossary of terms used in the event data provided by NS in discovery is set forth in NS Reply WP "Car Event Decoder.doc."

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Figure III-C-2

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In fact, of {{ }} local trains that served the Edgemoor facility during the Base Year, DuPont's train selection methodology captured only {{ }}![34] This glaring error in DuPont's train service plan results in a total failure of the DRR to serve issue traffic originating at Edgemoor.[35]

DuPont's fatally defective train selection methodology also affected issue movements for which DuPont is the consignee. {{

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[34] DuPont's train selection methodology captured only {{ }} *Compare* DuPont Opening WP "Base Year Train Statistics_Open_Errata.xlsx" *with* NS Reply Ex. III-3, "Train_Sheet_Missing_Trains."

[35] DuPont apparently noticed this error, and attempted to mask it in performing its RTC simulation, {{

}} no adjustment was made for tens of thousands of other trains that DuPont failed to include in the DRR's train service plan.

Figure III-C-3
DuPont Failed To Account For Local Train Service To McIntosh, AL

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While DuPont's computer-generated train list included {{ }}, it did not capture the {{ }} needed to originate this "issue" shipment at McIntosh.[36]

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[36] *Compare* DuPont Opening WP "Base Year Train Statistics_Open_Errata.xlsx" *with* NS Reply Ex. III-3 "Train_Sheet_Missing_Trains."

Moreover, DuPont's RTC simulation failed even to account for the road train service required to move this car from McIntosh to Mobile, AL. Figure III-C-4 is a "screenshot" from DuPont's RTC simulation, which depicts the movement of DRR Train {{

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Figure III-C-4

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As Figure III-C-4 shows, DRR Train {{

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[37] {{

}}. This illustrates the failure of DuPont's RTC simulation to account for the intermediate stops and car switching required to provide complete train service for the car corresponding to {{ }} and DRR's carload traffic generally. DuPont's failure to model the DRR's train services accurately and completely is discussed in detail *infra* at III-C-A-2.

Overall, of 6,335 carloads of DuPont "issue" traffic that moved in the Base Year, the DRR's Operating Plan provides complete on-SARR train service for only 1,541 cars, or just 24% of the total. As Figure III-C-5 shows, DuPont's train selection methodology failed to capture one or more of the trains required to handle 4,794 cars—comprising 76% of the issue traffic—across the DRR network.

Figure III-C-5
DuPont Issue Carloads With Incomplete Train Service

# of Missing Base Year Trains	DuPont Carloads	% of DuPont Cars
None	1,541	24%
1	3,553	56%
2	968	15%
3	256	4%
4	16	0%
5	1	0%
Total Carloads	***6,335***	***100%***

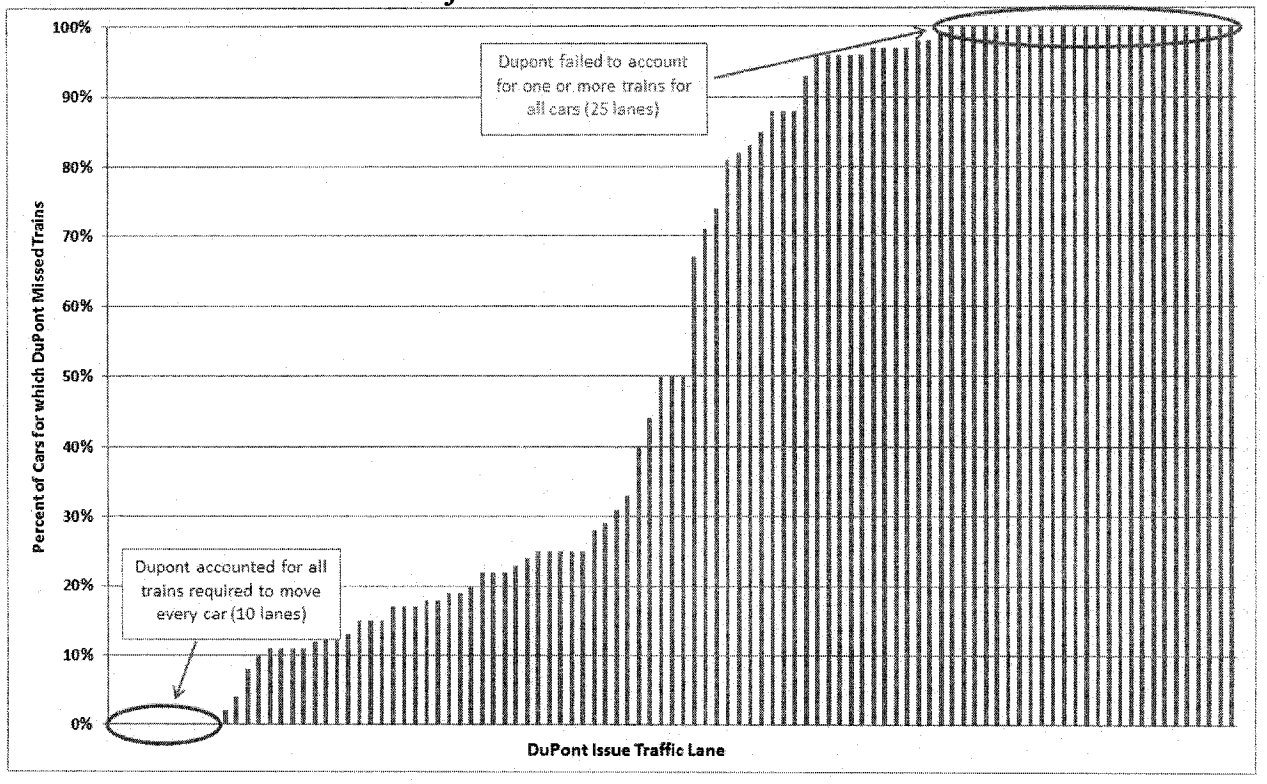
Considered on a lane-by-lane basis, the deficiency in DuPont's Operating Plan for issue traffic is even more startling. As Figure III-C-6 shows, DuPont's Operating Plan fails to account

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for all of the trains required to provide uninterrupted on-SARR train service in 91 of the 101 lanes in which issue traffic moved during the Base Year.

Figure III-C-6
DuPont failed to include trains to move the issue traffic in 91% of the lanes, 76% of the DuPont issue traffic carloads including 25 lanes for which there were no cars for which DuPont included all the trains



Any railroad operations expert should have discerned that the list of trains set forth in DuPont Opening WP "Base Year Train Statistics_Open_Errata.xlsx" left major "gaps" in DRR train service—especially since those omissions affected the vast majority of DuPont's own traffic. Moreover, had DuPont consulted the DuPont Car/Train Database that it compiled for purposes of developing its traffic and revenue evidence, it would have been apparent—even to a computer programmer—that those trains were necessary to provide uninterrupted on-SARR service for the DRR's selected traffic group. But DuPont failed to consider the detailed information set forth in the DuPont Car/Train Database, or otherwise to verify the accuracy and completeness of the train list developed by its computerized train selection methodology.

c. DuPont's Operating Plan Fails To Provide Uninterrupted Train Service For "Rerouted" Traffic.

DuPont's flawed train adoption process also resulted in significant "gaps" in train service for the traffic that DuPont proposes to reroute. For example, DuPont elected to construct only one of NS's two routes between Columbus, OH, and Kellysville, WV. DuPont Opening III-C-19. DuPont rerouted general freight and coal traffic that NS handles via Chillicothe, OH, and Kenova, WV (on NS's Heartland Corridor), to an alternate route via Dickinson, WV, and Elmore, WV.[38] An "automated" search of NS's historical train file obviously would not identify any train to handle this traffic via Dickinson, WV, and Elmore, WV, because NS did not actually move the traffic over that segment during the Base Year. Rather, in order to provide complete origin (or on-SARR junction) to destination (or off-SARR junction) train service for such rerouted shipments, it would have been necessary for DuPont either to "reroute" trains culled from NS's historical train file in DuPont's Operating Plan and RTC simulation, or to create "new" DRR trains to handle that traffic. However, in many instances, DuPont failed to do so. For example, DuPont's selected traffic included a shipment {{

}} that moved from Chicago, IL to Strasburg, VA. In the real world, that shipment moved on NS {{

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[38] Rather than rerouting intermodal traffic over the route via Dickinson, WV, and Elmore, WV, DuPont posits "internal cross-over" movements pursuant to which that traffic would move on the DRR from Columbus, OH, to Chillicothe, OH, be handled by NS between Chillicothe, OH, and PD Junction, WV, and then would cross-over once again from NS to the DRR at PD Junction, WV. For the reasons discussed below (at III-C-A-5), such "leapfrog" movements are fundamentally inconsistent with the Board's pronouncements regarding the proper use of "cross-over" traffic, and should be disallowed. Moreover, such multi-segment movements, with three (or more) interchanges en route, would not provide the high level of service demanded by shippers of intermodal traffic.

}}[39] However, DuPont elected not to include in the DRR network the NS line between {{

}} Instead, DuPont's SARR includes only NS's alternate route {{

}} *See* DuPont Opening III-C-19. DuPont's Operating Plan included NS Train {{

}} Nor did DuPont "replace" those NS trains with a "new" DRR train to provide service between {{

}} As a result, DuPont's Operating Plan failed to provide complete train service for this shipment. In total, NS's review of DuPont's train service plan revealed that DuPont failed to include (or to replace) 325 NS trains in which "rerouted" traffic moved in the real world over lines not replicated by the DRR.[40] That failure, by definition, makes it impossible for the DRR to provide service via the proposed reroute that is equal to or better than NS service, and its reroutes should therefore be rejected. *See AEPCO 2011*, STB Docket No. 42113, at 10 (rerouting traffic is permissible only where the SARR provides service that is "the same or superior [. . .] as provided by the actual operations of the defendant railroads").

Moreover, even where DuPont did account for "rerouted' traffic by adjusting the route of NS trains that the DRR adopted, DuPont failed to account for the fact that those trains included cars that originate and/or terminate at points along the NS line that DuPont elected not to build. For example, DuPont's selected traffic included a shipment {{

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[39] *See* NS Reply WP "Reroute_Traffic_Check_Final.xlsx."

[40] *See* NS Reply WP "Reroute_Traffic_Check_Final.xlsx."

}} NS Train {{ }} picked up and set off cars at points along the line via {{ }} that DuPont did not include in the DRR network. While DuPont "rerouted" Train {{ }} to the DRR's alternate route from {{ }} neither its operating plan nor its RTC simulation account for the fact that Train {{ }} contains cars that must be picked up from and/or delivered to customers at points along the line via {{ }}. DuPont's Operating Plan diverts such cars away from their intended route of movement, and does not provide complete service for those shipments. In total, NS's review of DuPont's train service plan identified 1,000 trains that DuPont diverted from their real world route of movement without taking into account the service requirements of cars destined to/from customers on the NS lines that DuPont excluded from the DRR system.[41]

d. DuPont Had All The Data Necessary To Develop The Detailed Operating Plan Required By The Board's Regulations.

Throughout its Opening Evidence, DuPont complains repeatedly about problems that it supposedly encountered in processing and using the train and car event data provided by NS in discovery. *See, e.g.,* DuPont Opening II-C-1; DuPont Opening Ex. III-A-2; DuPont Opening Ex. III-C-1.[42] However, the omission of tens of thousands of trains that are essential to the DRR's ability to provide uninterrupted train service is a direct result of DuPont's methodologies,

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[41] *See* NS Reply WP "Reroute_Traffic_Check_Final.xlsx." Note that this 1,000 train count covers only the January to May, 2010 period, that is, the overlap period in DuPont's Base Year and full traffic year 2010.

[42] As NS Reply Ex. III-C-7 demonstrates, DuPont's claims regarding the quality of the NS data are nothing more than a "smokescreen" proffered in a transparent attempt to excuse the glaring failures of proof that permeate DuPont's Opening Evidence. In reality, the unprecedented volume of information furnished by NS was more than sufficient to enable DuPont to submit a complete and accurate SAC presentation.

not any deficiency in the underlying NS data. Indeed, the DuPont Car/Train Database contained all of the trains that DuPont needed to develop a "complete" train service plan—but DuPont chose not to use it in preparing its Operating Plan. An extract from the DuPont Car/Train Database is set forth in Figure III-C-7 below.

Figure III-C-7
Extract From DuPont Car/Train Database {{

}}

Figure III-C-7 depicts the information that appears in the DuPont Car/Train Database for certain cars that moved on Train {{

}}

The DuPont Car/Train Database is also searchable by Waybill Number, rather than by Train Number. Figure III-C-8 below contains an extract of the complete movement information

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[43] NS Reply Ex. III-C-4 contains complete information for all cars on Train {{ }} set forth in the DuPont Car/Train Database. Figure III-C-7 is an extract of page 1 of that Exhibit.

[44] Additional data fields identifying the shipper and consignee, origin, destination, On-SARR junction, Off-SARR junction and connecting carrier(s) for each DRR car were developed in a subsequent step in DuPont's methodology. NS Reply Ex. III-C-5 depicts that additional information for the cars shown in Figure III-C-8.

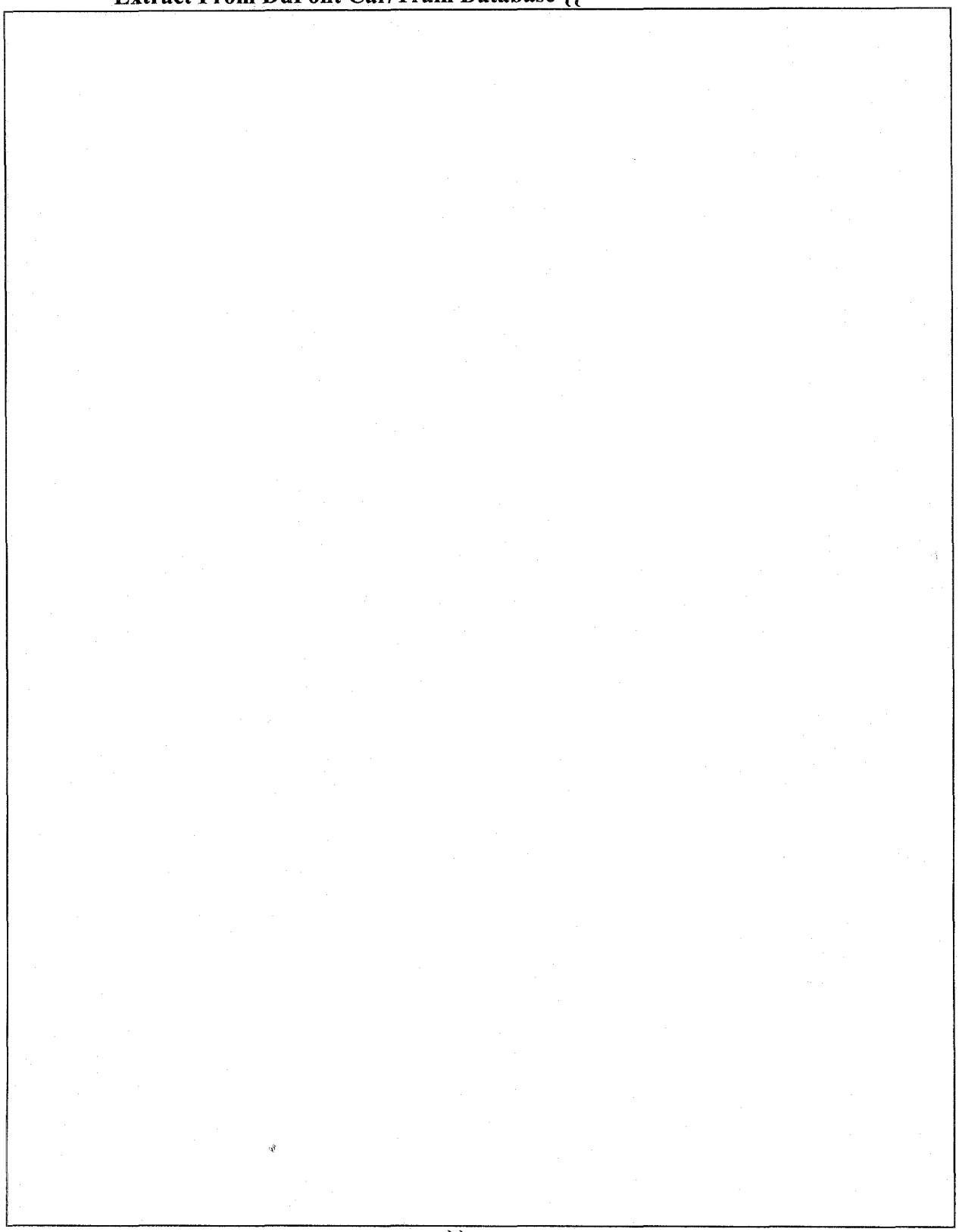
[45] {{

}}

set forth in the DuPont Car/Train Database for {{

}}

Figure III-C-8
Extract From DuPont Car/Train Database {{



}}

{{

}}

With the detailed, shipment-specific information contained in the DuPont Car/Train Database, DuPont could have developed a complete and accurate list of the trains required to provide uninterrupted on-SARR service to its selected traffic group. Indeed, every one of the trains that are missing from DuPont's Operating Plan was listed in Column 11 ("TRN") of the DuPont Car/Train Database! *See* NS Reply WP "DuPont Car/Train Database."

However, in developing its Operating Plan, DuPont apparently made a conscious decision not to take advantage of the detailed (and linked) waybill, train and car movement data that it had compiled for traffic and revenue purposes. Rather, it appears that DuPont employed

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[46] The entry "ICHR" in Column 8 of Line 1 indicates "Interchange Receipt" at {{ }}

[47] {{

[48] The entry "ICHD" in Column 8 of 53 indicates "Interchange Delivery" at {{ }}

different data sources and methodologies to compile the DRR's Base Year train list. Notwithstanding DuPont's complaints about the quality of the NS train event file (*see, e.g.*, DuPont Opening Ex. III-A-2), those data are not the source of the massive failure of proof in DuPont's train service plan. Indeed, both the DuPont Car/Train Database (and the original NS train and car event files from which DuPont extracted that data) contain every one of the trains that DuPont failed to account for in its Operating Plan.[49] Those trains are missing only from the final DRR train list set forth in DuPont Opening workpaper "Base Year Train Statistics_Open_Errata.xlsx" This demonstrates beyond question that the failure of DuPont's Operating Plan and RTC simulation to account for all of the trains required to serve the DRR's customers was caused by the methodologies that DuPont used to create the DRR's train list, not any deficiency in the source data furnished by NS.[50]

DuPont also attempts to blame the quality of NS data for a blatant methodological "shortcut" that it employed in modeling local trains operating in "turn service" in its RTC simulation.[51] Claiming that the information in the NS train event file for those trains was "unintelligible at best" (DuPont Opening III-C-15), DuPont elected to model the movement of

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[49] *See* NS Reply Exhibit III-C-3 "DRR_Trains_Analysis.xlsx."

[50] Such a comparison also refutes DuPont's knee-jerk assertion that "it included all NS local trains appearing in the [NS] train event files that moved in the 2010 Base Year" and that "[i]f in fact any trains are missing, it would be due to the many flaws in the NS train event data that are discussed in Exhibit III-C-1 of DuPont's Opening Evidence." *See* DuPont Reply to Norfolk Southern Railway Company's Motion for Modification of Procedural Schedule (Aug. 27, 2012) at 4, n.5 (2nd bullet item).

[51] A local train operating in "turn service" departs from its origin terminal (typically a serving yard in proximity to the customer facilities that it serves), makes one or more stops to pick up and/or set out cars at customer locations or interchange points, then returns to its origin terminal. Such trains are referred to herein as local "turn service" trains. By contrast, local trains in "straightaway service" complete their journey at a location that is different than their origin terminal.

local "turn service" trains based upon an assumption that those DRR trains would operate nonstop from their origin terminal to the "furthest location" indicated in the data, and then proceed directly back to their origin terminal, with a single 45-minute dwell at the "furthest location." *Id.* This methodological "shortcut"—which fails to account for the considerable time and resources required to pick up and set out cars at customer facilities along the train's route of movement—cannot be justified (as DuPont attempts to do) on the grounds that DuPont lacked sufficient information to model local "turn service" trains completely and accurately.[52]

As an initial matter, it should have been obvious to DuPont's experts that NS's train event file—which identifies the aggregate number of cars moving on a train but does not contain any information about the identity or destination of individual cars—was not an appropriate source of information to model local train service. The train event file contains no information that would enable DuPont to determine which cars need to be picked up at (or delivered to) which customer facilities by any local train on a given date.[53] Rather, such car-specific movement information can be found in the "car event" data furnished to DuPont in discovery. DuPont made extensive use of that car event data in compiling the DuPont Car/Train Database, and in preparing its traffic and revenue evidence. But the methodologies employed by DuPont in developing its train service plan, yard sizing and configuration, and RTC simulation make no effort whatsoever to account for the movement of individual cars. Rather, DuPont candidly acknowledges that "[t]he DRR was conceived as a railroad that would primarily handle trainload

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[52] The RTC simulation submitted as part of NS's Reply Evidence accounts for the intermediate stops made by both "straightaway" and "turn" local trains.

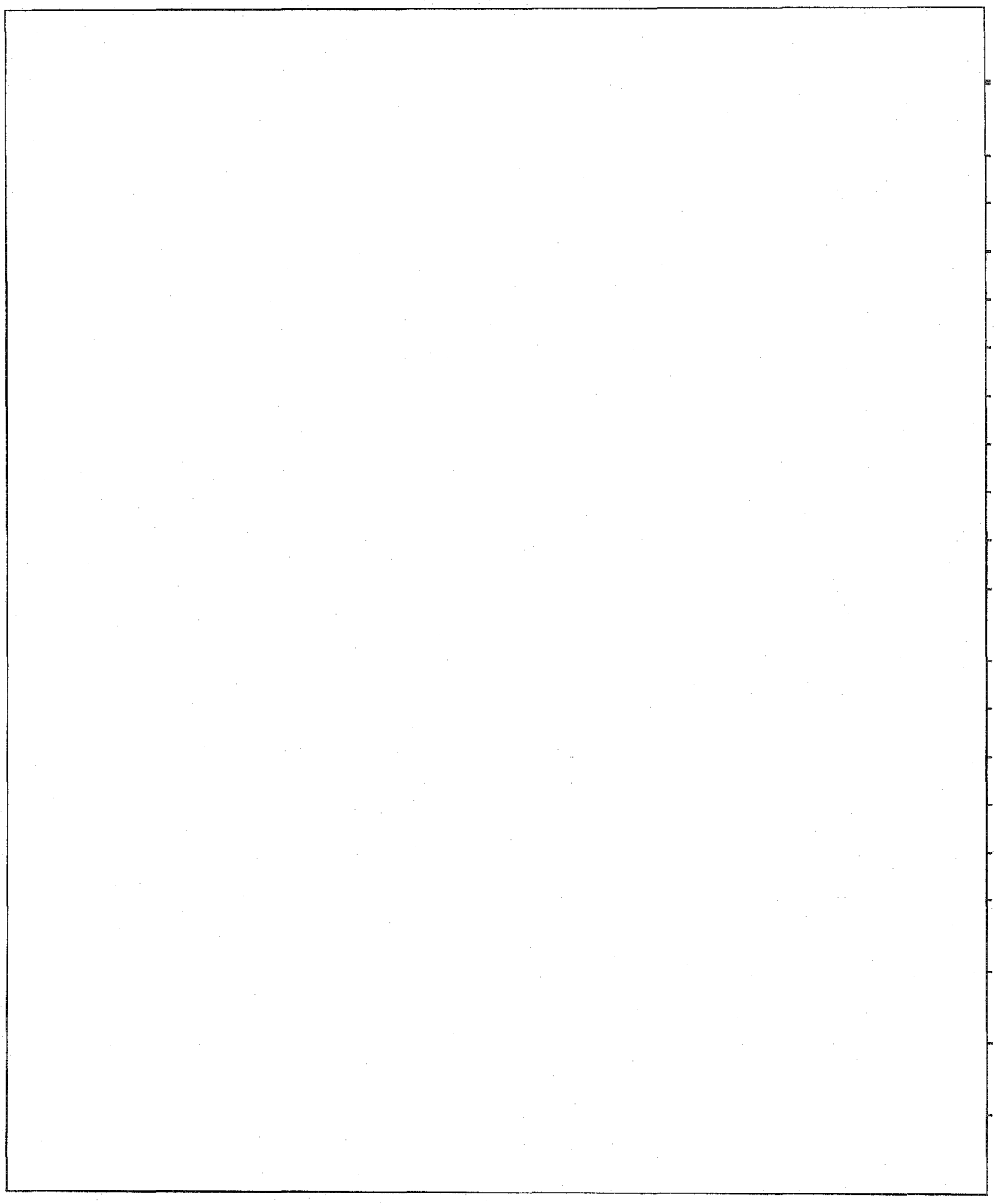
[53] Such carload visibility is essential to the development of a feasible operating plan for general freight traffic. DuPont's total failure to account for the movement of individual cars as they traverse the DRR network resulted in an operating plan and track/yard configuration that are woefully inadequate to meet the needs of the DRR's selected traffic group.

quantities of goods." DuPont Opening I-66. That methodological choice—not any limitation imposed by the data available to it—doomed DuPont's Operating Plan and RTC simulation.

Moreover, DuPont's assertion that the "unintelligible" nature of NS data prevented it from developing a detailed local train service plan is demonstrably false. The DuPont Car/Train Database contains all of the car-specific movement information that DuPont would have needed to model the movement of local "turn service" trains. Figure III-C-9 is an extract from the information contained in the DuPont Car/Train Data base for NS {{

}} Figure III-C-9—which is excerpted directly from the DuPont Car/Train Database—contains all of the information required to model the movement of this local "turn service" train completely and accurately.

Figure III-C-9
Extract From DuPont Car/Train Database {{



}}

{{

}} As Figure III-C-9 clearly demonstrates, the DuPont Car/Train Database contains sufficient information to enable DuPont to have determined not only the locations at which DRR local trains (including "turn" locals) were required to work en route, but also which individual cars those trains would need to pick up or set off at each location.

Indeed, DuPont had multiple sources from which it could have determined the route of movement of DRR trains. In addition to the robust data source created by DuPont itself, NS produced to DuPont in discovery other documentation that DuPont could have used in modeling

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[54] {{ }}

[55] {{ }}

[56] {{ }}

the routes of DRR trains. NS document "Schedule.xls"[57] provided information regarding the schedules and operating stations served by NS road trains. Another document provided by NS, designated as "Local routes and customers.xls,"[58] contained information regarding the routes traversed by NS local trains, as well as the names, and operating station locations, for more than 10,000 NS customers located in the territory replicated by the DRR. DuPont's Opening Evidence indicates that it did, in fact, consult those data sources for certain purposes. DuPont Opening Ex. III-C-1 at 10. However, DuPont apparently chose to ignore that information in developing and modeling the DRR's local train service plan.

e. DuPont's Yard Service Plan Is Based Upon Mathematical Calculations That Produce Absurd Results.

DuPont likewise failed to apply railroad operating analysis in developing its proposed sizing and configuration for DRR yards, and estimates of the DRR's yard locomotive and yard crew requirements. Each of those elements of DuPont's Operating Plan is based entirely upon unsupported mathematical calculations. DuPont's narrative evidence states only that the DRR has a total of 123 yards that "are used for train staging, 1000/1500-mile car inspections, crew changes, locomotive servicing and fueling, interchanges, local train operations and originating/terminating traffic." DuPont Opening III-B-7.[59] Nowhere in its Opening Evidence

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[57] Produced to DuPont at DVD-010. *See* NS Reply WP Folder "Documents Produced in Discovery III-C," "Schedule.xls."

[58] Produced to DuPont at DVD-032. *See* NS Reply WP Folder "Documents Produced in Discovery III-C," "Local routes and customers.xls."

[59] Tellingly, while certain tracks in DuPont's "yard matrix" workpaper are designated as classification tracks, DuPont's narrative does not mention "car classification" or "intermediate switching" among the activities to be performed at DRR yards. As discussed below (at III-C-62-67), DuPont's failure to proffer any car classification or blocking plan for the three million carloads of general freight traffic that it selected for its SARR renders its Operating Plan infeasible.

or workpapers does DuPont explain the methodology that it employed to determine the number of yards that the DRR would need, where to locate those yards, the number and configuration of the tracks and other facilities assigned to each DRR yard, or how the yards would be configured.

The only "evidence" proffered by DuPont to support its estimate of the DRR's yard requirements is a workpaper titled "DRR Yard Matrix errata.xlsx."[60] That workpaper sets forth DuPont's conclusions regarding the location of each yard, the number and length of the classification and other tracks at each yard, and the ancillary facilities and personnel (such as turnouts, rip tracks, locomotive servicing and fueling facilities, crew facilities, car inspectors and yard crews) assigned to each location. DuPont does not explain how it determined the number (or length) of the yard tracks at each yard, nor does it proffer any evidence demonstrating that those facilities are sized and configured in a manner that would support the operations required to serve the DRR's selected traffic group.[61] Indeed, the "stick diagrams" of the DRR system

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[60] A copy of DuPont Opening workpaper "DRR Yard Matrix errata.xlsx" is set forth in NS Reply Ex. III-C-8.

[61] The only explanation of the track configuration set forth in DuPont Opening workpaper "DRR Yard Matrix errata.xlsx" is a footnote to the Tab titled "DRR YARDS," which states that the track lengths at certain locations were "modified from NS actual to reflect the maximum train size in [DuPont's] RTC Model . . . . Length based on fitting largest train into the shortest track." *See* "DRRYard Matrix errata.xlsx," Tab "DRR YARDS." DuPont's methodological decision to configure the DRR's yards in a manner that would allow the "largest train" to fit on the "shortest track" is both wasteful and inefficient. There is no operational need for every track within a yard to be capable of accommodating the longest train that would ever stop at that facility. Rather, the optimal sizing of yard tracks requires consideration of the use(s) to which each track is put, the number of trains, cars, and blocks of cars that arrive, dwell and depart on a daily basis, and the schedule on which those trains, cars, and blocks arrive, dwell, and depart. DuPont's Opening Evidence offers no indication whatsoever that it considered those factors in developing the DRR's yards. Conversely, NS's yard sizing and configuration evidence is supported by a detailed analysis of the trains, cars, and blocks that the DRR would be required to handle, and the specific classification and switching activities that the DRR would perform, at each location. *See infra* III-C-195-201.

submitted as part of DuPont's Opening Evidence do not even include diagrams of any of the DRR's yards.[62]

Even a cursory examination of DuPont's "yard matrix" reveals that the DRR's yard requirements are based solely on mathematical spreadsheet calculations, rather than any meaningful analysis of the DRR's yard operations.[63] DuPont Opening workpaper "DRR Yard Matrix errata.xlsx" portrays a group of generic, "cookie-cutter" yards that incorporate few (if any) distinctions based on location-specific car volume and workload. For example, DuPont posits 11 different yards that would have six classification tracks.[64] The classification tracks at those 11 yards are identical—each has tracks with lengths of 2300, 2100, 1900, 1700, 1500, and 1300 feet. *Id.* Likewise, all three DRR yards with eight classification tracks have identical track lengths of 2700, 2500, 2300, 2100, 1900, 1700, 1500, and 1300 feet (adding tracks of 2500 and 2700 feet to the values assigned by the spreadsheet for six-track facilities).[65] At the five DRR yards with ten classification tracks, those tracks are, in every instance, 3300, 3100, 2900, 2700, 2500, 2300, 2100, 1900, 1700, and 1500 feet in length.[66] DuPont proffers no evidence to support its decisions regarding how many classification tracks to build at each location, much less any

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[62] *See* DuPont Opening WP "DRR Opening Sticks errata.pdf."

[63] *See FMC*, 7 S.T.B. at 737, n.88, 89 (noting problems with attempting to develop an operating plan from mathematics).

[64] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRACK LENGTH," Lines 24, 30, 33, 53, 58, 60, 80, 83, 86, 94 and 95.

[65] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRACK LENGTH," Lines 66, 72 and 102.

[66] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRACK LENGTH," Lines 1, 2, 3, 77 and 93.

rationale for providing identical track lengths at yards with the same number of classification tracks (but very different workloads).[67]

DuPont's decision to base its yard configuration evidence on figures untethered to actual requirements of the DRR's traffic produced absurd results. For example, DuPont's "yard matrix" assigns identical classification facilities (ten classification tracks with lengths ranging from 3300 feet to 1500 feet) to the DRR's "major" yards at Elkhart, IN, Conway, PA, and Roanoke, VA.[68] Had DuPont developed a car classification and blocking plan for the DRR's general freight traffic, it would have known that the number of cars that need to be classified on a daily basis varies widely at those three locations. Specifically, the average number of cars per day that the DRR would be required to classify during the peak year would be 2,274 cars at Elkhart, IN, 1,545 cars at Conway, PA, and 583 cars at Roanoke, VA.[69] Likewise, the information regarding NS's current yard operations furnished to DuPont in discovery showed that NS today classifies an average of { } cars per day at Elkhart, IN, { } cars per day at Conway, PA, and {686} cars per day at Roanoke, VA.[70] Thus, the DRR yards at Elkhart, IN, Conway, PA, and Roanoke, VA, have very different classification track capacity requirements, and the assignment of identical classification facilities to those yards by DuPont's "yard matrix" methodology is utterly unrealistic.[71] Indeed, as NS's Operating Plan demonstrates, the DRR

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[67] *See Otter Tail*, STB Docket No. 42071, at 19 (holding that yard configuration is a function of many factors including dwell time and flow in and out of the yard).

[68] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRK LENGTH," Lines 1, 2 and 3.

[69] *See* NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Lines 1, 4, 12.

[70] *See* NS Reply WP "Yards.xlsx" that was provided to DuPont in discovery and is included in NS Reply WP Folder "Documents Produced in Discovery III-C."

[71] DuPont cannot credibly argue that the number of car classifications required at those (and other) DRR yards in the Base Year would be significantly different than NS's current

would need 55 classification tracks at Elkhart, 37 at Conway, and 23 at Roanoke.[72] That is because the number of classification tracks needed is a function both of the number of cars per day that move through the yard and of the number (and size) of outbound blocks that must be built in the yard.[73]

DuPont's failure to develop a location-specific car classification and blocking plan for the DRR produced major errors at other yard locations as well. The four classification tracks assigned by DuPont's "yard matrix" at the DRR's "major" yard at Bellevue, OH, are woefully inadequate to handle the 1,760 cars per day that would be classified and switched at that location in the peak year.[74] Rather, as NS's location-specific analysis shows, the DRR's Bellevue yard would need 46 classification tracks to accommodate its daily workload. At Chattanooga, TN, the DRR would need 51 classification tracks (rather than the 12 assigned by DuPont) to classify and switch the average daily volume of 1,472 cars.[75] At Linwood, NC, the DRR would need

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experience. DuPont made a conscious methodological decision to "adopt" trains operated by NS during the Base Year, rather than developing the DRR's train services from scratch based on its selected traffic group. Accordingly, the cars on "DRR" trains move across the DRR network in the same manner as they did on NS during the Base Year, and must be classified and/or switched between trains at the same locations.

[72] *See* NS Reply Exhibit III-C-12 "DRR Yard Requirements."

[73] DuPont's Car/Train Database is searchable by location. By counting the number of cars whose first or last "EVENT TYPE" (Column 8) occurred at a particular location, DuPont could have estimated the average daily classification and switching requirements at the DRR's classification yards. Moreover, NS provided DuPont information regarding the average number of cars per day that are currently classified at each of the yards designated by DuPont as a "major" DRR facility. *See* NS Reply WP, "Yards.xlsx".

[74] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRK LENGTH," Line 6; NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 2; NS Reply Ex. III-C-12 "DRR Yard Requirements," "Bellevue_OH_Requirements_ Analysis_Final.xlsx."

[75] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRK LENGTH," Line 4; NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 5; NS

39 classification tracks (rather than the ten assigned by DuPont) to accommodate the average daily car classification workload of 1,238 cars.[76] At Birmingham, AL, the DRR would need 43 classification tracks (rather than the ten assigned by DuPont) to accommodate an average daily car classification workload of 1,584 cars.[77] As these examples demonstrate, DuPont's failure to analyze the DRR's peak year classification and blocking requirements—or even to consult the historical yard activity data provided by NS in discovery—resulted in a massive understatement of the capacity requirements at most DRR yards.

Indeed, DuPont's "yard matrix" methodology failed to provide any classification tracks at several locations at which the DRR would need to switch and classify cars. For example, NS operates an important classification yard at Enola, PA, near Harrisburg, PA. As NS's Operating Plan evidence indicates, the DRR would be required to classify an average of 942 cars per day at Enola during the peak year.[78] Yet, DuPont assigned no classification tracks, no car inspectors and no yard locomotives or crews to the DRR's Enola yard.[79] Rather, the only daily activity accounted for at Enola Yard, under DuPont's Operating Plan, is a change of crews for 11 road

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Reply Ex. III-C-12 "DRR Yard Requirements," "Chattanooga_TN_Requirements _Analysis_Final.xlsx."

[76] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRK LENGTH," Line 93; NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 7; NS Reply Ex. III-C-12 "DRR Yard Requirements," "Linwood_NC_Requirements_Analysis_Final.xlsx."

[77] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRK LENGTH," Line 77; NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 3; NS Reply Ex. III-C-12 "DRR Yard Requirements."

[78] NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 8.

[79] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRK LENGTH," Line 56; Tab "DRR YARDS," Line 56.

trains.[80] As NS's Operating Plan shows, the DRR would need 29 classification tracks at Enola Yard to accommodate the daily volume of classification and switching required to serve its selected traffic group.[81] DuPont's methodology likewise failed to provide any classification tracks at Buffalo (Bison Yard), where the DRR would need ten tracks to classify 289 cars per day; Louisville, KY, where the DRR would need ten tracks to classify 139 cars per day; and Tilton, IL, where the DRR would need five tracks to classify 69 cars per day.[82]

Conversely, DuPont's mathematical approach to yard sizing and configuration led it to "oversize" the DRR's physical plant by building yards at locations where no yard is needed to support efficient DRR service. The functions contemplated at many of the DRR's smaller yards can be accommodated by constructing one or more "industrial support" tracks in lieu of a yard facility. For example, at Greenville, SC, DuPont posits a yard consisting of three tracks totaling 7.12 miles of track. According to DuPont's "yard matrix," this facility would be used only as a crew change point—no classification tracks, locomotive or car servicing facilities, car inspectors or yard crew are provided at the Greenville yard.[83] NS's Operating Plan indicates that, during the peak year, the DRR would need to switch only 13 cars per day into or out of trains at Greenville.[84] NS witness Johnson determined that this limited switching activity could be

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[80] *See* DuPont Opening WP "Inspection Crews.xlsx."

[81] *See* NS Reply Ex. III-C-12 "DRR Yard Requirements," "Enola_PA_Requirements_Analysis_Final.xlsx."

[82] NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Lines 18, 32, 59; *see* NS Reply Ex. III-C-12 "DRR Yard Requirements," "Buffalo_NY_Requirements_ Analysis_Final.xlsx," "Louisville_KY_Requirements_ Analysis_Final.xlsx," and "Tilton_IL_ Requirements_Analysis_Final.xlsx."

[83] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "DRR YARDS," Line 96.

[84] *See* NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 119.

accommodated on two industrial support tracks totaling 1500 track feet.[85] Crew changes (which DuPont posits would take only 15 minutes) could be completed on the main line. Accordingly, a least cost, most efficient railroad would not build a yard with more than seven miles of track at Greenville, as DuPont proposes. The yard containing 7.69 miles of track at Bristol, VA, posited in DuPont's "yard matrix" is likewise wasteful and inefficient.[86] According to DuPont, this yard would (like the Greenville, SC, yard) essentially serve as a crew change point.[87] NS's analysis of the DRR's operations indicates that it would need to switch only 16 cars per day at Bristol during the peak year, which could be accomplished with 2,000 feet of industrial support track (consisting of one track of 1000 feet and two 500-foot tracks).[88] This is less than five percent of the 40,603 track feet assigned to Bristol in DuPont's "yard matrix." At Sandusky, OH, where the DRR's peak year switching activity would average only eight cars per day, two 500-foot industrial support tracks could accommodate the required workload, obviating the need for the 5.40 miles of yard track contemplated by DuPont's Operating Plan.[89]

As the foregoing examples demonstrate, in almost every instance, DuPont's spreadsheet-based yard sizing methodology either "undersized" or "oversized" the physical plant at DRR yards. The result is a SARR whose terminal facilities bear little resemblance to those that a least cost, most efficient railroad would build to serve its selected traffic group.

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[85] NS Reply WP "DRR Yard List Reply.xls," Tab "Ind. Support Yards."

[86] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "DRR YARDS," Line 64.

[87] *Id.*; *see also* DuPont Opening WP "Inspection Crews.xlsx."

[88] NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 114; NS Reply WP "DRR Yard List Reply.xls," Tab "Ind. Support Yards."

[89] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "DRR YARDS," Line 107; NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 131.

Perhaps the most glaring omission resulting from DuPont's mathematical approach to yard sizing and configuration is its failure to provide for a single "hump" yard. While DuPont's Operating Plan and "yard matrix" workpaper characterize certain DRR facilities as "major yards," and provide for classification tracks at 39 different yard locations, DuPont's evidence gives no indication that any of those yards is equipped with one or more "hump" tracks.[90] To the contrary, DuPont posits that "[i]nterior yard switches and set-out track switches are hand-thrown switches." DuPont Opening III-B-8 (emphasis added). As the Board knows, a hump yard requires a sophisticated system of power switches and car retarders that enable yard personnel to quickly change the "destination" track onto which each car is switched as it passes over the hump to the "classification yard" portion of the facility. DuPont's decision to equip all DRR yards only with hand-thrown switches confirms that the DRR's yards are not designed for "hump" operations. If switching were performed at all DRR yards by a locomotive pushing cars around—a process known as "flat switching"—its operations would be substantially less efficient, it would need more locomotives and crews, and the transit times for cars would be longer. The absence of a hump yard anywhere along the DRR's 7,300-mile proprietary network is a fatal deficiency that renders DuPont's Operating Plan for general freight traffic infeasible.

f. DuPont's Reliance Upon "Mathematics" Leaves DRR Woefully Short of Yard Crews And Locomotives.

The number of yard crews and yard locomotives that DuPont assigned to each DRR yard are likewise based upon mathematical calculations that bear little (if any) relationship to the actual work that would have to be performed on a daily basis.[91] DuPont posits that, at five

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[90] *See* DuPont Opening II-B-7; DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRK LENGTH."

[91] *See* DuPont Opening WP "DRR Yard Assignments_Opening.xlsx," Tab "Locos."

locations, the DRR would operate four yard assignments per day, resulting in a total requirement of 20 yard locomotives for those yards.[92] Likewise, DuPont posits five yards at which the DRR would operate three yard assignments (for a total requirement of 15 yard locomotives); four locations at which the DRR would operate two yard assignments (for a total requirement of eight yard locomotives); and 26 yards at which the DRR would operate only one yard assignment (for a total requirement of 26 yard locomotives). The 69 locomotives generated by this assignment-counting methodology were increased by a 15% spare margin to arrive at a total estimated requirement of 80 yard locomotives.[93]

At first glance, this "methodology" creates the illusion of logic and mathematical precision. In reality, it is both unsupported and seriously flawed. DuPont proffers no explanation whatsoever of how it determined whether to posit one, two, three or four yard assignments at particular yard locations.[94] Thus, the fundamental data point underlying DuPont's yard locomotive and yard crew calculations—*i.e.*, the number of yard assignments at each location—is unsupported by any record evidence. Moreover, as NS's Operating Plan demonstrates, the number of yard assignments posited by DuPont at major yards is woefully inadequate. For example, it is utterly unrealistic to assume (as DuPont did) that nearly 2,300 cars per day could be classified and switched by only four yard assignments at Elkhart.[95] As NS's Operating Plan shows, the DRR would need to operate six yard assignments at Elkhart to

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[92] *See* DuPont Opening WP "DRR Yard Assignments_Opening.xlsx," Tab "Locos."

[93] *Id.*

[94] Indeed, DuPont did not identify the specific yards at which the DRR would operate one, two, three or four yard assignments until August 27, 2012, when it produced to NS a new workpaper titled "DRR Yard Crew Assignments." *See* DuPont Reply to Norfolk Southern Railway Company's Motion for Modification of Procedural Schedule (Aug. 27, 2012) at 4, n.5.

[95] *See* DuPont Opening WP "DRR Yard Crew Assignments."

accommodate its selected traffic.[96] Likewise, two yard assignments clearly would not be sufficient to classify 1,386 cars per day at Macon, GA.[97] Rather, the DRR would need three yard assignments to accommodate the workload at its Macon yard.[98] Nor would four yard assignments be capable of classifying and switching 1,760 cars per day at the DRR's "major" yard at Bellevue, OH.[99] DuPont's allocation of yard assignments at other DRR yards is similarly divorced from reality.

Moreover, DuPont's methodology assigns no yard crews or locomotives at all to 83 of the 123 yards contemplated by the DRR Operating Plan.[100] DuPont does not explain how car switching would be accomplished at those locations. To the extent that DuPont takes the position that any required switching would be performed by road train locomotives and crews, its Operating Plan does not account for the additional time required for road crews to do so, or the impact of such an assumption on the DRR's overall locomotive and crew requirements.[101]

DuPont's estimate of the DRR's yard crew requirements suffers from the same infirmity. As it did in sizing the DRR's yard locomotive fleet, DuPont calculated the DRR's yard crew needs by multiplying the (unsupported) number of assignments that it posits for each yard by an assumed number of shifts that each assignment would operate per day.[102] Again, DuPont does

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[96] *See* NS Reply WP "DRR Reply DRR Reply Yard and Helper Assignments.xlsx."

[97] *See* NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 6.

[98] NS Reply WP "DRR Reply DRR Reply Yard and Helper Assignments.xlsx."

[99] *See* NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 2; *see* NS Reply WP "DRR Reply Yard and Helper Assignments.xlsx."

[100] *See* DuPont Opening WP "DRR Yard Assignments_Opening.xlsx," Tab "Locos," Tab "Crews."

[101] Indeed, DuPont's RTC model allows only 30 minutes of dwell time for road trains and "straightaway" local trains to work at intermediate yards. *See infra* III-C-239.

[102] *See* DuPont Opening WP "Yard Assignments_Opening.xlsx," Tab "Crews."

not explain anywhere in its Opening Evidence or workpapers how it determined the number of daily shifts that would operate at each location. In other words, DuPont's yard crew estimate is the product of a mathematical calculation that multiplies two numbers, both of which are based on assumptions for which DuPont provided no documentation or supporting evidence!

Predictably, the results produced by this mathematical exercise are utterly nonsensical. For example, DuPont's unsubstantiated methodology allocates a single yard locomotive, operating on three shifts, to the DRR's Linwood, NC, yard.[103] But a single yard assignment cannot realistically classify and switch 1,238 cars per day, as the DRR would need to do at Linwood.[104] Such an extraordinary level of productivity is especially implausible for a yard that lacked a "hump" track, "receiving" and "forwarding" tracks, and power switches and car retarders to expedite the classification process. Even with such track facilities, a single yard engine could not simultaneously perform all of the operations required as part of the classification process—including pulling cars from receiving tracks, shoving them over the hump, switching the resulting blocks into outbound trains, segregating "bad order" cars and moving them to and from rip tracks, and switching empty cars between trains and storage tracks as needed. Equally nonsensical is DuPont's assignment of a single yard engine, operating only one shift per day, to DRR's Allentown yard, where daily classification activity would average 781 cars.[105] Likewise, a single yard assignment operating one shift per day could not support the peak year classification and switching volume of 677 cars per day at the DRR's Sheffield, AL,

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[103] *See* DuPont Opening WP "DRR Yard Assignments_Open.xlsx."

[104] *See* NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 7.

[105] *See* DuPont Opening WP "DRR Yard Assignments_Open.xlsx;" NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 9.

yard.[106] And DuPont's "yard matrix" makes no provision whatsoever for either yard crews or locomotives at Enola, PA, where the DRR would need to classify an average of 942 cars per day in the peak year.[107]

The utter illogic of DuPont's approach to determining the DRR's yard sizing, yard locomotive, and yard crew requirements is perhaps best illustrated by the fact that DuPont did not assign any yard locomotives or yard crews to several yards at which it did build multiple classification tracks. Specifically, while the DRR yards at Park Manor/63rd Street, IL, Rutherford, PA, Danville, KY, and Chillicothe, OH, are all designed with three classification tracks, no yard locomotive or crew is allocated to any of those facilities by DuPont's methodology. Nor did DuPont provide a yard locomotive or yard crew at Watkins, OH, where (according to DuPont) the DRR would operate a yard with four classification tracks.[108] Again, if DuPont assumed road train crews would handle the work at these yards, DuPont has not accounted for that time. These inconsistencies reveal the total disconnect between the "yard matrix" calculations with which DuPont sized the DRR's yards and the separate mathematical formula (based on unsupported assumptions) that DuPont employed to estimate the DRR's yard locomotive and yard crew requirements.[109] More fundamentally, they reflect DuPont's failure to apply operational experience or judgment in developing and verifying the DRR's yards, and related equipment and personnel, requirements.

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[106] *See* DuPont Opening WP "DRR Yard Assignments_Open.xlsx;" NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 11.

[107] *See* DuPont Opening WP "DRR Yard Crew Assignments;" NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 8.

[108] *See* DuPont Opening WP "DRRYard Matrix errata.xlsx," Tab "CLASS TRK LENGTH;" DuPont Opening WP "DRR Yard Crew Assignments."

[109] *See FMC*, 7 S.T.B. at 737, n.88, 89 (noting problems with arithmetic attempts to develop an operating plan).

DuPont's belated attempt to establish a nexus between its yard configuration and staffing and the volume of work to be performed at those facilities is unavailing. In its August 27, 2012, response to NS's motion for modification of the procedural schedule, DuPont announced that it had "identified" two workpapers that (it asserted) were "missing from its Opening Evidence."[110] The first was the "DRR Yard Crew Assignments.docx" workpaper discussed above (which confirms the illogic of DuPont's yard crew assignments). The other was a workpaper titled "DuPont Carloads by Yard_Summary Extract.xlsx" which provides, separately for general freight, intermodal and coal traffic, "the number of carloads originated, received, terminated and delivered by [DRR] yard in the 2010 Base Year."[111] According to DuPont, that workpaper "address[es] NS's claim that DuPont has not identified the number of cars that the SARR would be required to handle at its yard facilities."[112]

Contrary to DuPont's assertion, the workpaper "DuPont Carloads by Yard_Summary Extract.xlsx" actually confirms that, in developing its Operating Plan, DuPont did not take into account the number of cars that need to be classified at DRR yards. The categories of cars listed in the workpaper—"Originated," "Terminated," "Interchange Forwarded" and "Interchange Delivered"—constitute only a fraction of the cars that must be handled by NS (and DRR) at intermediate yards each day. DuPont's workpaper "DuPont Carloads by Yard_Summary Extract.xlsx" does not make any mention of the thousands of loaded and empty cars that must be switched between trains at intermediate points on their journey across the NS (and DRR)

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[110] *See* DuPont Reply to Norfolk Southern Railway Company's Motion for Modification of Procedural Schedule, (Aug. 27, 2012) at 4, n. 5 (5th bullet item).

[111] *See id.* A copy of DuPont Opening WP "DuPont Carloads by Yard_Summary Extract.xlsx" is submitted herewith as NS Reply Ex. III-C-9.

[112] *Id.*

network.[113] For example, the data provided to DuPont in discovery indicated that NS classifies {{ }}, and NS's Operating Plan shows that the DRR would have to classify 2,274 cars per day at Elkhart during the peak year.[114] Based on those daily totals, the annual car classifications at Elkhart are {{ }}, and would be 830,001 cars on the DRR in the peak year. These figures dwarf the annual total of 20,578 general freight, intermodal and coal cars shown for Elkhart on DuPont Opening WP "DuPont Carloads by Yard_Summary Extract.xlsx."[115] To the extent that DuPont truly relied upon the data set forth in that workpaper in designing the DRR's yards, the failure of that workpaper to consider the massive number of cars that require intermediate classification and switching would have led DuPont to undersize virtually all of the DRR's classification yards (which it did).

However, DuPont's suggestion that it relied upon this newly "identified" workpaper in determining the DRR's yard configuration, yard locomotive and yard crew estimates is, at best, puzzling. For example, the annual volume of 20,578 cars shown on that workpaper for the yard at Elkhart equates to only 56.38 cars per day.[116] Such a low level of daily traffic would barely justify construction of a yard at Elkhart—much less the "major" yard with ten classification tracks and four yard assignments working three shifts per day posited by DuPont.[117] Likewise, 12 classification tracks and four yard assignments working three shifts per day would hardly be needed to handle an annual volume of 22,182 cars—or 60.77 cars per day—at the DRR's

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[113] *See* NS Reply Ex. III-C-1, "Carload Operations Overview."

[114] *See* NS Reply WP "Yards.xlsx"; NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 1.

[115] *See* NS Reply Ex. III-C-9.

[116] Dividing the annual total of 20,578 by 365 days produces an average daily total of 56.38 cars.

[117] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "DRR YARDS," Line 1; DuPont Opening WP "DRR Yard Assignments_Open.xlsx."

Chattanooga yard.[118] And the suggestion that DuPont allocated ten classification tracks and four yard assignments working three shifts per day to the DRR's yard at Conway, PA, on the basis of the annual total of 1,473 cars—or 4.04 cars per day—shown for Conway on DuPont Opening WP "DuPont Carloads by Yard_Summary Extract.xlsx" is simply not credible. In short, the belated production of DuPont Opening workpaper "DuPont Carloads by Yard_Summary Extract.xlsx" cannot salvage DuPont's nonsensical estimates of the DRR's yard configuration, equipment and staffing requirements.

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As the foregoing discussion demonstrates, DuPont's Operating Plan for the DRR is based upon a series of computerized data selection processes and undocumented spreadsheet calculations founded on unsupported assumptions, rather than any credible analysis of the operations that the DRR would need to perform in order to serve its selected traffic. The methodologies that DuPont chose to use in developing its operating evidence are replete with errors and unsupported assumptions that render DuPont's entire train service plan, yard configurations, yard locomotive fleet and yard crew assignments invalid. In particular, DuPont's Opening Evidence fails to establish any rational connection between the facilities and personnel posited by DuPont and the volume of classification and switching work that the DRR would have to perform in moving general freight traffic along the DRR network.

These fatal deficiencies in DuPont's Operating Plan are self-inflicted—as NS has shown, they are directly attributable to DuPont's ill-conceived and poorly executed methodologies, and not (as DuPont alleges) to any deficiency in the extensive information provided by NS in

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[118] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "DRR YARDS," Line 4; DuPont Opening WP " DRR Yard Assignments_Open.xlsx."

discovery. To the contrary, DuPont successfully utilized that NS data to select the DRR's traffic and to calculate its revenues. But, for reasons known only to DuPont, it chose not to use the shipment-specific train and car event data base that it created for traffic and revenue purposes to prepare –or even to verify—its operating evidence. That decision proved fatal to DuPont's case—the operating plan generated by DuPont's "automated" methodologies is irreparably flawed and the Board must reject it.

2. DuPont Has Failed To Present A Feasible Operating Plan For General Freight Traffic.

DuPont states that "[t]he DRR was conceived as a railroad that would primarily handle trainload quantities of goods." DuPont Opening I-66 (emphasis added). According to DuPont, "the DRR operates complete trains, including general freight, coal and intermodal trains in local and interline service." DuPont Opening III-C-8; see *also* DuPont Opening III-C-2 (DRR's traffic group consists of "general freight, coal and intermodal traffic moving in trainload service") (emphasis added).

DuPont's characterization of the DRR as a "trainload" railroad is fundamentally inconsistent with the traffic group that it selected for its SARR. While the traffic group in past SAC cases has most often consisted of coal and intermodal shipments (occasionally augmented by smaller volumes of general freight traffic), DuPont posits a SARR that would transport nearly three million carloads of general freight traffic, accounting for nearly 60% of the DRR's total net revenue. DuPont Opening III-C-3, Table III-C-1; III-A-18, Table III-A-7. While coal and intermodal shipments move predominantly between a limited number of origins and destinations in trainload service, general freight traffic is "carload" business that moves in single or multi-car shipments between a wide range of origins and destinations. Indeed, the general freight traffic selected by DuPont originates and/or terminates at more than 6,000 customer facilities at more

than 700 stations along the DRR's 8,100-mile network.[119] Regardless of the fact that DuPont calls the DRR a trainload railroad, "a rose by any other name is still a rose."

The operations involved in transporting merchandise traffic are far more complex and capital intensive than those of a rail system designed primarily to handle unit trains. A merchandise railroad must be capable of accommodating an ever-changing mix of hundreds of different commodities tendered for shipment by thousands of customers, both large and small. Such shipments may require specialized car types, or "transload" facilities to permit the transfer of the product from rail cars to trucks (or vice versa). Traffic volumes and train sizes vary from day to day, and service schedules must be adjusted to meet the needs of customers. Given the truck-competitive nature of many merchandise commodities, customer expectations for service quality and reliability are high. Carriers must be able to track the location of each car as it travels across the network, and to advise customers regarding the status of their shipments at each stage in the process of transporting them.

In order to satisfy these customer requirements, NS (and other Class I railroads) create a "trip plan" for each individual general freight car. A "trip plan" includes a scheduled train service plan to move the car on one or more trains from origin to destination (or point of interchange with another railroad); a blocking plan to facilitate transfer of the car between trains at intermediate yards as it travels along the carrier's network; and a local train service plan to deliver an empty car for loading at origin, pick up the loaded car for line-haul movement, and deliver the loaded car at its destination. [120] Developing a trip plan enables the carrier to track the

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[119] NS Reply WP "DRR Local Customers.xls."

[120] The "trip plans" created by NS for general freight cars are similar to the shipment plans used by Federal Express or United Parcel Service to ensure efficient, scheduled service for packages shipped from one location to another. Upon receiving a request for service, those carriers

movement of each car across the network, to adjust the plan as necessary in response to unforeseen events (such as a train delay that results in cars missing "connections" to other road or local trains), to adjust yard assignments to accommodate surges in arriving traffic, and to provide customers access to information regarding the status of their shipments (especially important for customers who employ "just in time" inventory practices).[121]

In order to execute successfully "trip plans" for thousands of daily general freight shipments, a railroad must design a scheduled train service plan that is capable of meeting customer service requirements, and yard classification and switching operations that are adequate to support those train services. Rail transportation of merchandise traffic involves two distinct types of train service: "road train" service to move cars between points along the carrier's network, and "local train" service to pick up cars from, or set off cars at, customer facilities. The "cycle" of a typical general freight shipment includes the following operations:

1. Local train service to place an empty car at the origin customer facility;

2. Local train service to pick up the loaded car at the origin customer facility (most often on a subsequent day);

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develop a package-specific plan that includes pickup by truck at the customer's facility (analogous to local train service at origin); delivery to a regional sorting facility (analogous to a local serving yard); intercity transportation by truck and/or air to a major facility such as Federal Express' Memphis hub (analogous to linehaul movement to a major rail classification yard); transfer to another airplane or truck to complete the intercity transportation (analogous to classification and intermediate switching between road trains); delivery to a regional sorting facility close to the destination (analogous to road train delivery to a serving yard near the destination); and delivery by truck to the consignee (analogous to local train service to the receiver's facility). Planning and coordination of each step in this "trip plan" is essential for Federal Express (and a Class I railroad) to provide on-time delivery in conformity with customer requirements.

[121] Trip plans also provide a useful tool for measuring a railroad's service performance.

3. Movement of the loaded car from the origin customer facility to a nearby serving yard;

4. "Classification" of the loaded car (with other cars destined to the same location or intermediate yard) for further movement along the railroad's network;

5. Road train service to move the car along the network to another yard (or via multiple yards) to a point closer to the car's ultimate destination;

6. Local train service to deliver ("set-off") the loaded car at the consignee's facility;

7. Local train service to pick up the empty car at the consignee's facility after it has been unloaded, and move it to a local yard where it can be placed in an outgoing train for delivery to its next point of loading.[122]

In order to facilitate efficient handling of large volumes of carload traffic, railroads "classify" cars into "blocks" moving to a common point further along the network. All Class I carriers operate large "hump" yards (and numerous smaller "flat switching" yards) for that purpose. NS and other railroads assemble blocks of cars both for movement to another yard on their own lines ("internal blocks") and for interchange to connecting carriers. Internal blocks facilitate the handling of merchandise traffic across a carrier's own network. In addition to creating "internal" blocks for their own traffic, NS and other Class I railroads cooperate with connecting carriers to "pre-block" cars that move in interline service. As discussed in greater detail below (at III-C-74-76), NS builds blocks of merchandise cars for interchange to UP at Memphis, TN, New Orleans, LA, and Kansas City, MO. Such pre-blocking expedites the further movement of those cars on UP's lines. UP reciprocates by pre-blocking cars for delivery to NS at those gateways. NS has similar blocking arrangements with BNSF, CN, CP, CSXT, and KCS.

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[122] *See* NS Reply Ex. III-C-1, "Carload Operations Overview."

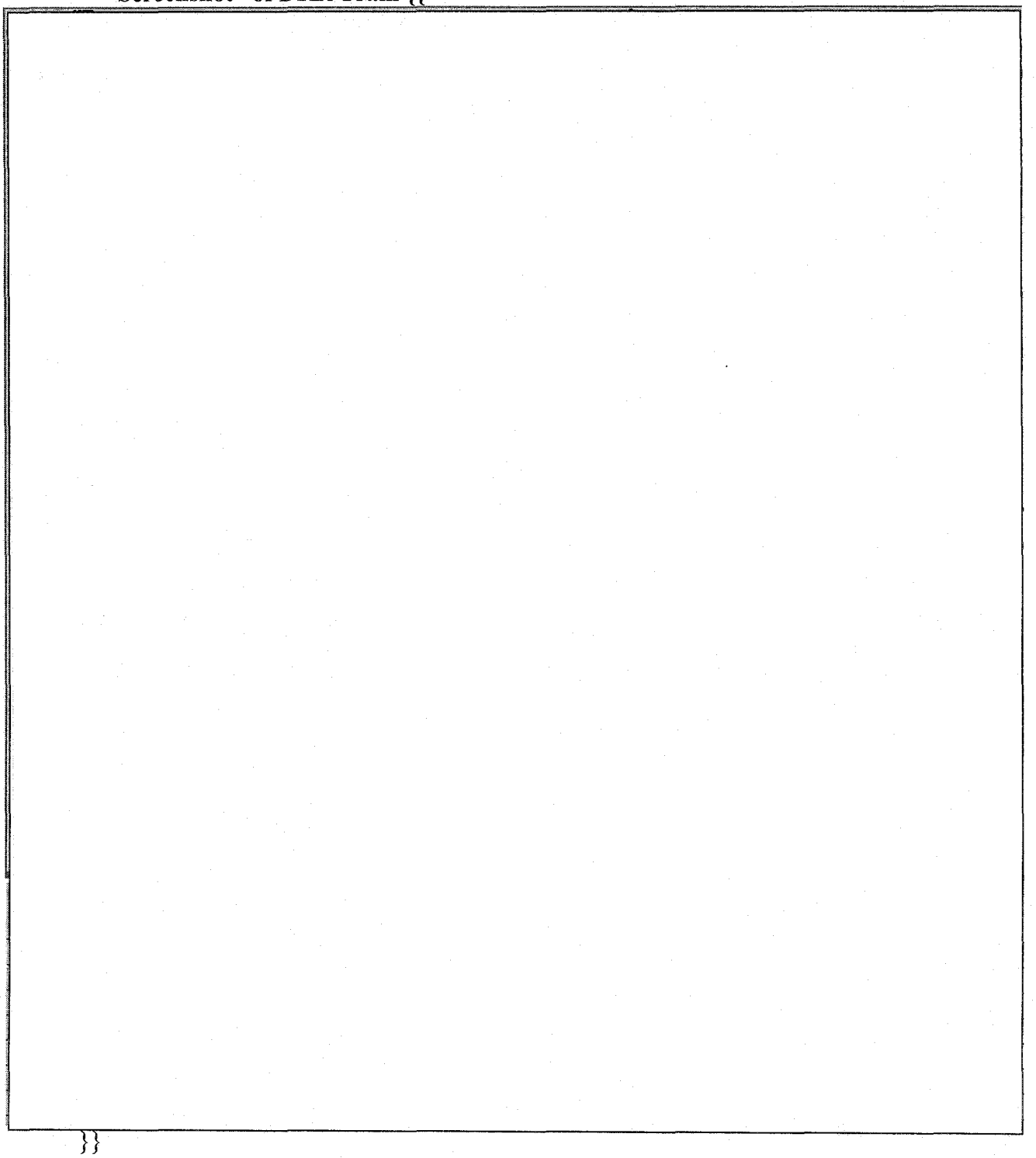
This practice improves the overall efficiency of the rail network by enabling cars to move from a major yard on one railroad's lines to a major yard on the connecting carrier's system without any additional switching en-route—which, as the Board knows, is the least cost, most efficient way of handling large volumes of general freight in interline service.

DuPont's Opening Evidence does not properly account for the facilities, personnel and time required to transport the massive volume of general freight traffic that it selected for the DRR in accordance with customer needs. DuPont's failures of proof involve virtually every aspect of "carload" railroading, and render its Operating Plan for general freight traffic infeasible.

First, as DuPont itself acknowledges, the SARR presented in its Opening Evidence is "conceived" as a "trainload" railroad. DuPont Opening I-66. But the DRR has three million cars of carload traffic! The DRR must be able to move each one of those cars from its specific origin (or on-SARR location), along the DRR network, including classifications and blocking at various yards, to its specific destination (or off-SARR junction). Nowhere in its operating evidence does DuPont account for the handling of individual general freight cars—much less present a "trip plan" to track and move those cars across the DRR network. To the contrary, DuPont made an intentional methodological decision to base its Operating Plan solely on "train" movements. This is clearly illustrated by DuPont's RTC Model simulation, in which trains move between terminals without ever changing consist. Figure III-C-10 is a "screenshot" from DuPont's RTC simulation, which documents the movement of Train {{

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Figure III-C-10
"Screenshot" of DRR Train {{



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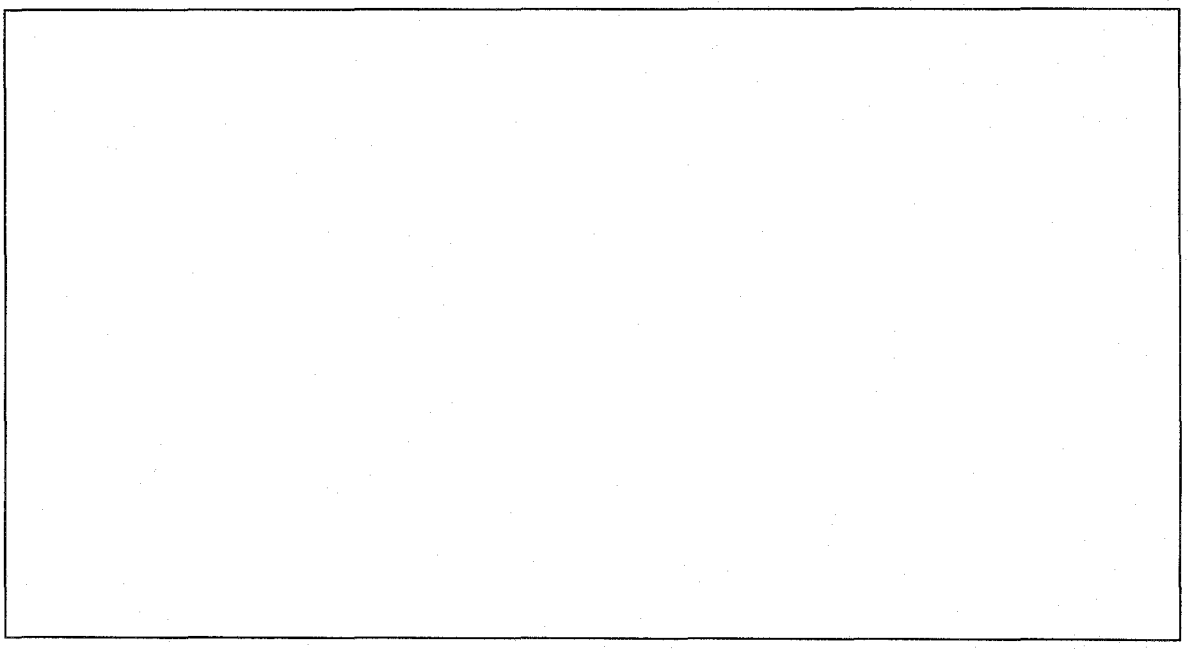
As Figure III-C-10 shows, the train departed Debutts Yard in Chattanooga, TN, with a consist of 50 loaded cars and 9 empty cars. It made intermediate stops at Knoxville, TN, Bristol,

VA, Roanoke, VA, Ingham (Solitude), VA, and Hagerstown, MD, before arriving at its final destination, Enola Yard.}} The car event data provided by NS in discovery showed that Train {{ }} picked up and/or set off cars at each of those locations. However, as Figure III-C-10 shows, in DuPont's RTC simulation, Train {{ }} departs each location with the same consist of 50 loads and nine empties.[123]

Figure III-C-11 contains information regarding the actual change in the consist of Train {{ }} as it travels along the DRR network (which was available to DuPont in developing its Operating Plan and RTC simulation).

Figure III-C-11

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{{

[123] See Figure III-C-10, Columns 8 and 9.

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DuPont's Operating Plan fails to account for these changes in the consist of trains as they move along the DRR system, or the car classification and switching at each intermediate yard required to transfer general freight cars between trains. Instead, DuPont's RTC simulation portrays the DRR's general freight train service as an "overhead" operation in which trains move "intact" across the network. In other words, DuPont's Operating Plan and RTC simulation for general freight traffic mimic the operations of a typical coal-hauling unit train SARR.

The "trainload-only" nature of DuPont's Operating Plan is further reflected in its assumption that the DRR interchanges only "complete trains" with connecting railroads. DuPont Opening III-C-5. As the Board (and DuPont's operating expert, Mr. McDonald) know full well, railroads interchange cuts of merchandise cars (rather than entire trains) at hundreds of interchange points throughout the rail network every day. DuPont's train-centric Operating Plan simply does not reflect the realities of handling general freight traffic.

Second, DuPont presented no car classification or blocking plan for the DRR's general freight traffic. While DuPont states that "[DRR] yards are used for train staging, 1000/1500-mile

car inspections, crew changes, locomotive servicing and fueling, interchanges, local train operations and originating/terminating traffic" (DuPont Opening III-B-7),[124] DuPont's Opening Evidence makes no mention of—much less adequate provision for—the car classification and blocking activities required to handle the nearly 3 million carloads of general freight traffic in the DRR's selected traffic group. Indeed, as NS demonstrated above, DuPont did not evaluate the number of cars to be classified on a daily basis in determining the DRR's yard configurations (including the number of "classification" tracks at each facility), yard locomotive fleet or yard crew requirements. As a result, the yard facilities, yard locomotives and yard crews posited by DuPont are woefully inadequate. DuPont's failure to provide "hump" tracks and power switches at any DRR yard further underscores its decision to ignore the service needs of general freight customers in designing the DRR's Operating Plan.

The fact that the majority of the general freight traffic selected by DuPont is "overhead" to the DRR network does not eliminate the need for the DRR to classify and switch those cars at intermediate points in order to provide the required service for those cars. Many overhead merchandise shipments travel in more than one road train during their journey on NS, and would do so on the DRR as well. {{

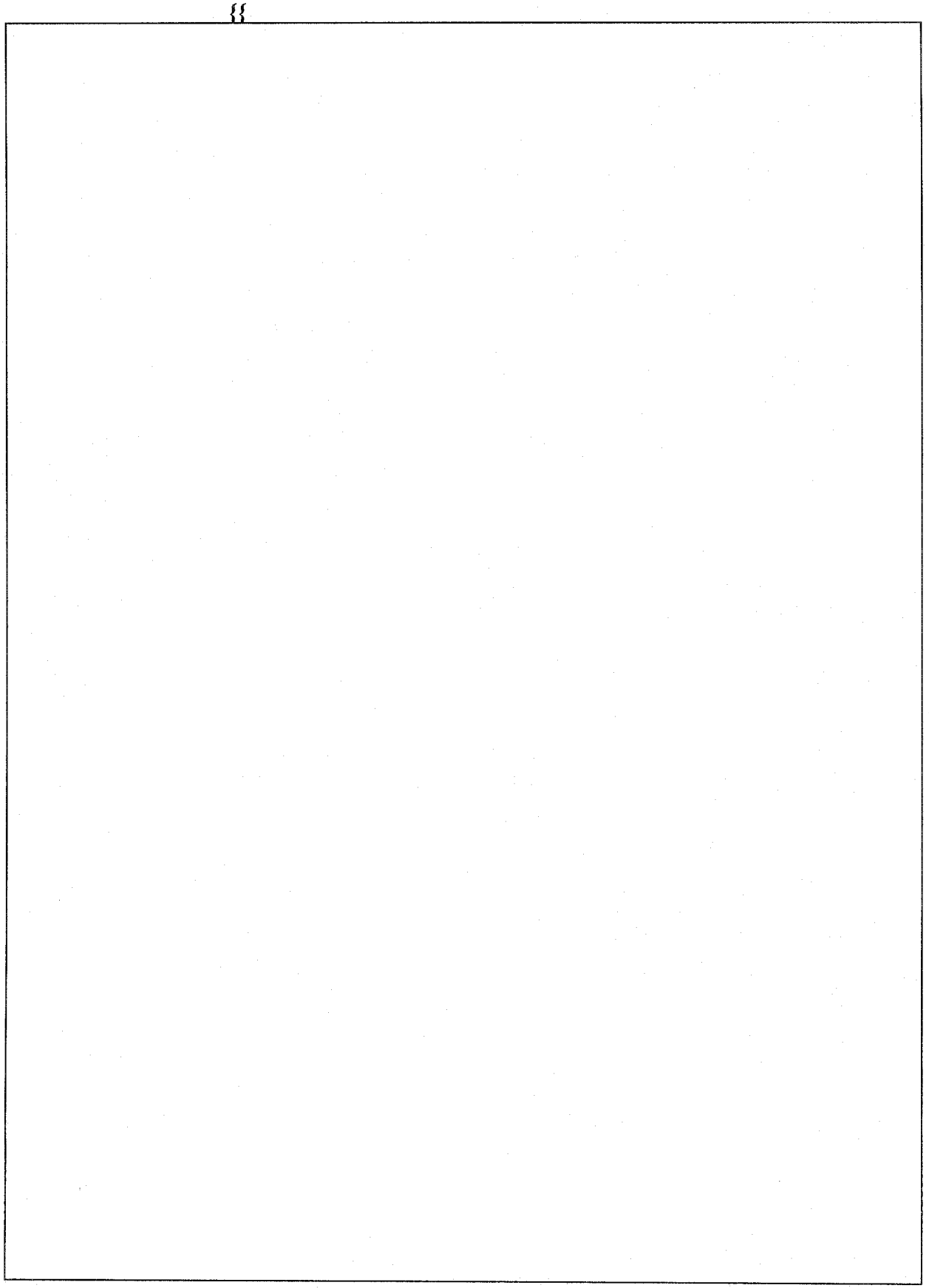
[124] *See also* DuPont Opening I-62 (DRR yards used for "train staging, inspections, crew changes, fueling, and other operations").

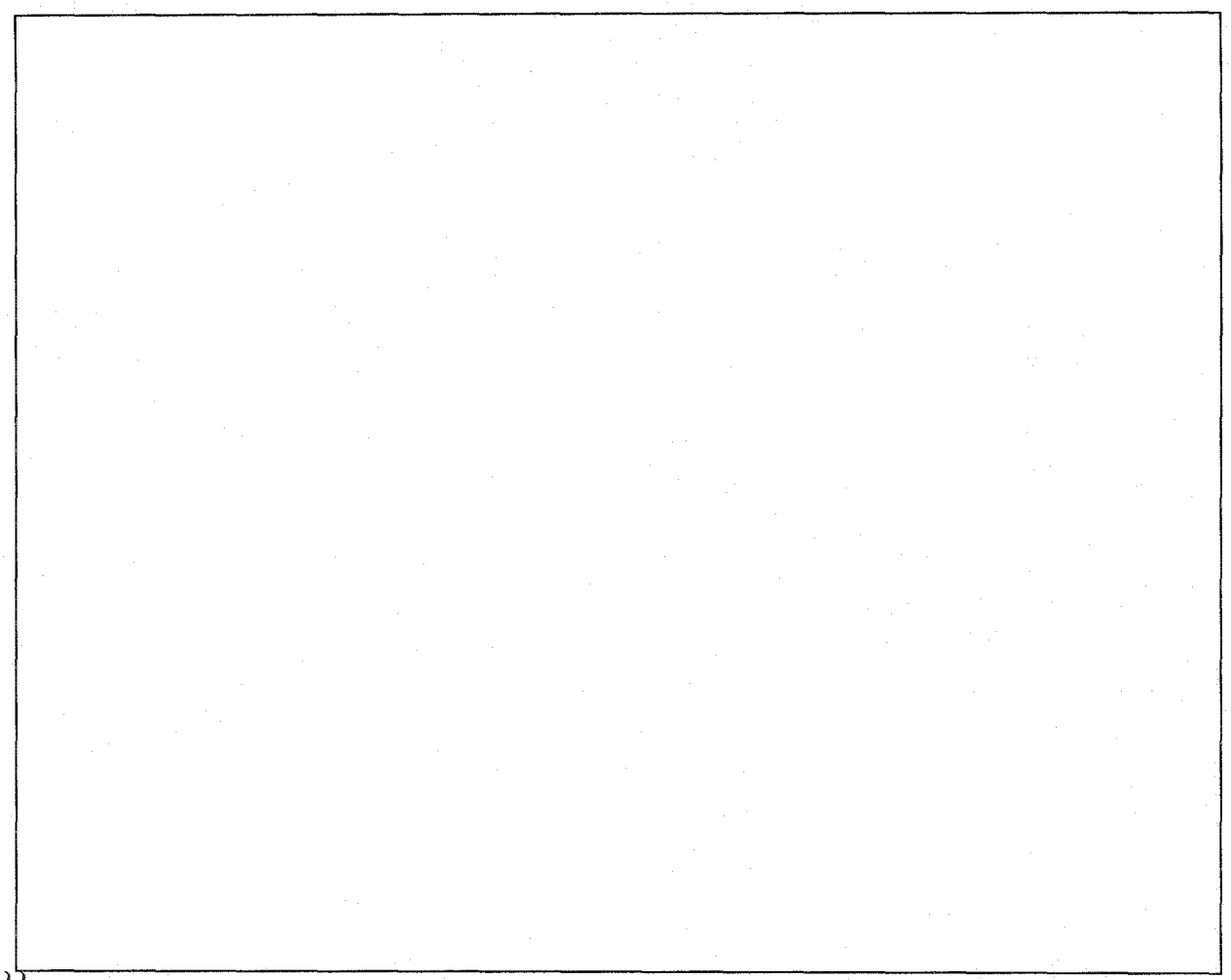
}} Because DuPont elected to "adopt" NS's historical trains as DRR trains, rather than developing its own train service plan, DuPont cannot contend that the DRR would handle this car (or other "overhead" general freight cars) in a different manner or with fewer trains and classifications than NS did in 2009-2010. DuPont's operating evidence fails to account for the time and resources required to transfer this shipment between trains at intermediate yards.

As NS demonstrated above, using the detailed, shipment-specific information contained in the DuPont Car/Train Database, DuPont could have developed a complete operating plan that included all of the trains required to provide uninterrupted on-SARR service to its selected traffic group, and the switching of cars between trains at intermediate yards along their route of movement. Moreover, the car event data provided to DuPont in discovery (which was used to compile the DuPont Car/Train Database) also contained shipment-specific information regarding the blocks in which each carload shipment moved on NS. Figure III-C-12 is an extract from NS's car event file for the same car (corresponding to Waybill {{ }}) discussed in connection with Figure III-C-8 (at page III-C-29) above.

Figure III-C-12

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As both Figure III-C-12 above and Figure III-C-8 show {{

}} Armed with this detailed information from NS's car event data, any competent operating expert would have been able to determine not only the locations at which the general freight traffic selected by the DRR was switched and classified, but also the specific block(s) into which each car was switched, where the block(s) were "swapped" between trains during its movement along the DRR network, and the ultimate destination of each block. Instead of using that

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[125] As NS demonstrates at III-C-A-3 below, DuPont's Operating Plan fails to account for the DRR's reciprocal obligations to connecting carriers (including the duty to "pre-block" cars prior to interchanging them with such carriers) under the NS intercarrier agreements that the DRR purports to adopt.

[126] The entry "ICHD" in Column 8 of 53 indicates "Interchange Delivery" at {{ }}

information to present a complete operating plan for the DRR's general freight traffic, DuPont chose to ignore it and to posit instead a "trainload" SARR.

Third, the Operating Plan proffered by DuPont does not account fully for the time and physical facilities necessary to provide local train service in connection with the DRR's merchandise traffic. More than one million general freight carloads handled by the DRR in the Base Year are local, interline forwarded or interline received—*i.e.*, they originate or terminate (or both) at points along the DRR system. DuPont Opening Table III-C-1. DuPont's Operating Plan contains numerous errors and omissions that make it literally "impossible" for the DRR to serve this traffic. As discussed above (at III-C-A-1-b), DuPont's computerized train selection methodology failed to capture literally tens of thousands of local trains that the DRR would need to operate in order to pick up and deliver cars at customer facilities. This glaring error alone renders DuPont's local train service plan infeasible. Even more nonsensically, DuPont's "stick diagrams" do not include the railroad owned spur and industrial tracks necessary to access the DRR's customer facilities, nor does DuPont's engineering evidence account for the cost of constructing those tracks. *See* DuPont Opening WP "DRR Opening Sticks errata.pdf." Without those tracks, service to the DRR's general freight customers is not only not "feasible," it is physically impossible.

Fourth, DuPont's RTC Model simulation does not properly account for the time required for DRR local trains to pick-up or set-out cars at origin and destination points. Rather, DuPont modeled the movement of DRR local "turn service" based upon an assumption that those trains would move directly from their origin terminal to the end point of their route, dwell there for 45 minutes, and then proceed directly back to their origin terminal, all without making any intermediate stops at customer facilities. DuPont Opening III-C-15. Somewhere in that time,

DuPont assumes that the DRR local train would serve all the local customers on the route. As NS demonstrated above (at III-C- 31 to III-C-36), DuPont's attempt to justify this methodological "shortcut" based on the quality of NS data lacks credibility. In reality, DuPont had multiple sources from which it could have accurately modeled the DRR's local trains, and identified which cars were picked up or set off at which customer facilities by those trains. *See* NS Reply III-C-31 to III-C-36. However, DuPont chose not to use that information in developing and modeling the DRR's local train service plan. The result of that methodological decision is an operating plan and RTC simulation that do not account for the considerable time and resources required to provide local train service to the DRR's general freight customers. As discussed below (at III-C-231 to III-C-236), NS's Operating Plan and RTC simulation properly account for the work events performed by both "straightaway" and "turn service" local trains.

Finally, DuPont's Operating Plan fails to account for the special services, such as transloading, required in connection with the traffic that it selected. For example, some commodities in the DRR's selected traffic group moves through Thoroughbred Bulk Transfer ("TBT") facilities at which the product is "transloaded" from a railcar to a truck or storage tank (or vice versa). These facilities have specialized equipment including:

1. Loading / unloading racks with specialized piping to handle tank cars with commodities such as carbon dioxide and ethanol;
2. Conveyor belts to transfer dry bulk commodities;
3. Portable pumps and piping to allow partial unloading from railcar to truck;
4. Truck wash capability for food grade commodities as well as plastic pellets;
5. Boilers to create steam to clean and to transfer commodities at certain temperatures.

TBT facilities may also contain paved roads and/or storage areas to allow truck access, a building for managing billing, communications and other office services, and lighting and fencing to provide security.

DuPont's selected traffic group includes significant volumes of traffic, including plastic pellets, ethanol and corn products, that move through TBT facilities on NS today. DuPont claimed the revenue for that traffic, but its Operating Plan does not account for any of the costs of building, operating and handling commodities at those facilities. The TBT facilities currently operated by NS provide a critical element of the service necessary to handle this business in accordance with customer requirements.[127] For instance:

- NS's TBT facility at Charlotte, NC, serves a variety of transload customers in the southern North Carolina market. That facility includes a truck wash, boiler, ethanol pumps, and state of the art commodity containment to handle commodities like ethanol and plastic pellets.
- NS's TBT facility at Doraville, GA, (north of Atlanta) provides a wide variety of transloading options for customers. Terminal infrastructure features include a truck wash, as well as pumps and containment for handling hazardous materials. The Doraville facility handles commodities such as corn products, ethanol and plastic pellets.
- NS's TBT facility at Dalton, GA, (located 30 minutes outside Chattanooga, TN) serves the northwestern Georgia market. This terminal specializes in handling plastic material for the surrounding carpet industries.
- NS's Spartanburg, SC, TBT facility offers logistics solutions for receivers in the South Carolina market. This facility has the necessary piping, pumps and boiler for steam heating to handle ethanol, plastic pellets and corn products.

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[127] Detailed information regarding the locations of NS's TBT facilities, the facilities' components and equipment, and the commodities they handle, was provided to DuPont in discovery. *See* NS Reply WP Folder "Documents Produced in Discovery III-C," "Bulk Transfer Facilities (NS-DP-HC-10559 to 10585).pdf;" "Bulk Transfer Facilities.xlsx" and "Bulk Transfer Additional.xlsx."

- NS's TBT facility at Cincinnati, OH, serves the Southern Ohio market. It features two boilers and truck wash for food grade products.

DuPont's SARR configuration and Operating Plan utterly fail to consider—much less meet the transportation needs of—this traffic. *Duke/NS*, 7 S.T.B. at 99; *WFA I*, STB Docket No. 42088, at 15.

In short, by failing to address the necessary elements of "carload" railroading, DuPont's Operating Plan and RTC Model simulation vastly understate the time, facilities, equipment and personnel required to serve the DRR's general freight customers. This glaring deficiency renders DuPont's Operating Plan infeasible, and its estimated train transit times, car and locomotive cycle times, locomotive and car fleet sizes, and crew requirements invalid. NS's operating evidence corrects these deficiencies by properly accounting for the time required to perform local pick-ups, set-offs and intermediate switching; incorporating those time requirements into NS's RTC Model simulation; and developing an accurate estimate of the number of locomotives, cars and crews actually required to serve the DRR's traffic group in a manner consistent with shipper needs (as required by the Board's SAC regulations).

3. DuPont's Operating Plan Fails To Account For The DRR's Reciprocal Obligations To Connecting Carriers.

DuPont posits that the DRR would interchange traffic with "BNSF, NS, CSXT, KCS, CN, CP and UP and more than 40 regional and short line railroads."[128] DuPont Opening III-C-3. According to DuPont, the DRR's interchange relationships with those carriers "are based on

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[128] DuPont's Opening Evidence makes inconsistent references to the number of Class I railroads with which the DRR would interchange traffic. *Compare* DuPont Opening III-B-4 (indicating that the DRR interchanges with all Class I carriers other than CP) *with* DuPont Opening III-C-3 (indicating that the DRR interchanges with all seven Class I railroads). DuPont Opening WP "DRR Interchanges.xlsx" identifies multiple "Major Interchange Locations" with CP, and its selected traffic includes carloads that are interchanged with CP.

NS's joint use and interchange agreements with such carriers; the DRR steps into NS's shoes under these agreements." DuPont Opening III-C-5 (emphasis added).

SAC precedent permits a SARR to "step into the shoes" of the defendant railroad, as DuPont proposes. However, in doing so, complainant must "assume that the SARR would have the benefit of the same opportunities under the same terms" as the incumbent carrier. *See AEPCO 2002*, 6 S.T.B. at 328 (emphasis added). In other words, while a complainant may adopt the incumbent carrier's existing trackage rights and joint facility agreements, interchange arrangements, and run-through and power sharing agreements as part of its SARR operating plan, it may not assume that the SARR would enjoy more favorable terms than the incumbent carrier under those agreements. *See id.* at 328-29.[129] Nor may a complainant "hypothesize non-existent revenue or cost-sharing arrangements" or assume that the SARR could secure operating rights that it "could not [otherwise] unilaterally create." *Id.* These well-established principles are a logical corollary to the fundamental SAC requirement that a SARR's operating plan must be "realistic, *i.e.*, consistent with the underlying realities of real-world railroading."[130] *See* DuPont Opening I-65 (acknowledging "fundamental requirement" that a SARR operating plan must be "consistent with the underlying realities of real-world railroading.").

DuPont's Operating Plan is replete with assumptions that violate these basic tenets of the stand-alone test. While the DRR purports to "step into NS's shoes" under NS's intercarrier arrangements, the relationships between the DRR and connecting railroads portrayed in

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[129] *See also CP&L*, 7 S.T.B. at 255 (citing *West Texas*, 1 S.T.B. at 667).

[130] *See, e.g., WFA I*, STB Docket No. 42088, at 15; *see also AEPCO 2011*, STB Docket No. 42113, at 16 ("The assumptions used in the SAC analysis, including the operating plan, nonetheless must be realistic, *i.e.*, consistent with the underlying realities of real-world transportation."); *Xcel*, STB Docket No. 42057 (Jan. 19, 2005) at 12 ("[T]he assumptions used in the SAC analysis, including the operating plan, must be realistic, *i.e.*, consistent with the underlying realities of real-world railroading.").

DuPont's Operating Plan are patently inconsistent with the terms of NS's existing agreements. DuPont also posits the existence of intercarrier arrangements that not only do not exist today, but are inconsistent with real world operating practices in the territory that the DRR would serve.

Interchange agreements, run-through train agreements, locomotive sharing arrangements, and similar operating agreements are generally based upon the principle of "reciprocity." Under such arrangements, one carrier provides specified services (such as pre-blocking cars for interchange or providing locomotives to power trains while on another carrier's lines) in exchange for the same or similar services from the other party. The "reciprocal" nature of the agreements confers equivalent benefits on both carriers, and encourages them to adopt operating practices that enhance the overall efficiency of the rail network. Absent such reciprocity, railroads would have little economic incentive to enter into intercarrier operating arrangements.

DuPont's Operating Plan assumes that the DRR would enjoy the benefits available to NS under its existing intercarrier agreements, but makes no provision for the DRR to take on reciprocal obligations for the benefit of the other parties to those arrangements. More importantly, DuPont makes a variety of operating assumptions that contradict the unequivocal language of the NS agreements that it purports to adopt, and posits intercarrier arrangements between the DRR and connecting railroads of a type that do not exist today. As a result, DuPont fails to account for the full stand-alone costs of serving the DRR's selected traffic. *See Coal Rate Guidelines*, 1 I.C.C. 2d 520, 542-43 (1985); *AEPCO 2002*, 6 S.T.B. at 329 ("[T]he SARR may be assumed to have the same cost-sharing arrangements as the defendant carriers have on each segment, so long as the terms of those arrangements (including operational provisions and terms of compensation) are the same as those applicable to the defendant carriers.").

DuPont cannot claim ignorance of the terms governing NS's interline relationships. All of NS's Trackage Rights Agreements, Joint Facility Agreements, Intercarrier Service Agreements ("ISAs"), and Run-Through Train Agreements were made available to DuPont, either as Bates-numbered documents or via access to NS's Real Property Management System ("RPMS").[131] RPMS tracking systems indicate that DuPont did, in fact, utilize RPMS to access 1,132 different NS agreements while preparing its Opening Evidence.[132] DuPont acknowledges that it reviewed many of NS's existing agreements and utilized them in developing its Operating Plan. *See, e.g.*, DuPont Opening III-C- 4-5; DuPont Opening Ex. III-C-2. DuPont has no excuse for failing to present an operating plan that is consistent with both real world operating practices and its stated assumption that the DRR "steps into NS's shoes."

This section of NS's Reply Evidence describes the many ways in which DuPont's Operating Plan violates the terms of NS's intercarrier agreements, posits agreements that do not exist, and is otherwise inconsistent with prevailing rail industry practices. It bears repeating that every one of the NS intercarrier agreements referred to in this section was made available to DuPont as part of NS's massive response to DuPont's discovery requests. DuPont's failure to take into account the "reciprocal" nature of interline rail operations results in a substantial understatement of the costs (in time and resources) required to serve the DRR's selected traffic group.

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[131] RPMS is an electronic database that contains a variety of NS contracts and agreements. *See* NS Reply WP "M. Warren 6/3/2011 Letter to J. Moreno re: RPMS Access.pdf."

[132] *See* NS Reply WP "Dupont_Access.xlsx."

a. DuPont's Operating Plan Makes No Provision For Pre-Blocking Cars Interchanged By The DRR To Connecting Carriers.

Intercarrier blocking agreements improve operational efficiency by placing cars destined to common locations into "blocks" that remain together as they move across the rail network, thereby reducing the switching required at intermediate locations. "Pre-blocking" cars prior to forwarding them in interchange reduces the burden on the receiving carrier to classify individual cars for movement to customer facilities or interchange points further along that carrier's system. NS's interchange relationships with connecting carriers—which the DRR purports to "adopt" as its own (DuPont Opening III-C-4-5)—provide for reciprocal "pre-blocking" of cars prior to interchange at major gateways. For example, {{

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}} These arrangements improve service efficiency and lower costs by reducing the number of times that individual cars must be handled during their journey from origin to destination.

DuPont's Operating Plan and RTC simulation are based upon trains that NS actually operated during the "Base Year" (June 1, 2009 to May 31, 2010). DuPont Opening III-C-8-9; III-C-15. Those real world NS trains contained numerous blocks of general freight traffic that were created by other railroads for NS's benefit, or reciprocally pre-blocked by NS for the benefit of connecting carriers, pursuant to NS's ISAs. By "adopting" NS's trains as its own, the DRR enjoys the benefits of NS's blocking arrangements with other carriers, including reduced switching requirements and increased efficiency in moving merchandise traffic across the DRR network.

However, DuPont's Operating Plan makes no provision for the DRR to pre-block cars for NS or any other railroad with which it would interchange traffic—indeed, DuPont's Operating Plan contains no car classification or blocking plan whatsoever. DuPont had access to all of NS's ISAs, and explicitly posits that the DRR "steps into NS's shoes" under those agreements. DuPont Opening III-C-4-5. Although the ISAs provide clear instructions regarding the respective obligations of NS and its connecting carriers to pre-block cars for one another, DuPont ignored those commitments in designing its Operating Plan for the DRR. Instead,

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DuPont simply assumed—contrary to reality—that every other railroad would act to DRR's benefit and expect nothing in return. As a result, DuPont's Operating Plan fails to fulfill the DRR's reciprocal obligations to connecting carriers under the very agreements that it purports to adopt.[136]

The entirely one-sided interchange relationships contemplated by DuPont's Operating Plan violate the Board's requirement that a SARR assume the defendant's agreements "under the same terms" as the incumbent carrier. *AEPCO 2002*, 6 S.T.B. at 328. Moreover, DuPont's implicit assumption that other railroads would pre-block thousands of cars for the DRR's benefit each week, without receiving reciprocal benefits, is utterly inconsistent with "the underlying realities of real-world railroading." *WFA I*, STB Docket No. 42088, at 15.

b. DuPont Improperly Assumes That Locomotives Will Run Through On All Trains Interchanged By DRR With Other Railroads.

DuPont's Operating Plan assumes that every train received by the DRR from a connecting carrier, or delivered by DRR to a connecting carrier, will be a run-through train. DuPont Opening III-C-5 ("All trains interchanged with other railroads are run-through trains, which mean (sic) the locomotive power stays with the train."). This assumption contradicts the clear terms of numerous NS interline service agreements, which do not provide for run-through power. *See, e.g.*, NS Reply WP Folder "Documents Produced in Discovery III-C," "ISAs (NS-DP-HC-4044 to 4885).pdf" and "ISAs (NS-DP-HC-40295 to 40570).pdf:" {{

[136] *See CP&L*, 7 S.T.B. at 255 (SARR may not assume changed service to suit its operating plan unless it shows affected "connecting carriers…would not object").

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There are a variety of reasons why railroads may not be willing to permit their locomotives to remain with trains forwarded to a connecting carrier. Where traffic flows are characterized by a substantial directional imbalance, a run-through power arrangement may confer disproportionate benefits on one party, which makes an agreement unwise. Likewise, a substantial difference in the length of haul on each carrier's lines may create a disadvantage for one of the carriers in the movement. If the volume of traffic (and trains) interchanged between the carriers is relatively small, the parties may not perceive sufficient benefits from running power through. The practice of running power through on all trains is especially infrequent in connection with trains interchanged between Class 1 railroads and their short line connections.[138]

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[137] The following ISAs with Class I carriers provide that power is not run through for specific trains: {{

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[138] The following NS agreements with shortline carriers do not permit run-through power: {{

In some cases, railroads may not have sufficient locomotives available to participate in a run-through agreement. Traffic imbalances may make it difficult to keep power in a particular area. Market conditions may require locomotives be deployed elsewhere to meet the needs of priority traffic. A surge in business may require that a carrier keep locomotives on its own lines, rather than making units available for run-through operations. In order to be commercially feasible, a run-through arrangement must provide advantages for both participating railroads.

Notwithstanding the unequivocal restriction on run-through power set forth in many of NS's existing ISAs, DuPont blithely asserts that "all" trains that the DRR interchanges with another railroad will follow the DRR's preferred practice to run through the locomotives. DuPont proffers no evidence whatsoever that NS (or other connecting carriers) would be willing to abandon their current practices in favor of a "100% run-through" arrangement with the DRR. Such an assumption is utterly inconsistent with the premise that the DRR "steps into NS's shoes" and with the Board's prohibition against "hypothesizing" intercarrier agreements that do not exist in the real world. *See AEPCO 2002*, 6 S.T.B. at 328-29.

DuPont's erroneous and self-serving assumption regarding the extent to which run-through power would be utilized in connection with DRR interline train movements results in a significant understatement of the DRR's locomotive requirements, by assuming that foreign

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locomotives would be available to power DRR trains where such locomotives are not available to NS today. NS's Operating Plan addresses that deficiency in DuPont's Opening Evidence by requiring the DRR to acquire a fleet of locomotives sufficient to handle the DRR's selected traffic in accordance with the terms of NS's real-world intercarrier agreements.

c. DuPont's Assumption That Connecting Railroads Will Adopt Distributed Power Locomotive Configurations Is Inconsistent With Real World Operating Practices In The Territory Served By The DRR.

DuPont posits that all DRR trains will operate with locomotives "in a 1/1 distributed power ("DP") configuration." DuPont Opening III-C-10. DuPont further assumes that all of the DRR's connecting carriers will have locomotives equipped for DP operations, and will agree to interchange all trains in the DRR's preferred DP locomotive configuration. DuPont Opening Ex. III-C-5 at 8, n.8. In support of the latter assumption, DuPont asserts that:

> The Class I railroads are converting to DP at a rapid pace; for example, Union Pacific reported at a recent RTC Model users' conference that 70 to 75 percent of its road trains now have a DP locomotive configuration. With the peak RTC simulation period ten years hence, it is reasonable to assume that the DRR will have in place run-through agreements that specify trains are to be received with DP power and that foreign-road locomotives will be equipped for DP operation.

Id. (emphasis added). DuPont's assumption that all connecting carriers will agree to interchange trains with the DRR in a DP power configuration violates SAC principles, for several reasons:

First, it is based upon the supposition that the DRR will "have in place" hypothetical run-through agreements that do not exist today. As the Board has made clear, a complainant cannot "hypothesize" that its SARR will enjoy the benefit of agreements that do not exist in the real world. *AEPCO 2002*, 6 S.T.B. at 328-29.

Second, DuPont's assumption is utterly inconsistent with the terms of the vast majority of NS's existing run-through train agreements with connecting carriers—which the DRR purports

to adopt as its own. Those agreements generally do not require the participating carriers to deliver trains with locomotives in a DP configuration.[139] DuPont had access to each of those intercarrier agreements, and therefore cannot plead ignorance of their terms.

Third, DuPont's claim that "[t]he Class I railroads are converting to DP at a rapid pace" (DuPont Opening Ex. III-C-5 at 8, n.8), and its assumption that DP locomotive configurations will become a universal practice in the DRR's service territory, are simply not consistent with "the underlying realities of real-world railroading." While western carriers like UP have increased their use of DP power configurations in recent years, the same is not true of railroads serving the Eastern United States. The physical characteristics of train operations in the West—in particular, the greater average length of haul and frequency of single commodity unit trains—make DP a far more suitable technology for use in that region of the country. UP and BNSF operate daily intermodal trains between Southern California and Chicago, a distance of 2,100 miles. They also transport unit coal and grain trains to a variety of destinations that are located 1,000 miles or more from their origin. The prevalence of long trains moving over great distances provides an ideal environment in which to utilize DP.

By contrast, trains operated by NS and other eastern railroads typically travel much shorter distances. Moreover, the average length of the NS trains that DuPont "adopted" as DRR trains is only 8,000-9,000 feet. The cost of outfitting NS's locomotive fleet for DP operations, and the extra time (and yard expense) that NS would incur to position locomotives and initialize communications between units in a DP configuration far outweigh any benefits that NS might achieve by utilizing DP on smaller trains traveling relatively short distances. For that reason, NS

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[139] *See, e.g.*, {{

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operates locomotives in DP configuration on a relatively small percentage of its road trains, primarily PRB coal unit trains interchanged with western roads, and certain long intermodal trains.

As reported in *Trains* Magazine:

> Indeed, the entire Northeast quadrant of the country is practically devoid of distributed power. Norfolk Southern's system road foreman of engines, Shannon Mason, says the shorter distances his trains operate make the setup time and logistical challenges of distributed power less worthwhile.
>
> Even UP's [Mike] Iden, a distributed power proponent, says he believes it's a tool that's not for use everywhere. 'You cannot look at distributed power as a technology you can just plug in and use,' he says. 'You have to have the right operation and the right railroad to use it properly.'
>
> In 2010, NS and CSX officials believe only certain routes in their networks justify the expense and effort that distributed power entails.[140]

Accordingly, DuPont's assumption that Eastern carriers like NS and CSXT will outfit their entire locomotive fleets for DP operations in the coming years, and enter into agreements that would require them to deliver and receive all trains interchanged with the DRR in DP configuration, is simply not consistent with reality.

Indeed, DuPont's assumption that the DRR itself would deploy locomotives in a DP configuration on all road trains operating over its network is both unrealistic and highly inefficient.[141] Because DuPont chose to build its Operating Plan using NS's "real world" trains,

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[140] *See* NS Reply WP "Distributed Power Trains Magazine Article.pdf" (Freight Train Unbounded: Distributed power: it's a bigger deal than you think," *Trains* (September 2010), at 31-32 (emphasis added)).

[141] DuPont's RTC simulation appears to include a significant number of DRR local trains with locomotives in a DP configuration. *See* NS Reply WP "RTC Local Train Configuration in DuPont RTC.xlsx" (showing that 457 of 1,290 local trains in DuPont's RTC simulation operated with DP power). Such a practice makes no sense—most local trains are neither long enough, nor

the DRR's average length of haul is similar to that of NS. Specifically, the average length of haul for DRR trains would be 286 miles for general freight trains, 223 miles for coal trains and 571 miles for intermodal trains.[142] Such relatively short train movements are not conducive to realizing the benefits of DP power.

Fourth, because DuPont's Operating Plan assumes 100% DP movements, the plan effectively imposes on NS and other connecting carriers the obligation (and expense) of ensuring that all locomotives on trains interchanged with the DRR are capable of operating in a DP configuration. It is well-established that a complainant may not assume that connecting railroads would change their operations to suit the SARR's preferences without accounting for any costs that such changes would impose on the connecting carriers. Even if DuPont's "all DP" assumption made real-world sense—and it does not—DuPont would be required to bear the massive cost of equipping the locomotive fleets of each of its connecting carriers with DP capability.[143] DuPont's operating expense evidence makes no provision for those costs. Instead, DuPont attempts to side-step the Board's requirement by assuming (contrary to fact) that "foreign road locomotives will be equipped for DP operations" before the DRR's "peak period" (in 2018) and that connecting carriers will voluntarily enter into run-through arrangements with the DRR that require a DP locomotive configuration on all trains. DuPont Opening Ex. III-C-5 at 8, n.8. DuPont's self-serving assumption violates both the prohibition on "hypothesized"

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do they travel a sufficient distance, to benefit from the use of DP. It is also inconsistent with DuPont's narrative evidence, which states that "[t]he DRR will operate its local trains with a single GP38 locomotive wherever possible." DuPont Opening Ex. III-C- 5 at 2; *see also* DuPont Opening III-C-11 ("[L]ocal trains and work trains are powered by GP38 locomotives, using one locomotive per train where possible.").

[142] *See* DuPont Opening WP "Base Year Train List_Statistics_Open_Errata.xlsx."

[143] *See Duke/NS Reconsideration*, 7 S.T.B. at 872-73 (including as SARR costs the outfitting of foreign locomotives for assumed on-SARR DP operations).

agreements (*AEPCO 2002*, 6 S.T.B. at 328) and the requirement that all operating assumptions be "consistent with the underlying realities of real-world railroading" in DRR's service territory, the Eastern United States. *WFA I*, STB Docket No. 42088, at 15; *see also AEPCO 2011*, S.T.B. Docket No 42113, at 16; *Xcel*, STB Docket No. 42057 (Jan. 19, 2005) at 12.

Finally, even if the DRR were entitled to assume that DP operations will become a universal practice in the "peak RTC simulation period" (2018)—and it may not—that assumption does not support the DP-based locomotive Operating Plan presented by DuPont. The DRR commences operations on June 1, 2009—more than nine years prior to the "peak period" simulated by DuPont's RTC Model. As demonstrated above, Eastern carriers like NS utilize DP power configurations only in limited circumstances today, and have no plans to adopt an "all DP" locomotive operating plan in the foreseeable future. Thus, DuPont's speculative assertion regarding what run-through arrangements might be available to the DRR in 2018 does not support DuPont's proposal to operate an "all DP" SARR from the outset of the DCF period.

In short, DuPont's assumption that connecting carriers would agree to deliver all trains to (and receive all trains from) the DRR with locomotives in DP configuration is inconsistent with both the realities of railroading in the DRR's service territory and the terms of existing run-through agreements. DuPont's unsupported attempt to impose unilaterally an obligation to interchange all trains in DP configuration (regardless of the benefits for connecting carriers) also violates the principle of reciprocity that underlies intercarrier cooperative agreements.[144]

For these reasons, NS witness Johnson rejected DuPont's assumption that all DRR trains would operate with locomotives in a DP configuration. Rather, he assumed that the DRR would

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[144] *See CP&L*, 7 S.T.B. at 255 (requiring a showing by complainant that "affected connecting carrier … would not object").

utilize DP in a manner similar to the "real world" operating practices of NS and other Eastern carriers. Witness Johnson's more realistic assumption increases the efficiency of the DRR's operations, and eliminates expenses that the DRR otherwise would be required to incur to implement DuPont's ill-advised "all DP" locomotive plan.

d. DuPont's Allocation Of Responsibility For Fueling And Inspecting Locomotives Is Inconsistent With Both NS's Intercarrier Agreements And Real World Operating Practices.

In addition to requiring connecting carriers to adopt a DP power configuration on all trains interchanged with the DRR, DuPont assumes that fueling and inspecting locomotives used in interline service would, in most instances, be the responsibility of connecting carriers rather than the DRR. Citing "[witness] McDonald's experience," DuPont asserts that "it is likely that trains received in interchange from NS or another railroad will have locomotives with full fuel tanks and that do not require a 92-day inspection while on the DRR." DuPont Opening Ex. III-C-5 at 7.[145] Nevertheless, DuPont adopts (what it characterizes as) the "conservative" assumption that "for all non-coal trains that move at least 750 miles on the DRR . . . locomotives on the train will need fueling and or a 92-day inspection at one of the DRR's yards . . . ." *Id.* DuPont's assumptions are both inconsistent with the "reciprocity" principle reflected in NS's intercarrier agreements and contrary to prevailing real world operating practice. Moreover, DuPont's 750-mile "rule of thumb" is anything but "conservative," and would effectively absolve the DRR of responsibility to fuel or inspect locomotives in connection with the vast majority of interline train movements.

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[145] DuPont does not explain what "experience" led witness McDonald to conclude that DuPont's assumptions are consistent with real world railroad practices, nor did it cite a single instance in which responsibility for fueling and inspecting locomotives is allocated by real-world carriers in the manner proposed by DuPont.

Although the terms of NS's interchange and run-through train agreements with connecting carriers differ in certain respects, one common principle underlying those agreements is the reciprocity of each party's obligation with respect to locomotive fueling and inspections. NS's run-through train agreements provide in some manner for "equalization" of the costs of fueling locomotives.[146] Where particular agreements specify that locomotives be delivered at interchange points with a minimum amount of fuel on board, that requirement is reciprocal—*i.e.*, both carriers are required to tender locomotives with the prescribed amount of fuel.[147]

DuPont's Operating Plan contemplates no such reciprocity. To the contrary, under DuPont's plan, connecting carriers would be required, in all cases, to deliver trains to the DRR with "locomotives with full fuel tanks." DuPont Opening Ex. III-C- 5 at 7. In return, the DRR would fuel locomotives prior to forwarding trains to interline partners only if the train moved a minimum of 750 miles on the DRR network. This non-reciprocal fueling obligation is patently

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inconsistent with the terms of the NS intercarrier agreements upon which, DuPont says, the DRR's interchange relationships are based. DuPont Opening III-C- 4-5.[148]

DuPont's assertion that its "750-mile" rule governing the DRR's responsibility to refuel locomotives is "conservative" is nonsense. As stated above, the average length of haul for DRR general freight trains is only 286 miles.[149] Indeed, only four percent of the DRR's general freight trains operate more than 750 miles, meaning that the DRR would have no obligation to refuel locomotives used in connection with 96% of its merchandise trains![150] Likewise, the average length of haul for DRR intermodal trains is 571 miles, and two-thirds of those trains do not travel at least 750 miles.[151] Far from being "conservative," DuPont's 750-mile assumption is a clever ruse designed to give the appearance of an "objective" rule of thumb, while effectively relieving the DRR of the obligation to fuel locomotives in connection with the vast majority of its interline operations.

In any event, DuPont's assumption that connecting carriers would, in all instances, deliver locomotives with full fuel tanks defies the reality of everyday railroading. While NS's run-through train agreements often obligate carriers to tender locomotives with a specified amount of fuel, those agreements typically acknowledge that requiring a completely full tank at every interchange point is simply not practicable:

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[148] *See CP&L*, 7 S.T.B. at 255 (requiring a showing by complainant that affected "connecting carriers … would not object").

[149] *See* DuPont Opening WP "Base Year Train List_Statistics_Open_Errata.xlsx."

[150] DuPont Opening WP "Base Year Train List_Statistics_Open_Errata.xlsx," Tab "Base Year Statistics."

[151] *See* DuPont Opening WP "Base Year Train List_Statistics_Open_Errata.xlsx," Tab "Base Year Statistics."

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It is simply not feasible to require a railroad to refuel every locomotive at every interchange point just prior to delivery to the receiving carrier. Such a provision would require carriers to build and operate fueling facilities at or near every interchange point—a particularly onerous and expensive requirement for the DRR itself, giving its plan to interchange traffic at approximately 150 locations.[153] (Of course, DuPont's self-serving "750-mile" rule would require connecting carriers, but not the DRR, to maintain fueling facilities near those locations).

Rather than impose such an unreasonable requirement, intercarrier agreements typically balance the parties' obligation to provide fuel used in interline train operations by adopting some form of fuel "equalization." Equalization agreements are designed to guarantee <u>both</u> carriers the economic equivalent of a full fuel tank in connection with locomotives received in interchange, without literally requiring that every locomotive be delivered with a full tank. For example, {{

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[153] *See <u>infra</u>* III-C-185-187.

}} Under this provision, which is typical of locomotive run-through arrangements prevalent in the rail industry, the DRR would be required either to fuel any locomotive used by it in interline service, or to reimburse the connecting carrier for {{

}} regardless of how many miles those locomotives traveled on the DRR network. DuPont's "750-mile" rule is utterly inconsistent with the terms of the NS intercarrier agreements that the DRR purports to adopt, and with the prevailing industry practice of imposing reciprocal obligations on railroads to fuel locomotives (or, in the alternative, to reimburse connecting carriers pursuant to an agreed "equalization" formula).

DuPont's Operating Plan incorporates a similar non-reciprocal allocation of responsibility for conducting FRA-mandated 92-day locomotive inspections. Specifically, while DuPont assumes that all locomotives would be delivered to the DRR fully inspected, the DRR would have no obligation to inspect locomotives on non-coal trains unless they travel at least 750 miles on the DRR network. DuPont Opening Ex. III-C- 5 at 7. For the reasons shown above, the "750-mile" rule would effectively excuse the DRR from performing 92-day inspections on the vast majority of the locomotives used in interline merchandise and intermodal train service.

DuPont's self-serving allocation of responsibility for locomotive inspections is patently inconsistent with the principle of reciprocity embodied in NS's intercarrier agreements. NS's run-through train agreements with connecting carriers typically require that FRA-mandated

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[154] *See also* NS Reply WP "NS-CP Master Run Through Agreement.pdf" at Section 5 (providing for the same reciprocal reimbursement for fuel consumed by the receiving carrier); NS Reply WP "NS-UP Run-Through Agreement.pdf" at Section 5 (same).

inspections be performed by the party in possession of the locomotive at the time the inspection is due.[155] While DuPont claims that the DRR's relationships with connecting railroads are "based on" NS's intercarrier agreements, the non-reciprocal manner in which DuPont assigns responsibility for 92-day inspections flies in the face of the clear terms of those agreements (which were available to DuPont in preparing its Opening Evidence) and DuPont provides no evidence that connecting carriers would agree otherwise.[156]

DuPont's one-sided and operationally infeasible assumptions regarding the obligations of the DRR and connecting carriers to fuel and inspect locomotives used in interline train service results in a significant understatement of both the facilities that the DRR would need to satisfy its fueling and inspection obligations, and the time (and corresponding personnel) needed to perform those duties. NS's Reply Evidence corrects this serious deficiency in DuPont's Operating Plan by providing sufficient facilities and staffing at DRR yards to accommodate the fueling activities and locomotive inspections that the DRR would have to perform in order to comply with the reciprocal obligations imposed by the NS agreements upon which the DRR's intercarrier relationships purport to be based.

e. DuPont Makes No Provision For Running Repairs To Foreign Railcars On The DRR Network.

The North American rail industry follows a practice of permitting rail cars to be "free running"—*i.e.*, cars may travel beyond the lines of the owning carrier to a destination served by

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[156] *See CP&L*, 7 S.T.B. at 255 (requiring complainant to show affected "connecting carriers ... would not object").

another railroad. This practice promotes optimal utilization of the overall railcar fleet, and reduces the cost of providing rail service. It also inevitably results in the need for railroads to make minor repairs to cars that do not belong to them, pursuant to the interchange rules promulgated by the AAR. DuPont's Operating Plan ignores this reality of day-to-day railroading, and makes no provision whatsoever for the DRR to perform "running repairs" on foreign carrier equipment.

DuPont posits that the DRR would acquire its rolling stock pursuant to "full service" car leases. DuPont Opening III-D-6-7. DuPont assumes that, under such leases, the car lessor would be responsible for all required maintenance of and repairs to the DRR's leased equipment. DuPont Opening III-D-8 ("As full service lease payments include maintenance costs, no other maintenance costs are included."). DuPont further assumes that privately-owned rail cars would be repaired and maintained by the shippers that supplied them. *Id.*[157]

Based upon those assumptions, DuPont concludes that the DRR would not need any proprietary car repair facilities or personnel, and none are provided for in DuPont's Operating Plan. Without such resources, it would be physically impossible for the DRR to perform running repairs on any foreign line car that became disabled while on the DRR network—a daily occurrence for every Class I railroad. The increased "out of service" time that cars would experience under DuPont's assumptions would seriously impair the efficiency of the DRR's operations, both by preventing it from making minor repairs that would enable it to place cars quickly back into service, and by increasing the number of cars required to provide timely service to the DRR's customers.

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[157] As NS demonstrates below (at III-C-225-226), DuPont's assumption that the DRR would not need any facilities or personnel to make running repairs to the DRR's own car fleet is wrong.

More importantly, the inability to perform running repairs to rail cars and intermodal equipment would make it impossible for the DRR to comply with its obligations under AAR rules and the terms of its intercarrier agreements. The AAR Interchange Rules impose on all member railroads a mutual obligation to perform running repairs to foreign line cars and intermodal equipment that require such assistance while on a carrier's lines. *See* Association of American Railroads, *2012 Field Manual of the A.A.R. Interchange Rules*, Rule 1(2)(a)(7) ("Running repairs as provided in these rules that are owner's responsibility may be made by a repair facility acting as the railroad's agent without requesting owner's disposition. Repairs must be completed while on handling line railroad or at a facility served by the handling line railroad.") (emphasis added); see *also* NS Reply WP "AAR Intermodal Interchange Rules.pdf" at sec. 27(b)(1) ("The carrier in possession of a trailer or chassis in interchange service shall provide maintenance to tires and tubes, including proper inflation, the repair of flat tires, pulled valve stems, etc.);" *id.* sec. 42(a) ("The carrier in possession of the trailer shall provide good maintenance to the landing gear, including minor repairs and lubrication."); *id.* sec. 57 ("The carrier in possession of the trailer or container shall provide proper maintenance to the heating and/or refrigeration unit . . ."); *id.* Appendix B (Providing provisions for "Correct Unit Repair Procedures").

As a participant in the U.S. rail system, the DRR would benefit from the AAR's rules, as NS (and other railroads) would be required to repair any DRR car that became disabled while on their lines. However, under DuPont's Operating Plan, the DRR would be unable to comply with its reciprocal obligation to perform running repairs to foreign cars that became disabled while traversing the DRR network. (DRR's car lessor would have no obligation to repair foreign line cars, which would not be subject to the full-service equipment lease between the lessor and the

DRR.) DuPont's failure to provide car repair facilities or personnel on the DRR is also inconsistent with the terms of the NS intercarrier agreements upon which the DRR's Operating Plan is supposedly based.[158]

By failing to give the DRR any capacity to repair foreign railcars, DuPont has ignored one of the most fundamental expectations of the industry—that railroads will work cooperatively to ensure that cars requiring minor repairs can quickly return to service, thereby improving the efficiency and fluidity of the rail network. DRR's inability to satisfy its obligation to perform running repairs renders its Operating Plan infeasible. NS's Reply Evidence addresses this serious deficiency in DuPont's Operating Plan by providing sufficient facilities and staffing at DRR yards to enable it to perform running repairs to both DRR and foreign carrier cars.

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As the foregoing discussion demonstrates, DuPont's SARR Operating Plan violates in numerous ways the principle of "reciprocity" that underlies the cooperative relationships among railroads that interchange traffic with one another. DuPont declares that the DRR "steps into NS's shoes" under its intercarrier agreements (DuPont Opening III-C-5), and takes full advantage of the benefits conferred upon NS under those agreements. However, the DRR does not reciprocate: while it expects connecting carriers to deliver all locomotives with full fuel

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tanks, it defines its own obligation to fuel locomotives so narrowly as to excuse it from that responsibility in connection with the vast majority of interline trains; the DRR assumes that connecting railroads will shoulder the burden (and expense) of performing most FRA-mandated locomotive inspections; the DRR avails itself of industry wide rules guaranteeing mutual assistance in performing minor repairs to foreign cars, but itself lacks the resources necessary to provide such repairs for the benefit of other carriers; and the DRR unilaterally imposes on all connecting carriers the obligation not only to permit their locomotives to run through on all interline trains, but also to equip and configure their locomotives for DP operations (even where DP offers little or no benefit to those carriers).[159] In short, DuPont posits a SARR whose operations conflict with longstanding industry practices and AAR rules, violate the terms of the very agreements upon which its intercarrier relationships are predicated, and depend on non-existent arrangements in violation of SAC precedent, without providing a scintilla of evidence that connecting carriers would agree to the one-sided arrangements DuPont proposes.[160] Such a SARR would not be capable of providing interline service that meets the needs of its customers.

4. DuPont's Operating Plan Does Not Comply With Regulations And Best Practices Relating To The Transportation Of TIH Shipments.

DuPont's complaint challenges NS's rates for 26 issue commodities. Nineteen of those commodities are regulated hazardous materials, and five are designated as TIH commodities.[161]

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[159] *See AEPCO 2002*, 6 S.T.B. at 328-29.

[160] *See CP&L*, 7 S.T.B. at 255 (complainant may not change service to suit its operating plan without evidence that affected "connecting carriers ... would not object").

[161] *See* DuPont Opening II-B, listing each issue commodity and discussing its hazardous properties. The following issue commodities are TIH: Fuming Sulfuric Acid (Oleum), *see* DuPont Opening II-B-30; Chlorine, *see* DuPont Opening II-B-67; Dimethyl Sulfate, *see* DuPont Opening II-B-93; Sulfur Trioxide, *see* DuPont Opening II-B-141; Titanium Tetrachloride, *see* DuPont Opening II-B-162. Similarly, while not considered TIH materials, the following issue commodities are regulated hazardous materials: Anhydrous Methylamines; Aniline Oil; Aqueous

DuPont's market dominance evidence is replete with references to the unique requirements associated with the transportation of those dangerous shipments. For example, DuPont relies heavily upon the fact that TIH commodities require specialized handling to argue that the issue traffic is not subject to effective intermodal competition.[162] Likewise, to explain why certain DuPont shipments of titanium tetrachloride moved by truck, DuPont noted that it "only shipped the trucks after performing a Transportation Route Assessment, which evaluates the safety risks along the route and identifies necessary safety precautions." DuPont Opening II-B-162.[163] While DuPont relies heavily on the risks and special handling requirements associated with TIH and hazardous commodity shipments to support its claim that NS is "market dominant," DuPont's Operating Plan fails to address those risks or to provide for compliance with laws, regulations and "best practices" for the handling of TIH traffic.

Methylamines; Difluoroethane; Dimethyl Ether; Dimethyl Formamide; Glycolic Acid; Hydrochloric (Muriatic) Acid; Liquid Flammable Waste; Potassium Caustic; Sodium Caustic; Sodium Methylate; Spent Sulfuric Acid; Sulfuric Acid.

[162] *See, e.g.*, DuPont Opening II-B-31 ("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."); DuPont Opening II-B-67 ("DuPont has very stringent safety rules for handling chlorine within its facilities."); DuPont Opening II-B-94 ("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."); DuPont Opening II-B-142 ("DuPont only delivers SO_3 using drivers who have been trained and equipped to safely handle SO_3. This ensures that [] the proper controls are in place and minimizes the potential exposure to the general public.").

[163] DuPont fails to mention that its internal procedures require route assessments for the shipment of TIH commodities by rail as well. {{

}} Not only is this a DuPont corporate requirement, it is also mandated by federal regulations. *See* 49 C.F.R. § 172.820 (requiring railroads to perform a Route Risk Assessment to minimize routing TIHs through High Threat Urban Areas).

The Base Year traffic group selected by DuPont includes 16,156 carloads of TIH commodities.[164] But DuPont's Operating Plan makes no provision for the safe handling of TIH cars in compliance with federal and state laws and regulations, industry best practices or even DuPont's own corporate policies. Indeed, DuPont's operating evidence makes no mention whatsoever of TIH commodities—a startling omission for a complainant that interacts with railroads on a daily basis to ensure that such dangerous commodities, shipped at DuPont's direction, are transported safely.

DuPont's Operating Plan fails in three fundamental ways to account for the proper handling of TIH commodities:

> (1) The DRR is not capable of tracking the movement and location of individual TIH cars, as required by law. Rather, as discussed above, DuPont's Operating Plan provides only for the movement of "complete trains" along the DRR network, and makes no attempt to track the movement, or address the particular service requirements, of general freight "carload" traffic, including TIH shipments. The DRR also does not have any means of providing "trip plans" for TIH cars—plans that are necessary both for route risk assessment and to enable the DRR to monitor TIH shipments.
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> (2) DuPont's Operating Plan and RTC simulation do not limit the speed of trains carrying TIH commodities to 50 MPH, as required by federal law and industry best practices.
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> (3) DuPont's Operating Plan does not provide the personnel that the DRR would need to comply with rules and best practices associated with the movement of TIH commodities and other hazardous materials.

a. DuPont's Operating Plan Does Not Track TIH Traffic.

Transportation Security Administration ("TSA") regulations prescribe a number of strict handling requirements for rail shipments of TIH commodities. Among those rules is a requirement that Class I freight carriers provide location and shipping information for TIH cars

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[164] See NS Reply WP "DRR TIH Shipments.xlsx."

in their physical custody or control within five minutes (for one car) or 30 minutes (for two or more cars) after receiving a request for such information. *See* Rail Transportation Security, 37 Fed. Reg. 72130, 72131 (Nov. 26, 2008) (emphasis added). NS's operating rules for TIH commodities—which were provided to DuPont in discovery—also require that {

} *Id.*

Each of those rules serves a crucial purpose. {

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[165] NS produced a copy of its HM-1 operating rules to DuPont in discovery. *See* NS Reply WP Folder "Documents Produced in Discovery III-C," "Hazardous Materials Instructions (NS-DP-C-3237 to 3301).pdf," produced at DVD-01.

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In order to comply with applicable regulations and common sense safety practices, a railroad must develop, and adhere to, a "blocking plan" in assembling trains that transport TIH shipments. However, DuPont's Operating Plan includes no plan whatsoever for "blocking" merchandise traffic generally—much less tracking the shipments placed into particular blocks. Instead, DuPont's Operating Plan presents a "trainload" railroad (DuPont Opening I-66), and makes no effort to identify the individual cars moving in DRR trains or to address any unique service requirements associated with those cars. DuPont's methodological decision to premise its Operating Plan and RTC simulation solely on "train" movements means that the DRR lacks the capability to identify whether a particular train is carrying TIH commodities (much less where in the train those cars are located). This serous deficiency in DuPont's evidence illustrates why a "feasible" operating plan for general freight traffic must take into account the car-specific requirements of the SARR's customers. DuPont's failure to develop a blocking plan for the DRR's general freight traffic—which includes thousands of cars of TIH traffic—renders the DRR incapable of complying with federal regulations and industry best practices for the safe handling of TIH materials.

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[166] *See* NS Reply WP "HM-1" at 32.

b. DuPont's Assumed Train Speeds Exceed Those Allowed For Trains Carrying TIH Traffic.

Both federal regulations and railroad best practices restrict the speed of trains carrying TIH cars to a maximum of 50 MPH. In January 2009, PHMSA issued regulations restricting TIH or hazmat trains to 50 MPH. *See* 49 C.F.R. § 174.9. Even before PHMSA issued formal regulations addressing this issue, the railroad industry had voluntarily adopted a 50 MPH restriction for "Key Trains."[167] "Key Trains" are defined as any train containing one or more loaded cars containing materials considered to be a "Inhalation Hazard," 20 or more carloads or intermodal tank loads of hazardous materials, or one or more carloads of a radioactive substance. *See id.* Key Trains are restricted to a maximum speed of 50 MPH, and are required to hold the main track during any train meet involving a siding that is restricted to 10 MPH or less. *See id.*

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Notwithstanding these industry wide rules and best practices, DuPont's Operating Plan and RTC simulation permit all trains—regardless of the commodities they carry—to operate at 60 MPH "conditions (including gradient and curvature) permitting."[168] The speed limit imposed on trains carrying TIH traffic has nothing to do with the profile of the track over which trains operate. Rather, those rules are designed to reduce the potential for an incident involving TIH shipments over every segment of the national rail network, including tracks that would otherwise permit higher train speeds. But DuPont makes no provision for the DRR to comply with this critical PHMSA regulation and industry best practice. Indeed, under DuPont's skeletal

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[167] *See* NS Reply WP "AAR Circular OT-55-L.pdf." AAR Circular OT-55 was initially published in 1990, and has been revised periodically since, most recently in December, 2010.

[168] *See* DuPont Opening III-C-5.

Operating Plan, which does not provide any car-specific visibility, the DRR would not even know which trains are carrying commodities that are subject to the 50 MPH mandate.[169]

DuPont's failure to comply with the train speed restriction for "Key Trains" is, to say the least, puzzling. DuPont is intimately familiar with the concept of "Key Trains" because DuPont was an active participant in the Chemical Manufacturers Association ("CMA") group that worked with the railroad industry on the Inter-Industry Rail Safety Taskforce to develop "best practices" for the safe handling of hazardous shipments.[170] One product of the Taskforce's efforts was the creation of the "Key Train" designation for trains carrying TIH and hazardous commodities, and the development of rules and best practices to enhance the safe movement of such trains. DuPont's active participation in that process makes it's failure to restrict the speed of DRR trains carrying TIH traffic all the more surprising. NS, on the other hand, tenders an Operating Plan that identifies Key Trains and restricts their maximum speed to 50 MPH.

c. DuPont's Operating Plan Fails To Provide The Personnel That The DRR Would Need To Safely Handle TIH Commodities.

Transporting TIH commodities in compliance with government regulations and industry best practices requires a railroad to employ staff to organize internal employee training, coordinate safety procedures both internally and with other railroads, and to interact with federal and state authorities on matters relating to the handling of hazardous shipments. Federal regulations require that railroads designate one primary and at least one alternate Rail Security Coordinator ("RSC") at the corporate level to serve as the point of contact for intelligence

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[169] The Base Year trains "adopted" by DuPont for its Operating Plan and RTC Model included 18,981 NS "Key Trains" (including 535 Key Trains that moved during the peak week period upon which DuPont's RTC simulation is based). *See* NS Reply WP "Key Trains Analysis.xlsx" As NS demonstrates below (at III-C-123-125), DuPont's RTC Model permits those trains to travel at 60 MPH, in violation of both federal regulations and industry best practices.

[170] *See* NS Reply WP "DRR Hazardous Materials Handling and Compliance.doc."

information and security related activities and communications with TSA. 49 C.F.R. § 1580.101(b). While the RSC may perform other duties, this individual must be available 24-hours a day, seven days a week and must coordinate the railroad's security practices and procedures with law enforcement and emergency response agencies. 49 C.F.R. § 1580.101(b).

In addition, TSA, in conjunction with the Department of Homeland Security and the Department of Transportation, has issued 24 recommended "action items" relating to the handling of TIH materials, including a recommendation that railroads "designate an individual with overall responsibility for hazardous materials transportation security planning, training, and implementation . . . [as well as] an individual with overall responsibility for security planning and countermeasure implementation for company-designated critical infrastructure."[171] Other TSA-recommended action items include establishing a liaison with other railroad security officers as well as with "state and local law enforcement, emergency responders, security agencies, and industrial partners." *Id.* The responsibilities contemplated by these recommendations are extensive and time-consuming, particularly for a Class I railroad (like the DRR) that would operate across a twenty-state area. In addition to numerous environmental protection personnel who assist with hazardous materials compliance, NS employs a Hazmat Compliance Manager as well as four Hazmat Compliance Officers—one for each region, as well as a director of infrastructure security.[172]

DuPont's Operating Plan does not provide sufficient personnel to perform these safety-related functions in connection with the DRR's TIH traffic. For example, DuPont does not have

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[171] *See* TSA, System Security Practices Affecting the Transportation of TIH Materials, http://www.tsa.gov/what_we_do/tsnm/freight_rail/tih_materials.shtm; http://www.tsa.gov/stakeholders/rail-transportation-security-rule%E2%80%93-49-cfr-1580.

[172] *See* NS Reply WP "DRR Hazardous Materials Handling and Compliance.doc."

a Rail Security Coordinator (much less a primary and alternate person in that position, as recommended by TSA). Rather, DuPont assumes that a single "Manager—Testing and Environmental" would be responsible for all safety issues relating to hazardous commodities across the entire DRR system.[173] DuPont posits that this person's duties would include "investigation of any problems involving cars containing hazardous commodities while on the DRR (and related federal reporting requirements)." *See* DuPont Opening Ex. III-D-1 at 3, 10. Assuming that the DRR would attempt to comply with applicable government regulations, this manager would be responsible for all of the following tasks:

(1) EPA, FRA, and TSA regulations, reporting and response;

(2) DRR's response to spills, Non-Accident Releases or hazmat incidents in general;

(3) Management and testing of waste water treatment;

(4) Community outreach and training of first responders across the DRR's 8,100-mile network;

(5) Collecting damages resulting from failure of customers to meet hazardous materials containment responsibilities;

(6) Railroad Infrastructure Security and Risk Assessment;

(7) Development and review of guidelines for property leases; and

(8) maintenance and enforcement of all rules and procedures to ensure the safe and proper handling of hazardous materials moving over the DRR.[174]

Clearly, one person could not reasonably be expected to perform all of those functions.

In short, DuPont's Operating Plan fails to provide the processes, personnel, and car-specific shipment tracking required for the DRR to comply with federal regulations and industry

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[173] In DuPont Opening Exhibit III-D-1 at 10, DuPont states that it has assigned one manager for Testing and Environmental to each of the DRR's two regions. However, in DuPont's Operating Expense Errata, DuPont provides for only one person assigned to this function. *See* DuPont Opening WP "Opening Expense_Errata.xls."

[174] For discussion of specific environmental responsibilities, see NS Reply Part III-D.

wide best practices relating to the transportation of TIH and hazardous shipments. Accordingly, DuPont's Operating Plan for TIH traffic is inconsistent with both federal law and "real world" railroad practices, and is not feasible.

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DuPont's failure to submit an operating plan that incorporates the resources, processes and personnel that all railroads devote to handing TIH commodities safely is particularly glaring, given DuPont's "real world" role as an industry leader that demands both safe handling of its hazardous material shipments and full compliance with government rules and regulations by rail carriers that serve it.[175] DuPont cannot credibly profess ignorance of those rules and best practices, which are part of the fabric of DuPont's everyday operations. DuPont has vast experience in manufacturing and shipping hazardous substances, and touts its strong institutional commitment to safety.[176] DuPont (like NS) is a member of TRANSCAER (Transportation Community Awareness and Emergency Response), a voluntary national outreach organization that "focuses on assisting communities to prepare for and to respond to a possible hazardous

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}} DuPont produced hundreds of pages of such documents in discovery.

[176] Indeed, DuPont's website lists "Safety and Health" as its first core value, noting that "[w]e adhere to the highest standards to ensure the safety and health of our employees, our customers and the people of the communities in which we operate." *See* DuPont, Our Core Values, *available at* http://www2.dupont.com/corp/en-us/our-company/core-values.html (last accessed Nov. 26, 2012).

material transportation incident." *See* http://www.transcaer.com/who-we-are. DuPont serves on the National TRANSCAER Task Group along with NS, other Class I railroads and various chemical companies.[177]

Indeed, DuPont's extensive experience with hazardous materials led NS to seek DuPont's assistance in developing NS's own safety standards.[178] As NS's website explains:

> In 1987 [NS] turned for guidance to DuPont Inc., a world leader in industrial safety, to improve safety performance. DuPont trained Norfolk Southern's senior management, started the company on the road toward continuous safety improvement and helped develop its safety structure. DuPont instilled the fundamental concept that improved safety performance requires teamwork—an effort in which everyone participates and no one sits on the sidelines.[179]

Given DuPont's razor-sharp focus on safety in its own handling of TIH and hazardous commodities, and its "real world" insistence that rail carriers do likewise, the failure of DuPont's Operating Plan and RTC simulation to address the unique requirements of hazardous commodities transportation is stunning. The SARR presented by DuPont does not track the movement of TIH cars; makes no special provision for "blocking" those cars within trains in a manner that reduces the potential for environmental incidents; ignores the federally-mandated

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[177] *See* NS Reply WP "National TRANSCAER Task Group Roster 2012.pdf."

[178] NS has recognized DuPont's safe handling of chemical products, awarding DuPont the Thoroughbred Chemical Safety Award in 2011, meaning that DuPont shipped more than 1,000 carloads of federally regulated hazardous materials over the NS system without incident for the year. *See* Norfolk Southern recognized 45 customers for chemical safety in 2011 (Apr. 25, 2012), *available at* http://www.nscorp.com/nscportal/nscorp/Media/News%20Releases/2012/ns_chemical_safety.html (last accessed Nov. 26, 2012).

[179] NS's *Safety Process*, *available at* http://www.nscorp.com/nscportal/nscorp/Investors/Financial_Reports/Investor%20Book/safety.html (last accessed Nov. 26, 2012).

speed limit for trains carrying TIH cars; and lacks the personnel required to devote sufficient attention to the myriad rules, regulations and best safety practices that are essential to the safe handling of TIH and hazardous rail shipments. These glaring deficiencies result in a significant understatement of the costs associated with the transportation of TIH and hazardous commodities that DuPont elected to include in the DRR's traffic group. Tellingly, no DuPont company witness is identified as a sponsor of any portion of the DRR's Operating Plan. It should come as no surprise that an operating plan conceived only by outside counsel and consultants would fail to reflect DuPont's real world awareness of, and sensitivity to, the realities of transporting TIH commodities and other hazardous shipments.

NS's Operating Plan corrects these deficiencies and provides for the handling of the DRR's hazardous shipments in a manner that complies with all applicable federal regulations and industry best practices.

5. The Board Should Not Permit DuPont's Attempt To Rely Upon "Internal Cross-Over" Movements ("Leapfrog Trains").

Like complainants in other recent SAC cases, DuPont selected massive volumes of "cross-over" traffic for the DRR's traffic group. DRR derives nearly 80% of its revenues from traffic that originates, terminates, or both, at points beyond its service territory. However, DuPont employs the cross-over traffic device in a manner that is far different than in any prior SAC proceeding. Specifically, DuPont posits the existence of "internal cross-overs" between the DRR and the residual NS at intermediate points within the DRR network. DuPont's Operating Plan contemplates that trains carrying cross-over traffic would not only enter or exit the DRR at the geographic end points of its system, but would also shift back and forth between DRR and the residual NS multiple times during their journey across the DRR network. This unprecedented assumption results in trains that "leapfrog" between lines operated by the DRR

and NS as they traverse the territory replicated by DuPont's SARR. These "leapfrog" trains are both contrary to fundamental SAC principles and inconsistent with the limited purpose of cross-over traffic articulated by the Board in past cases, and should be disallowed.

For example, the DRR's traffic group includes cars that move between the Kansas City, MO, gateway and various points in the Southeast. NS's real-world route of movement for that traffic includes line segments between Kansas City, MO, and East St. Louis, IL, (via Moberly, MO) and between East St. Louis, IL, and Chattanooga, TN. The DRR network posited by DuPont replicates the NS line segments between Kansas City, MO, and Moberly, MO, and between East St. Louis, IL, and Chattanooga, TN, but omits the 141-mile segment between Moberly, MO, and East St. Louis, IL. DRR Opening III-C-23. The DRR does have lines that physically link Moberly, MO, and East St. Louis, IL (via Decatur, IL), but handling east-west traffic via that far more circuitous north-then-south routing would not enable the DRR to meet customer service requirements in violation of the Board's rules regarding re-routes. Instead, DuPont posits that the DRR would operate trains between Kansas City, MO, and Moberly, MO, and interchange them to NS at that location. Under DuPont's assumption, NS would then move the trains between Moberly, MO, and East St. Louis, IL, and interchange them back to the DRR at East St. Louis, IL, for further movement to Chattanooga, TN, and points beyond. *Id.*

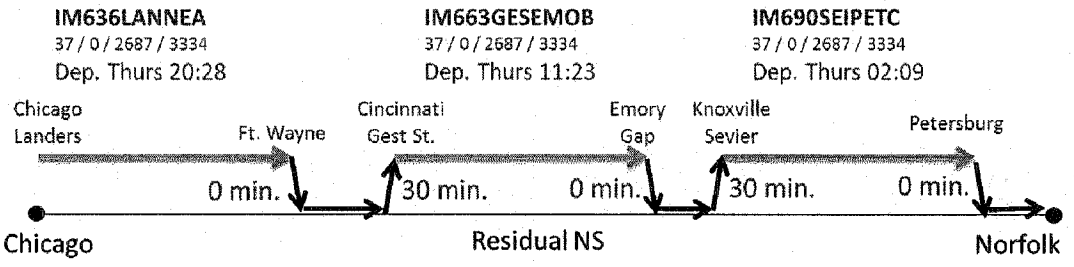
Likewise, rather than constructing a contiguous DRR route to serve selected traffic moving between Chicago, IL, and points in New England and upstate New York, DuPont carved out a 178-mile segment of NS's real-world route between Cleveland, OH, and Buffalo, NY. DuPont posits that trains would "leapfrog" between the DRR's line at Cleveland, OH, and its line at Buffalo, NY, via an "internal cross-over" with the residual NS between Cleveland, OH, and Buffalo, NY. DRR Opening III-C-23.

Indeed, DuPont's Operating Plan features movements involving multiple "internal cross-over" segments, resulting in trains that are interchanged between the DRR and NS as many as five times during their journey across the DRR network. For example, as Figure III-C-13 illustrates, DRR Train {{

}} DuPont's Operating Plan posits that the DRR moves the train between Chicago, IL, and Ft. Wayne, IN, where it is delivered to NS.

Figure III-C-13

DRR Chicago – Norfolk "Leapfrog" Intermodal Train 236



NS moves the train from Ft. Wayne, IN, to Cincinnati, OH, and interchanges it back to the DRR. DRR then operates the train—which has become an entirely "new" train, Train IM663GESEMOB—between Cincinnati, OH, and Emory Gap, TN, and forwards it a second time to NS. *Id.* After moving the train a short distance (50 miles) between Emory Gap, TN, and Knoxville, TN, NS hands it back to the DRR at Knoxville, TN. The DRR moves the train—bearing yet another entirely new designation, Train IM690SEIPETC—between Knoxville, TN, and Petersburg, VA, where it is forwarded yet again to NS for the final leg of its journey to Norfolk, VA. In other words, DuPont's Operating Plan posits that the DRR would transport this

intermodal traffic via a routing that requires five interchanges between the DRR and NS—including four interchanges at locations internal to the DRR network.[180] That type of train service could not meet the needs of the customers and would force traffic to the highways.

DuPont's assertion that the presence of "internal cross-overs" in its Operating Plan is "happenstance" is nonsense.[181] While complainants have incorporated cross-over traffic into their SAC presentations for many years, no complainant has ever posited an "internal cross-over" at an intermediate point within a SARR network. DuPont's attempt to do so is unprecedented. Moreover, examination of the specific segments excluded from the DRR network through DuPont's "internal cross-over" device demonstrates that they were carefully selected to eliminate costs and increase traffic density in a manner that improperly distorts the SAC analysis.

In some instances, the "internal cross-overs" posited by DuPont are concocted to enable the DRR to avoid constructing costly facilities. For example, the "internal cross-over" segment between Chillicothe, OH, and PD Junction, WV, encompasses 274 miles of NS's "Heartland Corridor" route linking Hampton Roads with the U.S. Midwest. As the Board is well aware, NS recently completed a three-year project to clear 28 tunnels along that route for double-stack

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[180] The departure times shown for the "three" DRR intermodal trains depicted in Figure III-C-13 reveal yet another serious flaw in DuPont's modeling of "leapfrog" trains. The first train (Train IM636LANNEA) departs Landers Yard in Chicago, IL, at 8:28 p.m. on Thursday. Yet, according to DuPont, that train (which morphs into Train IM663GESEMOB when NS delivers it back to the DRR at Gest Street Yard in Cincinnati, OH), departs Cincinnati, OH, at 11:23 a.m. on Thursday, approximately 9 hours before it departed Chicago, IL. After NS operates the train over the "leapfrog" segment between Emory Gap, IN, and Knoxville, TN, the train appears again on the DRR as Train IM690SEIPETC and departs Sevier Yard at 02:09 a.m. on Thursday, more than 9 hours before it departed Cincinnati, OH, and 18 hours before it left Chicago, IL. This bizarre occurrence is attributable to DuPont's apparent failure to "reset" the time/date for "leapfrog" trains when they re-enter the DRR (as different trains) in DuPont's RTC simulation.

[181] *See* Reply of E.I DuPont de Nemours and Company To Norfolk Southern Railway Company's Motion to Hold Case In Abeyance, filed August 27, 2012 ("DuPont Reply To NS Abeyance Motion") at 17.

operations, at a total cost of more than $260 million (including more than $141 million contributed by NS).[182] Twenty-four of those tunnels are located along the Chillicothe–PD Junction segment. By positing that NS (rather than the DRR) would be responsible for handling trains between Chillicothe, OH, and PD Junction, WV, this "internal cross-over" excuses the DRR from incurring the capital costs of replicating NS's Heartland Corridor through challenging terrain (including the expense of building those 24 tunnels).

DuPont's assertion that the Chillicothe–PD Junction internal cross-over "did not avoid the costs of building the SARR through difficult mountainous terrain" and that "the DRR could still handle that cross-over traffic without the 'leapfrog' segments via an internal route" (DuPont Reply to NS Abeyance Motion at 17-18) is incorrect. By constructing only the parallel NS line between Columbus, OH, (north of Chillicothe) and Kellysville, WV (near PD Junction), via Belle, WV, and Elmore, WV, and "rerouting" to that line only coal and general freight traffic (while leaving double-stack intermodal shipments on the Chillicothe–PD Junction line), DuPont avoided the expense of clearing its DRR route for double-stack operations. At the same time, positing an "internal cross-over" that uses NS's efficient Heartland Corridor route enables DuPont to participate in time-sensitive intermodal shipments for which the DRR could not possibly provide service that meets customer requirements via its inferior route via Columbus, OH, and Kellysville, WV.

In other instances, DuPont used "internal cross-overs" to avoid building lines that are characterized by relatively light density, without reducing the geographic footprint of the DRR or requiring it to forego the opportunity to participate in traffic that must traverse those segments. For example, the "internal cross-over" segment between Ft. Mill, SC, and Augusta, GA, (141

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[182] *See* NS Reply WP Folder "Heartland Corridor."

miles) has an average density of only { } ("MGT"). Excluding the Ft. Mill, SC–Augusta, GA, segment from the DRR network also enables DuPont to avoid constructing NS's bridge across the Savannah River near Augusta, GA. Several other "internal cross-over" segments posited by DuPont, including Moberly, MO–East St. Louis, IL { }, Salisbury, NC–Asheville, NC { }, and Abrams Yard–Reading, PA { }, are likewise characterized by lower traffic densities than segments that DuPont chose to construct as part of the DRR network.[183]

The Board should reject DuPont's unprecedented assumption that a complainant may invoke the cross-over traffic device to create "internal cross-overs" between a SARR and the residual incumbent at locations that are internal to the SARR network. "While a complainant has considerable flexibility in designing and locating the SARR and grouping traffic to take advantage of traffic densities, it does not have unbridled discretion." *TMPA I*, 6 S.T.B. at 589. at 16 (emphasis added). As the Board stated in *TMPA*, "in determining the reasonableness of or propriety of assumptions and selections made by a SAC proponent, we are guided by the underlying purpose and objectives of the SAC test." *Id.* DuPont's unprecedented "internal cross-over" assumption violates both fundamental SAC principles and limits on the use of cross-over traffic articulated by the Board in past cases.

The fundamental purpose of cross-over traffic is to simplify the SAC analysis by enabling complainants to reduce the geographic reach of their SARRs:

> "The use of cross-over traffic . . . . provides a reasonable measure of simplification that allows SAC presentations to be more manageable. Curtailing the geographic scope of the SARR greatly simplifies the operating plans that must be developed, thus limiting

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[183] *See* NS Reply Ex. III-B-3; NS Reply WP "Leapfrog Segments.doc."

> the complexity of what is nevertheless still a dauntingly large and detailed task."

Xcel, 7 S.T.B. at 603 (emphasis added).[184] Permitting complainants to select cross-over traffic is intended to allow the SARR to achieve "the same economies of scale, scope and density that the incumbents enjoy over the identical route of movement." *TMPA I*, 6 S.T.B. at 590 (emphasis added).[185] As the Board observed in *NS/Duke*, "[the complainant] may also use the device of cross-over traffic—rather than extending the SARR to far-flung origins and destinations of non-issue traffic (which could lead to a SARR of potentially nationwide reach)—to realize the full benefit of those economies." 7 S.T.B. at 115 (emphasis added). The Board has made clear that its intent in permitting the use of cross-over traffic is to "make the analysis more manageable without introducing bias to the SAC analysis." *Major Issues*, S.T.B. Ex. Parte No. 657, at 24 (emphasis added).

Thus, the Board's prior decisions sanction the use of cross-over traffic solely for the purpose of "simplifying" a SAC presentation. Such simplification is achieved by allowing a SARR to interchange cross-over traffic with the incumbent carrier at the geographic end points of a "smaller" SARR network, rather than extending the SARR to distant origins and

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[184] *See also WFA I*, STB Docket No. 42088, at 2 ("To make this [SAC] modeling task easier, the Board permits complainants to design smaller SARRs that use something called 'cross-over traffic.'"); *Xcel*, 7 S.T.B. at 601-02 ("Creating a SARR to serve the same traffic group without using the cross-over traffic device would dramatically enlarge the geographic scope of a SARR"); *Otter Tail*, STB Docket No. 42071, at 12 ("Without cross-over traffic, the SARR would replicate the entire service provided by the defendant railroad for all of the traffic included in the SAC analysis . . . . Such an expanded SAC analysis, however, would be impracticable."); *Major Issues*, S.T.B. Ex. Parte No. 657, at 32 ("the use of cross-over traffic is nothing more than a simplifying device").

[185] *See also Xcel*, 7 S.T.B. at 601 (cross-over traffic enables the SAC analysis to take into account the economies of scale, scope and density that the defendant carrier enjoys); *Otter Tail*, STB Docket No. 42071, at 11 (same); *WFA II*, STB Docket No. 42088, at 12 (same).

destinations of that traffic.[186] In this way, cross-over traffic affords the SARR the same economies of scale, scope and density as the incumbent railroad experiences in the real world on the lines replicated by the SARR.

In *Major Issues*, the Board made clear that the right of complainants to utilize cross-over traffic movements is constrained by these stated objectives:

> Coal Shippers disagree that cross-over traffic should be viewed as a simplifying device. They contend that under *Guidelines*, complainants have an absolute right to use cross-over traffic and to choose any segment of the incumbent's market they wish the SARR to serve.
>
> We do not share Coal Shippers' views of the nature of cross-over traffic. First, it is clear that the concept of cross-over traffic was not contemplated by the ICC when it adopted *Guidelines*. Indeed, the name of the test itself (the 'stand-alone' cost test) reflects an implicit assumption that the SAC analysis would examine a stand-alone network designed to meet the transportation needs of the SAC traffic group. . . . The use of cross-over traffic, however, results in a hypothetical SARR that would not stand alone in any meaningful sense, but rather would be dependent on the residual defendant carrier to provide the feeder network needed to sustain its operations. As the *Nevada Power* decision made clear, the use of cross-over traffic was permitted only to 'allow shippers to make effective cases . . . . using smaller hypothetical SARR's than would otherwise be required.'

Major Issues, S.T.B. Ex. Parte No. 657, at 31 (emphasis added).

The "internal cross-overs" posited by DuPont are utterly inconsistent with both the limited purposes of cross-over traffic and fundamental SAC principles, and must be disallowed:

First, the "internal cross-overs" posited by DuPont do not reduce the geographic scope of its SARR. Unlike cross-over movements authorized in prior SAC cases, which involved interchanges with the residual incumbent at the geographic end points of a SARR, the "internal

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[186] *See Bituminous Coal – Hiawatha, UT to Moapa, NV*, 10 I.C.C.2d 259, 267 (1994) ("cross-over traffic should be included in the SARR and treated as if it would be interchanged with the incumbents carriers at the appropriate end points of the SARR.") (emphasis added).

cross-overs" posited by DuPont create additional interchanges at intermediate points within the DRR network. Those "internal cross-overs" do not eliminate the need for the DRR to extend its network to "far-flung origins and destinations." To the contrary, the DRR serves both end points of each "internal cross-over" segment and has the ability to operate trains between those points (albeit via more circuitous routes that DuPont did choose to build). Thus, "internal cross-overs" do not serve the fundamental purpose of enabling the DRR to participate in traffic without unduly extending the geographic reach of its network. Rather, they are transparently intended to excuse the DRR from constructing internal portions of its network that (for various reasons, such as low density or high construction costs) it would simply prefer to avoid building and operating.

Second, "internal cross-overs" certainly do not "simplify" a SAC presentation. To the contrary, the "internal cross-overs" posited by DuPont necessitate additional interchanges between the DRR and NS at intermediate points that the DRR is itself capable of serving on a "single-line" basis. Such (otherwise unnecessary) interchanges create a need for additional track facilities and give rise to complicated issues relating to the coordination of train operations at intermediate points along the DRR network.[187] DuPont's Opening Evidence simply ignores those complications. Such complicating assumptions would be unnecessary in the absence of DuPont's unprecedented "internal cross-over" device.

Third, the "internal cross-overs" posited by DuPont are inconsistent with the Board's stated objective of enabling a SARR to achieve "the same economies of scale, scope and density that the incumbents enjoy." *TMPA I*, 6 S.T.B. at 590 (emphasis added). Permitting a SARR to "carve out" segments within its network that have lower traffic densities, and to impose on the

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[187] These interchanges create further complications as well, not simply for hypothesized DRR operations, but for implementation in the analysis resulting in complicated ATC revenue allocations and MMM analysis.

incumbent carrier responsibility for providing service between those intermediate points, would enable the SARR to achieve greater overall economies of scale, scope and density than are available to the incumbent carrier. In the real world, NS does not have the luxury of delegating responsibility for operating the { }-density Moberly, MO–East St. Louis, IL, portion of its route between the Kansas City, MO, gateway and the Southeast to a fictitious "residual incumbent." Excusing a SARR from the obligation to build and operate { } density segments within its own network by allowing it to rely upon "piecemeal" routes that alternate between rail lines operated by the SARR and the residual incumbent distorts the SAC analysis. DuPont's approach produces an "apples to oranges" comparison of the costs incurred by the SARR and the residual incumbent in serving the selected traffic group, undermining the fundamental goal of the SAC test—*i.e.*, to determine the amount that the defendant carrier (not a hypothetical SARR that enjoys greater economies of scale, scope and density) needs to charge in order to fully cover all of its costs.[188]

DuPont suggests that its use of internal cross-overs "actually benefits NS" because "NS actually receives a greater portion of the revenue because it handles the cross-over traffic for a greater distance." DuPont Reply to NS Abeyance Motion at 18-19. DuPont is wrong, for several reasons. As an initial matter, the allocation of revenue between the SARR and the residual incumbent is beside the point—the Board's *Major Issues* decision makes clear that the cross-over traffic device was not intended to permit a complainant to manipulate the SAC analysis by picking and choosing which portions of the SARR's internal network it wishes to replicate. *See Major Issues*, S.T.B. Ex. Parte 657, at 31. Moreover, DuPont compounds the bias

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[188] *See, e.g.*, *Major Issues*, S.T.B. Ex. Parte 657, at 6; *WFA II*, STB Docket No. 42088, at 8; *Otter Tail*, STB Docket No. 42071, at 6; *NS/Duke*, 7 S.T.B. at 115.

created by its "internal cross-over" construct by also rerouting some traffic away from its real-world route of movement over "internal cross-over" segments to other lines that the DRR constructed, while leaving only more time-sensitive shipments for handling by NS via those "internal cross-over" routes. Because ATC calculates NS's revenue division for such shipments based on NS's historical traffic density over those segments (rather than the lower volume of traffic left to NS as a result of DuPont's reroutes), the ATC calculation does not reflect the residual NS's actual (lower) density on the "internal cross-over" segments during the SAC analysis period. As a result, NS receives a lower revenue division on the traffic that it is required to handle via the "internal cross-over" segments.

Fourth, DuPont rerouted some of the traffic that moves (in the real world) over the "internal cross-over" segments to other lines that the DRR did choose to construct. At the same time, DuPont assumes that more time-sensitive traffic (including intermodal and automotive shipments) would remain on its real-world route of movement, but that the DRR would nevertheless participate in (and earn revenues from) those shipments via an "internal cross-over" movement with NS. This scenario is patently inconsistent with the Board's standards governing the rerouting of traffic. The Board's prior decisions give a complainant three choices with respect to non-issue traffic: (1) build the lines and facilities necessary to move the non-issue traffic within the SARR's service territory; (2) reroute that traffic over other SARR lines if the alternate route can provide equal or better service (thereby enabling the SARR to avoid building the lines over which the traffic actually moves); or (3) forego such non-issue traffic. DuPont's "internal cross-over" construct is a blatant attempt to side-step these well-established rules governing the permissibility of rerouted traffic movements.

Specifically, DuPont employs "internal cross-overs" as a means of enabling the DRR to participate in traffic that would not qualify for rerouting under the Board's standards (because the alternate DRR route cannot provide equal or better service), without actually building the lines required to move that traffic. For example, the "internal cross-over" segment between Chillicothe, OH, and PD Junction, WV, posited by DuPont is used by NS today for both merchandise and time-sensitive intermodal and automotive traffic. In addition to DRR/NS interline service via the Chillicothe-PD Junction "internal cross-over" segment, DuPont's Operating Plan provides for separate DRR single-line train service between Columbus, OH (north of Chillicothe) and Kellysville, WV (near PD Junction), via Belle, WV, and Elmore, WV. DuPont rerouted the merchandise traffic that currently moves over the Chillicothe–PD Junction segment to the DRR's parallel route between Columbus, OH and Kellysville, WV. However, the circuity of the Columbus–Kellysville route, and the challenging terrain it traverses, make it impossible for the DRR to meet the service requirements of time-sensitive intermodal shipments via that alternate route. Instead of incurring the expense of building the Chillicothe–PD Junction segment (including 24 tunnels cleared for double-stack train operations), or foregoing that time-sensitive traffic, DuPont simply assumes that NS would be responsible for "bridging the gap" in the DRR's network between Chillicothe, OH and PD Junction, WV.

If DuPont had simply attempted to reroute this traffic, the Board would be required to "look at [the] proposed rerouting to ensure that it is permissible and consistent with SAC principles." *CP&L*, 7 S.T.B. at 253; *see also NS/Duke*, 7 S.T.B. at 112 (same); *TMPA I*, 6 S.T.B. at 594-95. The Board does not permit reroutes that "inappropriately shift a greater share of the revenues from the movement onto the SARR and/or to shift costs of serving that traffic off of the SARR onto the residual railroad." *CP&L*, 7 S.T.B. at 253. DuPont's "internal cross-over"

scheme has precisely that impermissible effect, by enabling the DRR to participate in cross-over traffic that cannot be rerouted (for service reasons) while shifting the costs associated with constructing and operating the facilities needed to handle that traffic within the DRR's service territory to the residual NS.

Finally, permitting a complainant to posit the existence of "internal cross-overs" within a SARR network would create opportunities to "game" the SAC analysis. As discussed above, "internal cross-overs" might be used (as they are by DuPont) to avoid building and operating integral portions of a SARR network that have high construction costs and/or low traffic densities. For example, a complainant could avoid the cost of constructing a rail bridge over the Mississippi River simply by carving the bridge out of its SARR network, and assuming that the residual incumbent would provide service between a point west of the river and a point east of the river via an "internal cross-over." A complainant might use "internal cross-overs" to avoid replicating rail lines through major metropolitan areas (where land values are higher and operating conditions more complex). Indeed, if the Board were to authorize DuPont's Chillicothe–PD Junction "internal cross-over" to avoid constructing the 24 tunnels on NS's Heartland Corridor route (without foregoing the traffic and revenue that moves over that line), what would stop a complainant from building all portions of a defendant carrier's route except the tunnels, in an effort to gain even more revenue while avoiding expensive construction projects? Such practices would distort the SAC analysis by vastly understating the defendant carrier's cost of providing service. Sanctioning "internal cross-overs" would also undermine the Board's standards for rerouting non-issue traffic, by excusing complainants from the need to choose between building all of the lines and facilities required to handle traffic that cannot be rerouted (for service reasons) or foregoing that traffic. Finally, "internal cross-overs" might be

used to "game" the RTC Model simulation process. Specifically, where a complainant was unable to run its RTC simulation to a successful completion (due to unrealistic operating inputs or the inadequacy of the SARR's facilities), the complainant could eliminate the "problem" by carving out those segments of its SARR network where such modeling failures occur and converting those segments into "internal cross-overs" with the defendant carrier. Such a practice would undermine the integrity of the RTC simulation exercise, upon which the parties (and the Board) rely to test the adequacy of the physical facilities posited by the complainant.

For the foregoing reasons, the Board should reject DuPont's attempt to expand the cross-over traffic device to include "internal cross-overs" at intermediate points along the SARR network.

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As the foregoing sections of this Part III-C of NS's Reply Evidence show, DuPont's operating evidence is based on flawed methodologies, fails to address essential elements of an operating plan for carload traffic, and contains other glaring errors. The DRR's Operating Plan is incapable of providing complete on-SARR train service for more than 700,000 of the 3 million carloads of general freight traffic that it selected—including 76% of the issue traffic! The DRR has no car blocking or classification plan for merchandise traffic—indeed, DuPont's Operating Plan never mentions "classification" among the activities that the DRR would be required to perform. The size and configuration of the DRR's yards, and the number of yard locomotives and yard crews assigned to those facilities, are based upon mathematical calculations that are unsupported by credible evidence and utterly inconsistent with the daily workload at each location. The DRR's traffic group includes tens of thousands of carloads of TIH and other hazardous commodities, but DuPont's Operating Plan makes no provision for the DRR to

comply with laws, regulations and industry wide best practices applicable to the handling of such shipments. The DRR claims to "step into NS's shoes" under NS's intercarrier agreements and avails itself of the benefits of those arrangements, but makes no provision to perform "reciprocal" services for connecting carriers. DuPont's unprecedented "internal cross-over" movements transfer to the residual NS the obligation to operate line segments within the DRR's network that are characterized by high costs and/or low traffic densities. Any one of these deficiencies renders DuPont's Operating Plan "infeasible"—collectively, they constitute a failure to present a *prima facie* case and warrant dismissal of DuPont's complaint.[189]

By contrast, NS's Reply Evidence presents a comprehensive operating plan for the DRR that is tailored to the specific needs of the traffic group actually selected by DuPont. NS's Operating Plan fully accounts for the facilities, equipment and personnel necessary to provide the road and local train services, intermediate classification and switching, and pick-ups and set-offs at shippers facilities and interchange points required to serve the DRR's traffic in a manner that is consistent with customer requirements, applicable laws and real world operating practices. Should the Board decide not to dismiss DuPont's complaint outright, it should adopt NS's Operating Plan as the basis for decision in this case.

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[189] DuPont's Opening Evidence contains numerous other errors and faulty assumptions that further undermine its Operating Plan and expense estimates. For example, DuPont posits that the DRR would have a Positive Train Control ("PTC") system from the outset of operations in June 2009, even though PTC technology did not exist in 2009 and still does not exist in deployable form today. *See,* DuPont Opening III-B-8, III-F-39 to III-F-40. The DRR purports to exercise NS's existing trackage rights in a manner that violates the terms of NS's agreements with the host carrier. *See infra* III-C-143 to III-C-147. The staffing provided by DuPont's Operating Plan (including train crews, crew management personnel, dispatchers, operations control personnel, managers of locomotive and yard operations, and intermodal and automotive terminal personnel) is woefully inadequate to support the activities required to serve the DRR's customers. *See* NS Reply Part III-D.

B. DuPont's RTC Model Simulation Is Meaningless.

DuPont attempts to satisfy its evidentiary burden of proffering a "feasible" SARR configuration and operating plan by presenting a simulation of the DRR's peak-period operations using the Rail Traffic Controller ("RTC") Model.[190] DuPont claims that its RTC Model ran to a successful conclusion, and produced transit times that were "similar to or lower than the NS's actual cycle and transit times during the comparable period."[191] According to DuPont, this modeling exercise "confirm[s] that the DRR's configuration, facilities and operating plan are feasible."[192] Contrary to those assertions, DuPont's RTC simulation is—like the Operating Plan that is based upon—fatally flawed, and its outputs are meaningless.

As an initial matter, DuPont's assertion that a "successful" RTC simulation of a SARR's peak week operations confirms the feasibility of a complainant's operating plan is not correct. An RTC Model simulation does not—and cannot—prove that an operating plan is "feasible." Rather, an RTC simulation indicates whether the complainant's proposed SARR configuration is adequate to enable the SARR to execute an otherwise "feasible" operating plan. *See, e.g., WFA II*, STB Docket No. 42088, at 14 (RTC Model enables complainant to "test the adequacy of the configuration (to make sure the [SARR] would have sufficient capacity to handle the peak forecast demand)"); *WFA I*, STB Docket No. 42088, at 16 (same); *AEP Texas*, STB Docket No. 41191, at 17 (RTC simulation used "[t]o assess the adequacy of the proposed track configuration for the TNR to handle the expected traffic"). A properly conducted RTC Model simulation also

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[190] DuPont Opening III-C-14 to III-C-17; Ex. III-C-5.

[191] DuPont Opening III-C-16.

[192] DuPont Opening III-C-17.

generates various operating statistics that can be used in estimating a SARR's operating expenses.

However, in order for an RTC simulation to produce meaningful results, the inputs to the model must account for all of the elements of a "feasible" operating plan—*i.e.*, one that is capable of meeting the transportation needs of the SARR's customers and that is fully consistent with real-world railroading. In other words, a "feasible" operating plan is an necessary prerequisite for a credible RTC simulation. If the train services, yard activities, or operating assumptions input to the RTC Model do not reflect a feasible operating plan, a "successful" simulation cannot cure those deficiencies, nor can it prove that the SARR's physical facilities are adequate. Such is the case with the RTC simulation presented by DuPont.

1. DuPont's RTC Simulation Is Based Upon A Fatally Deficient Train Service Plan.

The RTC Model upon which DuPont's simulation of the DRR's peak period operations is based is founded upon the fatally deficient train service plan presented in DuPont's operating evidence. As NS demonstrated above, the train selection methodologies employed by DuPont failed to capture tens of thousands of NS trains that are essential to enable the DRR to provide uninterrupted train service for the DRR's traffic—including the vast majority of DuPont's own issue traffic. That glaring error, which created "gaps" in train service for more than 700,000 carloads of general freight traffic, was carried forward into DuPont's RTC simulation. Specifically, the list of trains input into DuPont's RTC Model is the same list (set forth in DuPont Opening WP "Base Year Train Statistics_Open_Errata.xlsx") that DuPont utilized in developing its deficient Operating Plan. Of the 35,699 Base Year trains missing from the DRR's train list, 1,079 trains operated during the week in the Base Year upon which DuPont's RTC analysis is based. Taking the growth in DRR traffic volumes in the Peak Year into account, this

means that at least 1,191 peak period road and local trains are "missing" from DuPont's RTC simulation.[193] To put this omission in perspective, a total of 5,088 peak week trains were modeled in DuPont's RTC simulation. DuPont Opening Ex. III-C-5 at 13-14. The 1,191 trains excluded by DuPont's flawed train selection methodology represent 19% the 6,179 trains that should have been included in that simulation. In other words, DuPont's RTC simulation does not even consider the capacity requirements for 19% of the trains that the DRR would operate during the peak period. The failure of DuPont's RTC Model to account for such a substantial portion of the DRR's trains renders DuPont's RTC simulation meaningless, and fatally undermines DuPont's reliance upon that simulation to demonstrate that the DRR's configuration and facilities are adequate.

Moreover, the manner in which the DRR's road and local trains are modeled in DuPont's simulation is inconsistent with applicable laws and regulations, industry wide safety practices, the requirements of the DRR's customers and other aspects of real world railroading. In DuPont's RTC simulation, trains carrying TIH commodities are permitted to operate at speeds up to 60 MPH.[194] Figure III-C-14 sets forth a sample of the DRR general freight trains that contain TIH cars but operate at 60 MPH in DuPont's RTC simulation.

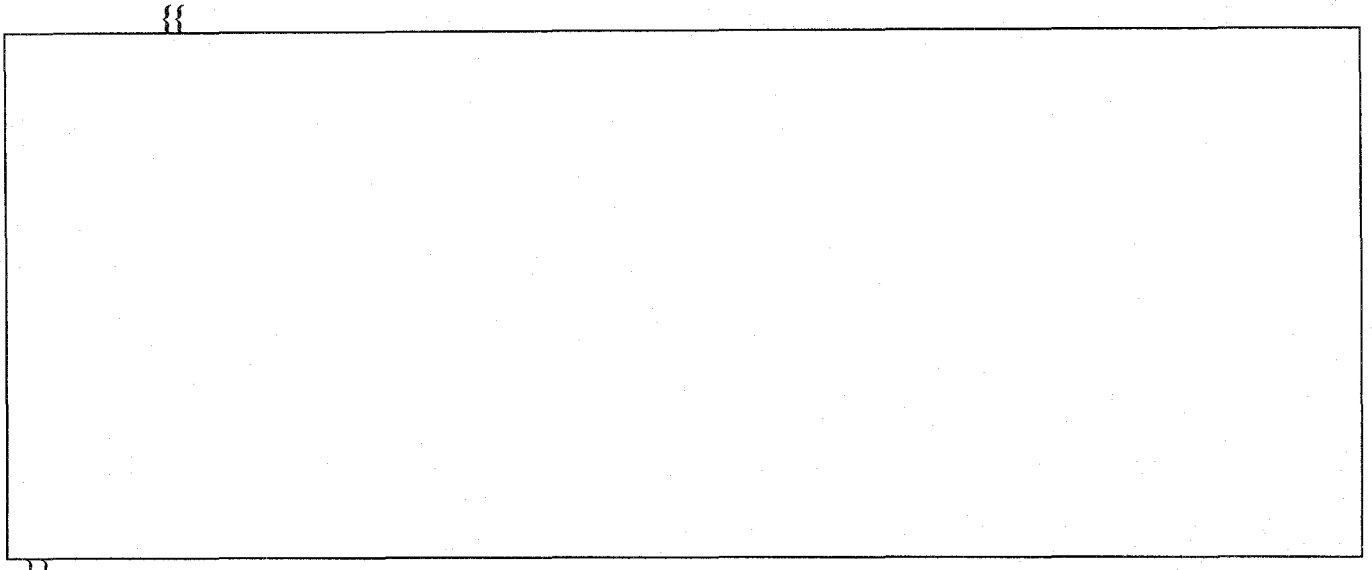
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[193] See NS Reply WP "DuPont Missing Trains-Peak Period.xls." This estimate of trains missing from DuPont's RTC simulation is conservative, because it does not include those trains among the additional 16,746 trains operating on the periphery of the DRR network that moved during the peak period simulated by DuPont's RTC Model.

[194] In developing its RTC Model, DuPont adopted NS's practice of reducing train speeds below 60 MPH "for safety reasons" including maintaining a safe braking distance between trains, reducing track/curve wear, and avoiding high-speed gage separation. DuPont Opening Ex. III-C-5 at 5. However, it did not reduce the maximum speed of trains carrying TIH traffic, or otherwise adopt the "best practices" of NS (and other railroads) with respect to "Key Trains." *See supra* III-C-91 to III-C-97.

Figure III-C-14

{{



}}

Overall, DuPont's DRR Base Year train list includes 18,797 "Key Trains."[195]

Thus, the DRR's operations portrayed in DuPont's RTC simulation violate PHMSA regulations (and an industry wide "best practice") that restrict the operation of such trains to a maximum speed of 50 MPH. *See supra* III-C-96 to III-C-97. Moreover, the fact that DRR trains never change consist in DuPont's RTC Model reflects the failure of DuPont's Operating Plan and RTC simulation to provide for compliance with federal regulations that require railroads to track the location of TIH cars in their physical custody or control, so that such information can be made available to government agencies or emergency responders.[196] By incorporating this invalid—indeed, unlawful—assumption, DuPont's RTC simulation understates the time that trains carrying TIH cars would occupy the DRR's tracks. NS's Operating Plan and RTC simulation address this fatal error in DuPont's Opening Evidence by limiting all "Key Trains"

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[195] *See* NS Reply WP "Key Trains Analysis.xlsx."

[196] *See* 37 Fed. Reg. 72130, 72131 (Nov. 26, 2008).

operated by the DRR to a maximum speed of 50 MPH.[197] In total, 15,470 of the DRR's Base Year road trains, and 3,110 of the DRR's Base Year local trains in NS's Reply DRR Train List derived from MultiRail, were "Key Trains" which DuPont should have restricted to a maximum of 50 MPH (but did not).[198]

DuPont's RTC simulation does not model the movement of DRR road trains accurately or completely. While DuPont's model includes some "work events" for DRR trains (*i.e.*, stops en route to change crews, or pick up or set off cars at customer facilities or for interchange), NS's analysis of DuPont's RTC simulation revealed that, in numerous instances, DuPont did not account for all of the work events that road trains must perform during their journey across the DRR network. For example, Figure III-C-15 is an extract from the NS car event data produced in discovery that sets forth the route of movement and work events for {{

}} picked up and/or set off cars at each of those locations. However, DuPont's RTC simulation does not account for those work events—even though it included those cars in the DRR's traffic group.

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[197] A list of the "Key Trains" in NS's RTC simulation is set forth in NS Reply WP "Key Trains in NS Reply RTC Simulation.xls."

[198] *See* NS Reply WP "Key Trains in NS Reply RTC Simulation.xls."

Figure III-C-15
Route of Movement and Work Events for {{

					PICKUP		SETOUT		TRAIN	
EVENT_TS_EST	OS	CITY_NAME_19	STATE_PROV_INIT	EVENT_TYPE	E	L	E	L	E	L
11/16/09 16:00	791	BIRMINGHAM	AL	DFLC	51	32			51	32
11/16/09 23:00	7R	RYAN	AL	DFLC		20			51	52
11/17/09 5:40	193N	SELMA	AL	ARIL	2				53	52
11/17/09 15:23	108MB	MCINTOSH	AL	DFLC	2	16			55	68
11/17/09 16:50	149MB	MOBILE	AL	ARIL			53	68	2	0
				ARRI			2			

Source: NS 2009 Car Event Data Produced in Discovery

}}

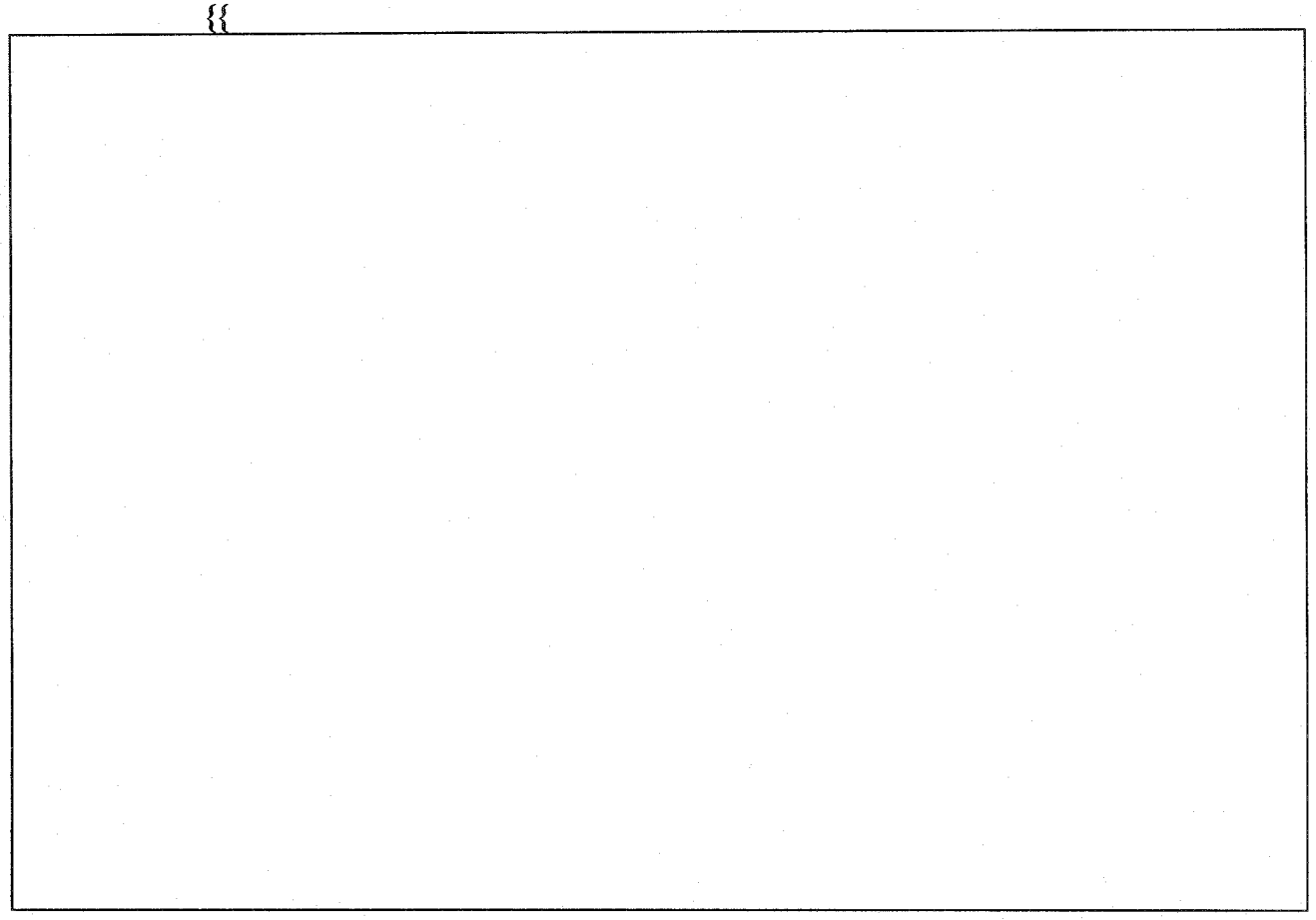
Figure III-C-16 is a "screenshot" of DRR Train {{

}} as it was modeled in DuPont's RTC simulation. As Figure III-C-16 shows, in DuPont's RTC simulation, Train {{ }} stops en route at {{ }} but does not make stops to pick up or set out cars at {{

}}

Figure III-C-16

{{

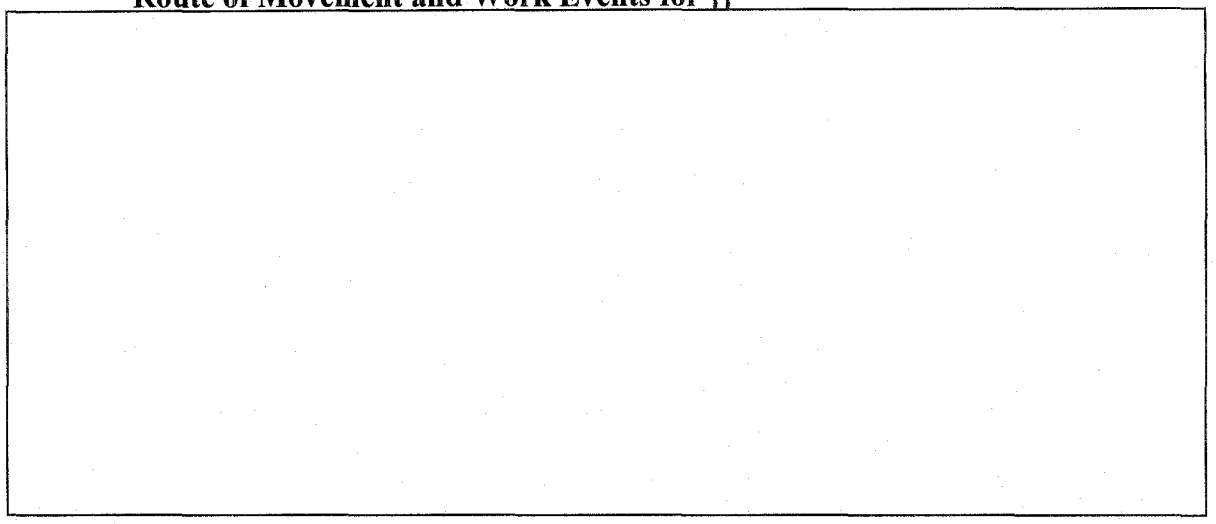


}}

Likewise, Figure III-C-17 is an extract from the NS car event data that sets forth the route of movement and work events for NS Train {{

}}

Figure III-C-17
Route of Movement and Work Events for {{



}}

As Figure III-C-17 shows, the train departed {{ }} with a consist of 55 loaded cars and 47 empty cars. It made intermediate stops at {{ }} before arriving at its final destination, {{ }} The car event data provided by NS in discovery shows that {{ }} picked up and/or set off cars at each of those locations. In DuPont's RTC simulation, this train {{ }} stops en route at {{ }} but not at {{ }} Upon arriving at{{ Cincinnati, OH,}} the DRR hands the train off to NS pursuant to an "internal cross-over" posited by DuPont. The train reappears as "new" {{ }} on the DRR system at {{ }} but does not stop to pick up the 20 loaded cars that NS Train {{ }} on that date.[199] As these examples demonstrate, DuPont's RTC Model does not properly account for the work events that DRR road trains would have to perform at intermediate locations. DuPont's modeling of local

[199] *See* simulation contained in DuPont Opening WP folder "RTC."

trains operating in "straightaway" service suffers from the same inaccuracies and omissions as its modeling of road trains.

DuPont did not even try to model the work events performed by DRR local trains operating in "turn service." Instead, DuPont simply assumed that such trains would travel nonstop from their origin terminal to the furthest location indicated in the NS event data, dwell for 45 minutes, and then proceed directly back to their origin terminal. DuPont Opening III-C-15; Ex. III-C-5 at 8-9.[200] According to DuPont, this generic dwell time allowance for "turn service" local trains is sufficient to account for both "any switching occurring at the turn location and the time needed for the crew to walk to the other end of the train [in order to reverse direction]." DuPont Opening Ex. III-C-5 at 9.

DuPont's rationale is fundamentally flawed, for several reasons. First, while DuPont's 45 minute allowance purports to include time for industry switching "at the turn location," it makes no allowance whatsoever for switching required to serve customers at intermediate locations. As NS's MultiRail and RTC analyses show, many of the local trains operated by the DRR would be required to perform pickups and setoffs at multiple locations along their route of movement. Moreover, DuPont's suggestion that reversing the direction of a "turn service" local train can be accomplished simply by having the crew "walk to the other end of the train" necessarily assumes that all DRR "turn service" local trains are powered by two locomotives in a DP configuration. That assumption is directly contradicted by DuPont's own evidence, which states that "the DRR will operate its local trains with a single GP38 locomotive where possible." DuPont Opening Ex. III-C-5 at 2 (emphasis added). Indeed, NS's analysis of the workpapers

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[200] As NS demonstrated above (at III-C-24 through III-C-36), DuPont's claim that this methodological "shortcut" was necessitated by alleged deficiencies in the data provided by NS is demonstrably false.

underlying DuPont's RTC simulation indicates that 65% of the DRR's local trains operate with only one locomotive. In order for those trains to reverse direction, the crew would need to run the power around the train and reattach it to the other end. That process alone would consume at least the 45 minutes allocated by DuPont for both industry switching and reversal of direction at the location where a "turn service" local train turned around.[201]

Moreover, even where DuPont's RTC simulation does include "work events" performed by DRR road or local trans, the "dwell time" allocated by DuPont's RTC Model for those activities is consistently understated. While DuPont stated its dwell time assumptions for events such as interchanges (30 minutes) and crew changes (15 minutes), it did not articulate any explicit rule regarding the time required for road or local trains to pick up or set off cars at customer facilities or interchange points. However, NS's analysis of DuPont's RTC simulation reveals that DuPont consistently allocated 30 minutes of dwell time for any "work event" that involved picking up or setting cars off a train. Figure III-C-16 above illustrates DuPont's application of a 30-minute dwell time to perform intermediate switching. As Figure III-C-16 shows, DRR train {{ }} for 45 minutes. The "Crew" column of the table at the bottom of Figure III-C-16 indicates that the train changed crews at that location, accounting for 15 minutes of dwell time. The remaining 30 minutes appears to be allocated for picking up and setting out cars at that location. Likewise, in Figure III-C-10 (on Page III-C-57) above, 45 minutes of dwell time are allocated to DRR Train {{

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[201] DuPont's further assertion that "[n]o additional time is allotted for reversing direction if the procedure occurs at a location where the train is interchanged with another railroad" (DuPont Opening Ex. III-C-5 at 9 (emphasis added)) is utterly nonsensical. By definition, a local train operating in "turn service" returns to its origin terminal, and is not interchanged with another railroad. This statement graphically illustrates DuPont's failure to apply operating expertise in designing its Operating Plan and RTC simulation.

}} At both of those locations, the train changed crews, accounting for 15 minutes of dwell, while the remaining 30 minutes represents the time that (DuPont assumed) would be required to switch cars into and out of the train. At {{ }} Column 12 of Figure II-C-10 indicates there was no crew change—accordingly, the RTC Model assigned 30 minutes of dwell time to account for intermediate switching at that location.

The 30-minute dwell time assumption for picking up and setting out cars at all intermediate yards and customer facilities reflected in DuPont's RTC Model significantly understates the time actually required to switch cars into and out of trains at intermediate yards and customer facilities. As NS demonstrated above, "serving" general freight customers often involves more than simply "dropping off" or "picking up" one or more cars. Rather, a road or local train may be required to perform multiple tasks such as "spotting" cars in a particular order on a customer's tracks, or handling both inbound cars (which may be loaded and/or empty) and outbound cars (which likewise may be loaded or empty or both). Service to a particular operating station may involve switching cars at multiple industries located at that station.[202] IN order to serve its selected traffic, the DRR would be required to provide local service to more than 6,000 customers located at more than 700 unique DRR-served stations.[203] If an operating station is also an interchange point, the train may be required to pick up cars left by a connecting carrier, or to place a cut of cars on an interchange track to be picked up by that carrier. The specific tasks to be performed vary from station to station, and may also vary from day to day at a particular location. For these reasons, applying a standard 30-minute dwell to every

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[202] Indeed, the traffic selected by DuPont moves to and/or from more than 6,000 customers located at more than 700 DRR-served stations. *See* NS Reply WP "DRR Local Customers.xls."

[203] *See* NS Reply WP "DRR Local Customers.xls."

intermediate stop made by a road or local train does not accurately reflect the time (and resources) required to provide "carload" rail service.

NS's RTC Model addresses this fundamental deficiency in DuPont's RTC simulation by applying location-specific dwell times based upon the average daily activity at each location. NS witnesses Johnson and Smith evaluated the switching required at each station based upon the average number of cars delivered to or picked up at each location in the MultiRail "SuperSim" simulation, as well as their knowledge regarding customer requirements and the functions performed by real world NS trains and crews at particular stations each day. Based on that assessment, witnesses Johnson and Smith developed location-specific dwell times that reflect the average time that would be required to serve that station. The location-specific dwell times in excess of 90 developed by witnesses Johnson and Smith, and the reasons for assigning that dwell time (such as service to multiple customers at a single station or customer-specific requirements) are summarized in NS Reply Ex. III-C-14.[204]

The unrealistic 30-minute dwell time assumption applied by DuPont in modeling the DRR's train operations had the effect of understating the time that trains would occupy main line segments of the DRR network, consuming track capacity that DuPont's RTC simulation assumes would be available to other DRR trains. It also resulted in a substantial understatement of the equipment and crews required to provide complete train service to the DRR's selected traffic. DuPont's demonstrably faulty dwell time input invalidates both the purported "success" of DuPont's RTC simulation and the operating expense estimates based upon that simulation.

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[204] NS Reply WP "Dwell by Location in NS Reply RTC.xls" sets forth the dwell time assigned to all DRR train work events in NS's Reply RTC simulation.

2. DuPont's RTC Model Contains Incorrect Grade Information.

In constructing its RTC Model, DuPont made numerous errors in coding the grades along the DRR network. The incorrect grade information in DuPont's RTC Model—which affects 7,000 distinct "nodes"—is summarized in NS Reply WP "top impact grade changes.xlsx." This flaw in DuPont's RTC Model is attributable to inputting errors committed by DuPont, not to any deficiency in the grade information provided by NS. Correct grade information for the entire NS system was produced to DuPont in discovery.[205]

Correcting the erroneous grades incorporated into DuPont's RTC Model invalidates the results of DuPont's simulation. NS replaced the incorrect grades in DuPont's RTC Model with the correct grade values shown on NS's track charts. NS then ran DuPont's RTC simulation with the correct grades, without making any other changes to the Model. That single adjustment caused trains to stall at multiple locations along the DRR network, resulting in a failure of DuPont's RTC Model to run to a successful completion.[206] Figure III-C-18 depicts the locations at which DuPont's RTC simulation failed when the correct grade values were assigned. NS Reply workpaper "DRR Train Failures Resulting From Substitution of Correct Grade Information.zip" demonstrates that each of the trains listed in Figure III-C-18 stalled when the correct grade information was taken into account.

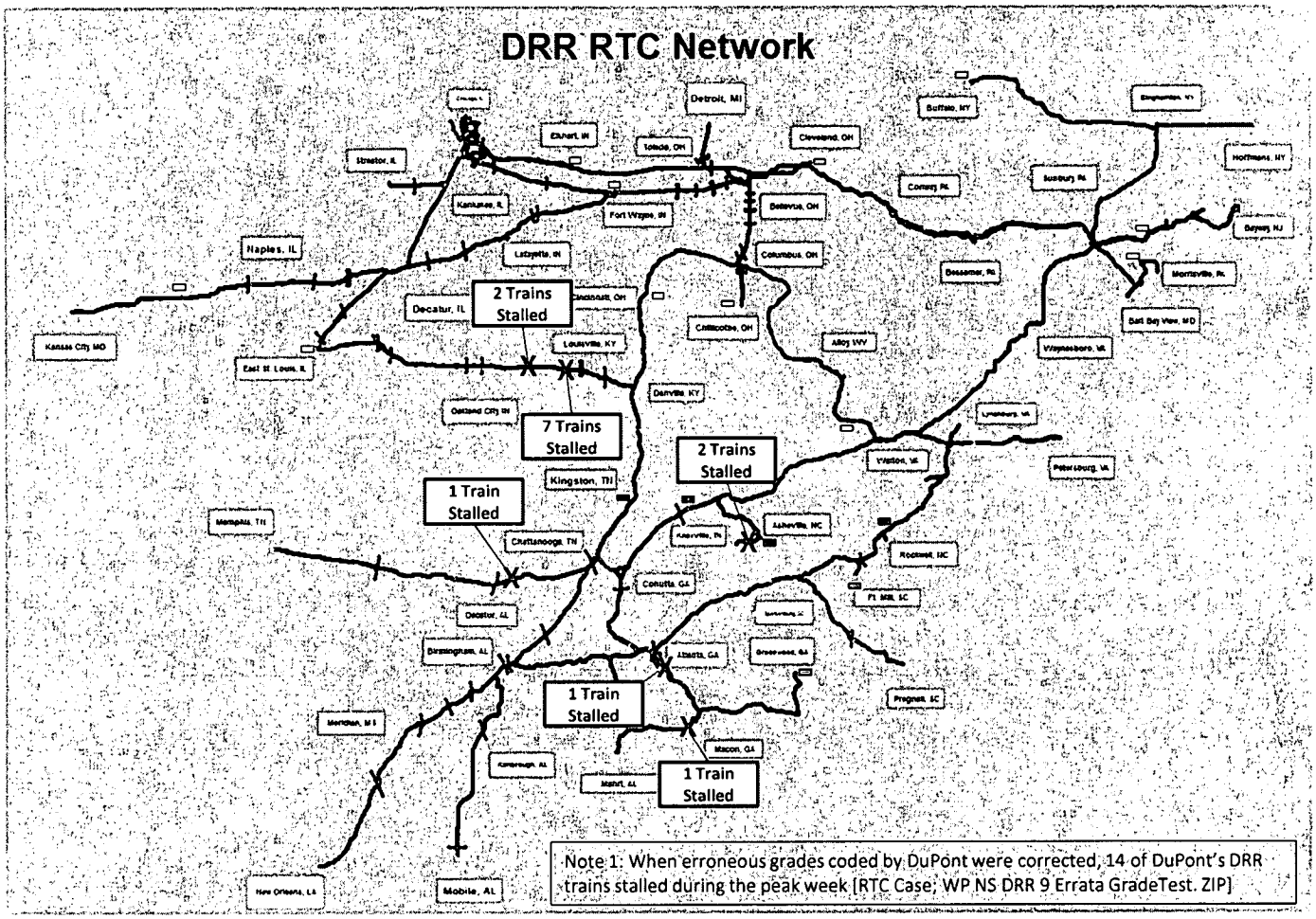
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[205] Accurate grade information for the NS system was set forth in two files, "Track Chart Documents and Data.doc" and "grd_ns.txt," that were produced along with NS's electronic track chart data on DVD-004. Those documents are included in NS Reply WP Folder "Documents Produced in Discovery III-C."

[206] *See* NS Reply WP "DRR 9 Errata_GradeTest.zip," which is a version of DuPont's Errata RTC model with one modification correcting the grades.

Figure III-C-18[207]

Train Stalls Caused by Fatal Grade Errors in DuPont's Errata DRR RTC Model[1]



3. DuPont's RTC Model Does Not Properly Account For Random Outages And Train Delays.

DuPont acknowledges that "[r]andom events that affect track, signals and equipment are a part of everyday railroading. It is unrealistic to expect that no such events would occur during the DRR's peak traffic period . . . or that such events would not affect train operations during that period." DuPont Opening Ex. III-C-5 at 10. DuPont purports to account for random failures

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[207] *See also* NS Reply WP "DRR Train Failures Resulting From Substitution of Correct Grade Information.doc."

on the DRR by "select[ing] the kinds of outages that [witness McDonald] deemed most likely to occur including operational outages, such as a broken knuckle or drawbar, a train going into emergency braking mode, or a broken rail." *Id.* at 11 (emphasis added). However, both DuPont's selection of random outages for inclusion in its RTC Model and the implementation of those failures in DuPont's RTC simulation are seriously flawed. As a result, DuPont's RTC simulation does not properly account for delays caused by random outages.[208]

In identifying outages to be input to DuPont's RTC Model, witness McDonald categorically excluded certain types of NS failures that (he posits) "would not be incurred by the DRR due to differences in the two railroads' operations." *Id.* For example, witness McDonald did not include any delays caused by a locomotive failure in his list of DRR outages. *Id.* In the real world, locomotive failures are the single most common source of random delays on the NS system.[209] DuPont's rationale for excluding locomotive failures is as follows:

> Mr. McDonald designed the DRR operating plan so that all road trains would operate with at least two (2) locomotives, meaning a failure in one locomotive would not leave the train stranded and blocking track. Instead, DRR trains would move under the remaining operational power on the train to the next yard, where the inoperative locomotive would be replaced.

DuPont Opening Ex. III-C-5 at 11.

This purported justification for ignoring the impact of locomotive failures on the DRR's operations is nonsensical. Railroads determine the number of locomotives required to power a train based on its length, trailing tonnage and the terrain over which it will operate. Locomotives

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[208] *See AEPCO 2011*, STB Docket No. 42113, at 28-30 (criticizing complainant's operating plan for failing to account properly for random outages).

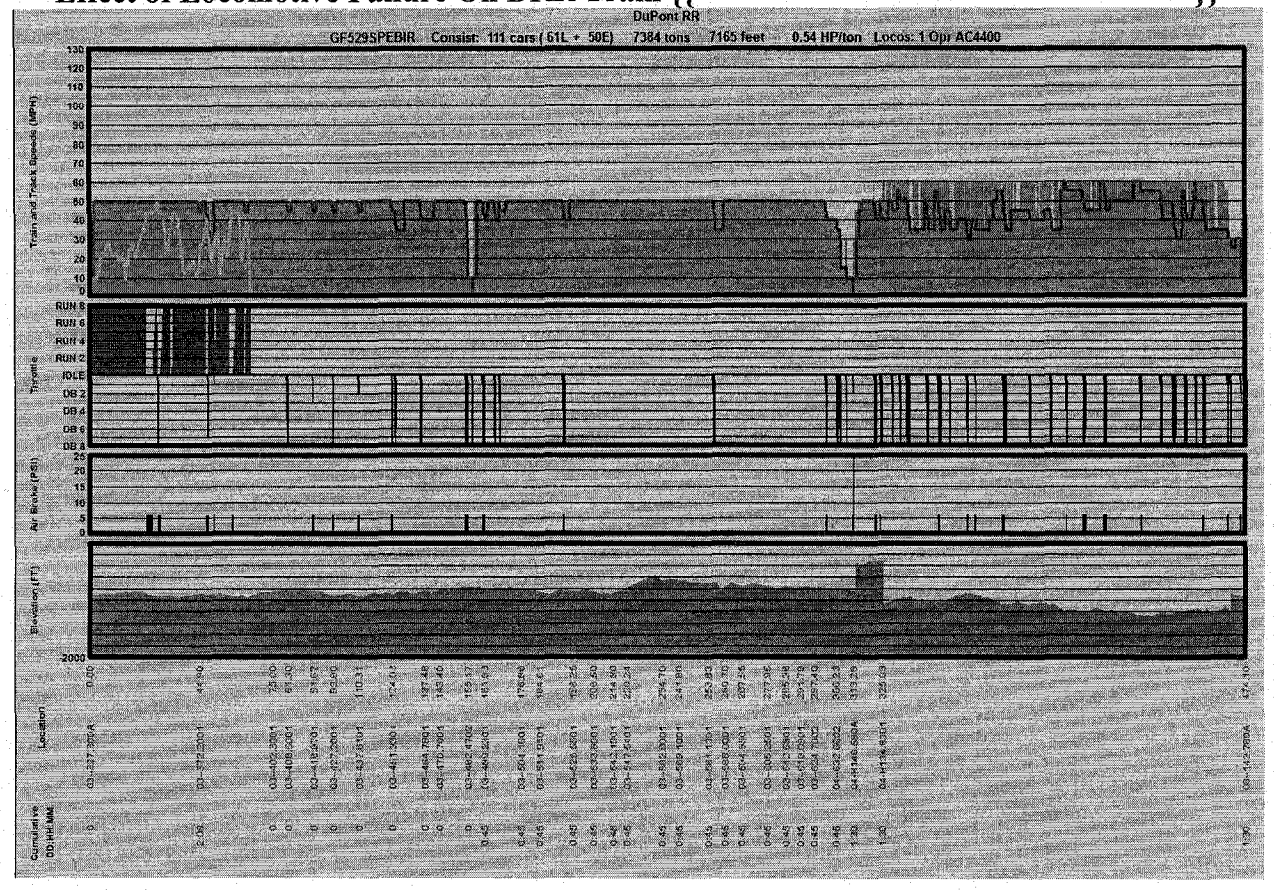
[209] As NS Reply workpaper "Delay Code Comparisons.xls" shows, NS experienced 220 delays due to "Engine Failure" in the territory replicated by the DRR during the time period that DuPont used to estimate random outages for the DRR's peak period.

are expensive assets, and railroads do not "overpower" trains by systematically assigning more units than are required to move them based on those parameters. If NS (or DRR) assigns two locomotives to a particular train, it does so because two units are required to move that train over the subject territory. As any operating expert would know, DuPont's assumption that a train powered by two locomotives could complete its journey with only one unit in service after experiencing a locomotive failure defies the laws of physics.

Nevertheless, to "test" DuPont's assumption, NS witness Wheeler analyzed the impact of a locomotive failure on DRR Train {{

}} with two locomotives (in DP configuration) and a consist of 111 cars. Witness Wheeler removed one of the locomotives from the train to simulate the effect of a locomotive failure on its ability to proceed. Figure III-C-19 is a "screenshot" of Train {{ }} as it attempted to continue its journey with a single locomotive.

Figure III-C-19
Effect of Locomotive Failure On DRR Train {{ }}



As the "Elevation" graph in the lower portion of Figure III-C-19 indicates, Train {{ }} is traversing a segment of the DRR that is characterized by relatively gentle grades at the time the locomotive failure occurs. Nevertheless, as the "Train and Track Speeds" graph at the top of Figure III-C-19 shows, Train {{ }} is unable to maintain a consistent operating speed and stops altogether—blocking the DRR main line—after traveling a portion of the distance to its next terminal. This screenshot from DuPont's own RTC simulation illustrates the nonsensical nature of DuPont's assertion that DRR trains would be immune to delays caused by locomotive failures.

In any event, witness McDonald's rationale does not support DuPont's decision to ignore locomotive failures involving DRR local trains. DuPont posits that "[t]he DRR will operate its

local trains with a single GP38 locomotive where possible." DuPont Opening Ex. III-C-5 at 2. In fact, 833 (or 65%) of the 1,290 local trains modeled in DuPont's RTC simulation operate with a single locomotive.[210] A local train that experienced a failure to its only locomotive obviously would not be able to continue its journey, and would block the track it was occupying when the failure occurred. Accordingly, DuPont's decision to discard locomotive failures involving local trains from the list of random outages developed for its model cannot be justified even if (contrary to the laws of physics) witness McDonald's conclusion with respect to road trains were otherwise credible.[211]

The list of random outages "selected" by witness McDonald also failed to account for a wide variety of other events that would, in reality, affect the DRR's train operations. For example, witness McDonald did not select any of the "Mechanical (Other Than Locomotive)" failures reflected in the real world data furnished by NS. The category of "Other" mechanical failures includes events such as sticking brakes, dragging equipment, hot wheel indications, and end-of-train device failures. DuPont offers no evidence to support its (indefensible) assumption that the DRR would be immune to such occurrences. The data provided to DuPont show that, in reality, NS experienced 112 such failures in the territory replicated by the DRR during the time period upon which DuPont based its peak period random outage analysis.[212] DuPont's list also contains no delays attributable to end-of-train device failures. The data provided to DuPont

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[210] *See* NS Reply WP "DRR Local Trains in DuPont RTC Simulation.xlsx."

[211] DuPont's assumption that the DRR would never experience a locomotive failure is especially nonsensical in light of its decision to select SW1500 locomotives for the DRR's yard service. As NS demonstrates below (at III-C-224 to III-C-226), that antiquated model—which has not been manufactured since 1974—has one of the highest failure rates of any locomotive type in NS's fleet. A locomotive failure within a busy yard can wreak havoc on a carrier's operations, and cause delays to road and local trains arriving at, and departing from, the yard.

[212] *See* NS Reply WP "Delay Code Comparisons.xls."

show that, in reality, NS experienced 47 such failures during the relevant time period.[213] Likewise, witness McDonald's list of outages contains no delays on account of regulatory activities such as rules checks, random drug screening or similar actions by FRA inspectors. As a Class I carrier with operations over an 8,100-mile network, the DRR would be subject to such random inspections and testing. While DuPont's list of random outages does include a few incidents in which DRR trains are "held by [a] foreign railroad"—for example, when entering or operating over the 818.87 miles of trackage rights lines that are part of the DRR network—DuPont (without explanation) reduced the number of such incidents from the 83 events that NS actually experienced to just four such delays.[214] That unsupported adjustment reflects DuPont's unrealistic assumption that DRR trains would, in virtually every instance, move unimpeded over the lines of foreign carriers.

Neither DuPont's Opening Evidence nor its workpapers explains the methodology that witness McDonald employed in "selecting" the type, number or location of the random outage events that appear in DuPont WP "Delay_2009 (on-SARR).xlsx." However, NS's analysis of that workpaper reveals that, in addition to excluding certain categories of delay events, DuPont's list fails to include any random outages at a number of geographic locations. For example, DuPont's random outage list includes six "Air Brake Separation" delays, 17 fewer than the 23 "Air Brake Separation" delays reflected in the data provided by NS in discovery.[215] NS reviewed the locations associated with the 17 "Air Brake Separation" delays that DuPont chose not to include in its list, and found that DuPont's random outage list does not contain any type of

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[213] *See* NS Reply WP "Delay Code Comparisons.xls."

[214] *See* NS Reply WP "Delay Code Comparisons.xls."

[215] *Compare* DuPont Opening WP "Delay_2009 (on-sarr).xlsx" *with* NS Reply WP "Delay Code Comparisons.xls."

outage at any of those 17 locations.[216] Likewise, DuPont's random outage list includes a total of 36 delays involving "Brakes In Emergency" or "Computer Aided Dispatch Down" events.[217] The data provided to DuPont in discovery showed that, in reality, NS experienced a total of 89 such incidents in the territory replicated by the DRR.[218] NS analyzed the locations associated with the 53 "Brakes In Emergency" and "Computer Aided Dispatch Down" events that DuPont chose not to select for its list, and discovered that DuPont's random outage list does not contain any type of outage at any of those 53 locations. For example, one of the "Brakes in Emergency" delays ignored by DuPont occurred at Altoona, PA, (Milepost PT236.00). Not only did DuPont not include this "Brakes in Emergency" outage in its list of random failure, but that list does not reflect any random outages at Altoona, PA, even though there were many other types of delay events reported there in the NS data.[219] The same is true at Linwood, NC (MP 323.00), for which DuPont's random outage list does not contain any random outage during the peak period, despite the fact that the NS data reflected multiple outages (including "Brakes in Emergency," "Computer Aided Dispatch Down," "Delayed by FRA Inspector," "Mechanical Failure (Other)," and "Weather Related Slow Order") during that period. These findings suggest that witness McDonald's "selection" process may have categorically excluded random outages on a geographic, as well as event type, basis. At a minimum, NS's analysis raises a question as to how "random" witness McDonald's selection process truly was.

DuPont's decision to exclude entire categories of delay events that real world railroads experience on a daily basis resulted in an RTC simulation that vastly understates the impact of

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[216] *See* NS Reply WP "Delay Code Comparisons.xls."

[217] *See* DuPont Opening WP "Delay_2009 (on-sarr).xlsx."

[218] *See* NS Reply WP "Delay Code Comparisons.xls."

[219] NS Reply WP "Delay Code Comparisons.xls."

random outages on the DRR's operations. As DuPont reported, "the end result of the analysis was to include 177 operational and maintenance outages as inputs to the RTC Model." DuPont Opening Ex. III-C-5 at 12.[220] The data provided to DuPont in discovery show that, in reality, NS experienced a total of 1,231 random outages in the territory replicated by the DRR during the period analyzed by witness McDonald.[221] The enormous disparity between DuPont's truncated list of delay events and NS's real world experience demonstrates that DuPont's RTC Model fails to account properly for random failures.

DuPont's RTC Model likewise understates the impact of maintenance activities on the DRR's operations. DuPont's list of 177 outages includes 34 events related to conflicts between train movements and DRR maintenance work.[222] In other words, DuPont's RTC Model assumes that the DRR would experience only 3.4 maintenance-related train delays per day across the entire 7,300 miles of track owned and maintained by the DRR—or one delay for every 2,147 miles of the DRR system. DuPont's assumption that required maintenance activities would have such a *de minimis* impact on DRR trains does not comport with the realities of real world railroading. NS's RTC Model addresses this deficiency by assigning appropriate maintenance "windows" to the DRR network. *See infra* III-C-239 to III-C-240.

Moreover, DuPont compounded the flaw created by its illogical selection of random outages by failing to input properly witness McDonald's list of events. In constructing its RTC Model, DuPont was required to define the "DRR network" by including the appropriate NS

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[220] *See* DuPont Opening WP "Delay_2009(on-sarr).xlsx." While DuPont's narrative evidence states that witness McDonald selected 177 random outage events for DuPont's RTC simulation, DuPont's workpaper includes only 173 outage events.

[221] NS Reply WP "Delay Code Comparisons.xls."

[222] *See* DuPont Opening WP "Delay_2009(on-sarr).xlsx."

subdivision and milepost designations for the lines to be replicated. In doing so, DuPont made a large number of "mapping" errors. At some locations, DuPont assigned the correct milepost but failed to designate the corresponding subdivision correctly. At others, DuPont failed to properly input either the correct milepost or correct subdivision. The result of those errors was an RTC Model that was incapable of processing accurately the random outages identified by witness McDonald. In some instances, the Model did not give effect to an outage event, because the location associated with the event was not properly "mapped" by DuPont in building its Model. In others, the Model actually gave effect to an event multiple times (for example, in instances in which a particular milepost designation existed on several different subdivisions).

One particularly egregious example illustrates how DuPont's RTC Model failed to account correctly for random outages, and the impact of that failure on the DRR's operations (as portrayed in DuPont's RTC simulation).

Among the random outages selected by witness McDonald for inclusion in DuPont's RTC Model were six "Bridge Open" delays involving the drawbridge on NS's line crossing the Tennessee River near Decatur, AL. Figure III-C-20 identifies those "Bridge Open" delays. As Figure II-C-20 indicates, the subject bridge is located on NS's "Memphis-East End" Subdivision.

Figure III-C-20
"Bridge Open" Delays Selected By Witness McDonald

Subdivision	Beginning Field MP	Ending Field MP	Trk #	Simulation Starting Time (DD:HH:MM:SS)	Simulation Ending Time (DD:HH:MM:SS)	Enable?	Description
Memphis - East End	357.95	358.05	1	4:07:02:00	4:07:34:00	YES	BRIDGE OPEN
Memphis - East End	359.95	360.05	1	4:05:26:00	4:05:38:00	YES	BRIDGE OPEN
Memphis - East End	359.95	360.05	1	8:18:05:00	8:18:25:00	YES	BRIDGE OPEN
Memphis - East End	359.95	360.05	1	10:05:14:00	10:05:34:00	YES	BRIDGE OPEN
Memphis - East End	361.95	362.05	1	6:10:23:00	6:10:43:00	YES	BRIDGE OPEN
Memphis - East End	378.95	379.05	1	4:14:09:00	4:14:29:00	YES	BRIDGE OPEN

In developing DuPont's RTC Model, witnesses Fapp and Humphrey input those six "Bridge Open" delays for the Tennessee River Bridge. However, in developing DuPont's RTC model, they erroneously coded the territory in which the Tennessee River bridge is located, with the result that no "Memphis-East End" subdivision existed on the DRR. As a result of this coding error in designing the DRR network, DuPont's RTC Model ignored the six random "Bridge Open" outages on the "Memphis-East End subdivision," and they had no effect on DRR trains traversing the Tennessee River Bridge. DuPont's coding error had "catastrophic" consequences. Because the Model perceived no "Bridge Open" events affecting that line at the relevant times, it permitted DRR trains to operate freely across an "open" bridge over the Tennessee River. For example, on the 8th day of DuPont's RTC simulation, DRR Train GF3322SHEPRI, a unit train carrying 102 cars, approached the bridge at a time when the bridge was (according to the events selected by witness McDonald) in the open position. DuPont's RTC Model did not give effect to the "Bridge Open" event as DRR Train GF3322SHEPRI approached—thereby literally allowing that train to fall into the river![223]

In other instances, DuPont assigned events to the correct milepost and subdivision, but coded the event to impact only one of two DRR tracks at that location. For example, DuPont correctly identified the location of a "Bridge Open" event occurring on the DRR line replicated by NS's Chicago Line, but coded the event for only one track. As a result, DuPont's RTC Model did not give effect to the event on the second track and permitted DRR trains to proceed impossibly across an "open" bridge.

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[223] See simulation set forth in DuPont Opening workpaper file "RTC" (Day 8). *See also* NS Reply Ex. III-C-16, "Illustration of Failure of DuPont's RTC Model to Give Effect to Random Outages."

DuPont's flawed outage selection process and the failure of its RTC Model to implement DuPont's truncated list of delay events produced an RTC simulation that fails to account for the impact of random outages and maintenance activities on the DRR's train operations and, therefore, does not accurately measure the DRR's track capacity requirements.[224] In order to address this deficiency, while taking into account that the DRR's experience might not be identical to NS's, NS conservatively included 468 random outage events in its RTC Model.[225]

5. DuPont's RTC Model Does Not Account For Delays To DRR Trains Operating On Amtrak's Northeast Corridor.

Among the categories that witness McDonald chose to exclude from the list of delays input to DuPont's RTC Model was "all delays related to Amtrak operations." DuPont Opening Ex. III-C-5 at 11. DuPont purports to justify this categorical exclusion on the grounds that "unlike the NS, Amtrak would not be a DRR tenant railroad." *Id.* While DuPont's exclusion of Amtrak-related outages on DRR lines on that basis is logical, DuPont's categorical exclusion of all Amtrak-related delays sweeps too broadly. Specifically, DuPont's assumption ignores that fact that, like NS, the DRR would operate over Amtrak-owned trackage along the Northeast Corridor between Perryville, MD, and Ragan, DE, (a distance of 29.63 miles), and between Perryville, MD, and Baltimore Bayview Yard (a distance of 32.49 miles). Indeed, the issue traffic moving to and from DRR's Edgemoor, DE, plant traverses the Perryville–Ragan segment. DRR's freight operations would be impacted by outages on Amtrak's Northeast Corridor, just as NS is today.

Moreover, in designing its RTC Model, DuPont appears to have ignored entirely the restrictions on freight train operations on the Northeast Corridor that affect NS's operations

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[224] *See AEPCO*, STB Docket No. 42113, at 28, 30 (rejecting complainant's operating plan).

[225] See NS Reply WP "NS Reply RTC MOW and Failures.xlsx."

every day. In order to accommodate Amtrak's need to operate its passenger trains on schedule, and to avoid potential conflicts (or incidents) involving freight and passenger trains, Amtrak prohibits NS and other freight railroads from operating along the Northeast Corridor between the hours of 8:00 a.m. and 9:00 p.m.[226] NS designs its freight train schedules with this "curfew" in mind. Nevertheless, a delay to a train elsewhere on the NS system can result in an even greater delay in the movement of that train over the Northeast Corridor if the train cannot complete that movement within the time allowed under Amtrak's "curfew." In such cases, NS may hold the train at Enola, PA, or some other location until the Northeast Corridor line is again accessible.

The effect of the Northeast Corridor restrictions should have been apparent to DuPont from the event data provided to it in discovery. The NS train event data for November 2009 (the time period upon which DuPont's RTC simulation is based) showed that 99% of the NS train departures from Perryville (at one end of NS's trackage rights over Amtrak), and 97% of the arrivals at Baltimore (at the other end of the trackage rights line) occurred between the hours of 9:00 p.m. and 8:00 a.m.[227] As a SARR that "steps into NS's shoes" under NS's agreements with Amtrak, the DRR would be subject to the same restrictions (including both random outages and the "curfew" affecting freight operations over Amtrak's line) that affect NS operations in that territory. DuPont's Operating Plan and RTC simulation fail to account for the inevitable delays to DRR trains that operate over the Northeast Corridor.

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[226] Amtrak may, on occasion, make limited exceptions to this "curfew" on freight operations, but such exceptions are rare. As a SARR that "steps into NS's shoes" under NS's agreement with Amtrak, the DRR would be subject to the same restrictions as NS.

[227] *See* NS Reply WP "NS Event Records Perryville.xlsx."

6. DuPont Failed To Input Foreign Railroad Crossings Into Its RTC Model.

DuPont's RTC simulation does not take account of the impact of conflicts between DRR trains and foreign trains at locations where the DRR's lines intersect with those of other railroads. In building its RTC Model, DuPont failed to input any foreign railroad crossings into the DRR network, nor did DuPont incorporate any delay events to simulate the impact of conflicts between DRR and foreign trains. Instead, DuPont's RTC simulation assumes (contrary to reality) that DRR trains would at all times proceed unimpeded by foreign train movements. This means that DuPont's simulation does not take account of the delays that real world railroads inevitably experience as a result of being required to reduce train speeds, or to hold trains at crossings, to accommodate foreign trains crossing their lines.

In reality, the DRR's operations would be impacted by foreign train movements on a daily basis. The NS lines replicated by the DRR include 68 locations at which the DRR's tracks and those of other railroads intersect. Information regarding the number and location of these foreign train crossing points was readily available to DuPont on the NS track charts produced in discovery.[228] Moreover, as DuPont's experts know, information regarding the number of foreign trains that cross NS's lines is publicly available from the FRA.[229]

NS's Reply RTC simulation corrects this deficiency in DuPont's evidence by taking account of both the number and location of foreign train crossing movements each day during the peak period. Specifically, NS constructed several miles of "foreign" rail lines at the locations where they intersect the DRR network. NS then modeled the interaction of foreign trains with

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[228] *See* NS Reply WP Folder "Documents Produced in Discovery III-C," "Track Chart Documents and Data.doc."

[229] *See* http://safetydata.fra.dot.gov/OfficeofSafety; *see also* NS Reply WP "At-Grade Foreign Crossing Train Data.xlsx."

DRR trains, and enabled the RTC Model to "resolve" conflicts between those trains. The foreign train crossings along the DRR system and the number of foreign train movements per day at each of those locations included in NS's Reply RTC simulation are set forth in NS Reply WP "At-Grade Foreign Crossing Train Data.xlsx."

DuPont's failure to evaluate foreign train crossing points in its simulated DRR network, or to include any input for train delays caused by crossing movements, further invalidates the train transit times and equipment cycle times generated by DuPont's RTC simulation.

7. DuPont's RTC Simulation Fails To Model Accurately The DRR's Operations In The Chicago Area.

One of the more glaring errors in DuPont's Operating Plan and RTC Model is the manner in which they portray the DRR's train operations in and around Chicago, IL. The errors and omissions in DuPont's modeling of the DRR's Chicago area operations fall into two categories. In some instances, DuPont failed to build NS lines that would be essential for the DRR to interchange traffic with connecting carriers. In others, DuPont attempts to operate over the lines of other railroads in a manner that is not permitted by the terms of the NS trackage rights agreements that the DRR purports to adopt. The result of those errors and omissions is an Operating Plan for the critical Chicago gateway that is not feasible.

First, DuPont failed to build certain NS track segments that are necessary for the DRR to conduct operations in the Chicago area. NS currently routes UP interchange traffic from eastern Chicago over its line between Elkhart, IN, through NS's Ashland Avenue Yard to Ogden Junction for a connection to UP at Proviso Yard. Using NS's owned line is more economical than operating via trackage rights over The Belt Railway Company of Chicago ("BRC") and the Indiana Harbor Belt Railroad Company ("IHB") (as it avoids the payment of trackage rights fees to those carriers), and enables NS to control the movement of those interchange trains. Likewise,

UP also uses NS's line between Ogden Junction and Ashland Avenue Yard to deliver interchange traffic to NS.

Rather than constructing the NS lines over which that interchange traffic moves in the real world, DuPont posited a route consisting of NS's trackage rights over the BRC and the IHB. Specifically, DRR traffic destined to UP at Proviso Yard was routed over the BRC from Clearing Yard north to a connection with the IHB at Argo, and then over the IHB to UP at Provo Junction.[230] Positing that trackage rights route for interchange movements to/from UP enabled DuPont to avoid the cost of building NS's line between Ashland Avenue Yard and Ogden Junction.

The route posited by DuPont ignores the manner in which interchange traffic moves today, and assumes that UP would agree to modify its operations to conform to the DRR's routing preference. While DuPont may "assume that the SARR would have the benefit of the same opportunities under the same terms" as NS does under its interchange arrangements with UP, it may not assume that the DRR could require UP to change the routing of interchange movements through the congested Chicago terminal area, simply to accommodate the DRR's desire to avoid the cost of building the line over which interchange traffic moves today.[231] In particular, DuPont may not assume that UP would agree to interchange traffic destined for points on the DRR at any location other than Ashland Avenue Yard.

DuPont's reliance upon NS trackage rights to interchange traffic with BNSF at Cicero Yard is similarly misplaced. DuPont posits that the DRR would utilize NS's trackage rights over

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[230] *See* DuPont Opening Ex. III-C-2 (B.3 (Belt Jct. to Argo over the BRC); B.4 (Argo to Provo Junction); B.5 (Provo Jct. to Proviso Yard)).

[231] *See AEPCO 2002*, 6 S.T.B. at 328-29 (emphasis added).

the BRC between Clearing Yard and Cicero, IL, to interchange traffic with BNSF.[232] In reality, NS delivers traffic to BNSF via a route that includes NS's proprietary line north from Ashland Avenue Yard to BNSF's Western Yard, and then over BNSF track to Cicero Yard. Conversely, BNSF delivers unit trains to Western Avenue for interchange to NS. As explained above, DuPont cannot assume that BNSF would agree to modify those interchange arrangements for the DRR's benefit. Rather, the DRR must build the NS line connecting Ashland Avenue Yard with BNSF's Western Avenue Yard (which is part of the same line that NS and UP use to interchange traffic).

NS's Operating Plan and RTC Model correct these errors by including NS's line between Ashland Avenue Yard and Ogden Junction in the DRR network, and modeling the DRR's interchange movements to/from UP and BNSF in a manner that reflects their real world route of movement. Building the Ashland Avenue Yard–Ogden Junction line also allows the DRR to "step into NS's shoes" by permitting UP reciprocally to use the line for interchange movements destined to the DRR.

Second, the DRR operates over trackage rights segments in ways that violate the terms of NS's trackage rights agreements. Trackage rights agreements clearly state what the tenant carrier may, and may not, do in operating over the host carrier's rail lines. For example, the agreements typically identify specific points of ingress and egress at which the tenant railroad may enter or exit the trackage rights lines. Trackage rights agreements also contain specific restrictions on whether, and where, a tenant railroad may interchange traffic with other carriers on or along the trackage rights segments. DuPont's Operating Plan violates in multiple ways the

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[232] *See* DuPont Opening Ex. III-C-2 (B.6 (East End to Cicero via the BRC); B.7 (Cicero to Cicero Yard over the BNSF)).

restrictions set forth in NS's trackage rights agreements with Chicago area carriers. DuPont's Operating Plan and RTC simulation blithely assume that the DRR may enter or exit lines over which NS holds trackage rights at any point DuPont chooses. DuPont also assumes that the DRR may interchange traffic with third party carriers at points along trackage rights segments where NS is prohibited from interchanging traffic today. These assumptions ignore the terms of the NS trackage rights agreements that the DRR purports to adopt.[233]

Nowhere is this more evident than in Chicago, where DRR trains operate in ways that are clearly prohibited by NS's trackage rights agreements. For example, in order to move trains westbound across Chicago to points beyond the Chicago area, DuPont cobbled together a route consisting of various line segments owned by CSXT, IHB, and CN, respectively, over which NS holds trackage rights today.[234] Beginning in the east, DuPont assumed that the DRR would operate over CSXT trackage, entering CSXT's line at Pine Junction, IN, and exiting the line at Burnham, IL. *Id.* However, NS does not have the right to operate trains in that manner.[235] NS's agreement with CSXT grants only "bridge" trackage rights to move trains between Pine and Argo—it does not permit NS trains to enter or exit CSXT's line at Burnham or other intermediate points. NS's Operating Plan and RTC simulation correct this violation of NS's agreement with CSXT by rerouting this traffic over NS's line between CP 502 and CP 509, and then over the BRC line between CP 509 and Rockwell Yard.

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[233] DuPont cannot claim ignorance of the operating restrictions set forth in NS's trackage rights agreements. Those agreements were made available to DuPont in discovery via RPMS.

[234] *See* DuPont Opening Ex. III-C-2 (segments A.1 (Calumet City to Riverdale over the IHB); A.2 (Riverdale to Gibson City over the CN); B.2 (Burnham to Pine over CSXT); B.8 (Blue Island Yard to Riverdale over the IHB)).

[235] *See* NS Reply WP "145393 Chicago–Stateline–Pine jct.pdf."

DuPont also mistakenly assumes that NS's existing trackage rights agreements would permit the DRR to operate over IHB between Calumet City and IHB's Blue Island Yard via Riverdale, IL. NS's agreement with IHB does not grant such rights, and NS is not a party to any agreement permitting it to operate trains in the manner contemplated by DuPont. Specifically, NS does not have the right to enter or exit IHB's lines at Riverdale (as the DRR proposes to do).[236]

Finally, DuPont's Operating Plan and RTC simulation route certain southbound DRR trains over CN's line between Riverdale, IL, and Gibson City, IL. Specifically, DuPont assumes that the DRR would enter CN's line at Milepost 17.70 at Riverdale, IL (accessing CN's line via the unauthorized egress from IHB's line at Riverdale discussed above).[237] The movement proposed by DuPont violates both NS's agreement with IHB, and its trackage rights agreement with CN. Under the NS/CN agreement, NS may enter or exit CN's line at three clearly identified locations: Milepost 12 at Chicago, Milepost 55 at Kankakee, and Milepost 110 near Gibson City.[238] NS has no right to enter or exit CN's line at Riverdale. Accordingly, the DRR would have to enter CN's line at 95th Street Junction (Milepost 12) in Chicago, rather than at Riverdale. NS's Operating Plan and RTC simulation routed this traffic over 95th Street as required by NS's trackage rights agreement. *Id.*

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[236] *See* NS Reply WP "92988.pdf;" "127986 PRINT.pdf;" "160632 Riverdale–Blue Island Ya.pdf;" "163752 Riverdale–Blue Island.pdf."

[237] *See* DuPont Opening Ex. III-C-2.

[238] *See* NS Reply WP "14022.pdf."

8. DuPont's RTC Simulation Fails To Give effect To The Impact Of Light Engine Movements And Hi-Rail Vehicles.

In addition to the major errors and omissions discussed above, DuPont's RTC simulation suffers from a number of other infirmities that undermine the credibility of its results. For example, DuPont's RTC Model purports to account for light engine movements (*e.g.*, helper locomotives returning to their point of origin after assisting a DRR road train). However, rather than assigning a "block" to such light engine movements, DuPont assumes that, in every instance, the light engines would follow—and move in the same block as—a DRR road train. Based on that assumption, DuPont states that "[l]ight helper movements are not treated as separate trains for purposes of the RTC simulation." DuPont Opening Ex. III-C- 5 at 4-5. Indeed, as discussed above, DuPont removed all light engine movements from the list of DRR trains upon which its RTC simulation is based. *See supra* III-C-13.

DuPont's assumption that light engines could travel in the same block as other DRR trains—and, therefore, that light engine movements would never "consume" track capacity—is inconsistent with real world railroad practice.[239] A locomotive (or group of locomotives) operating without trailing cars is, for operating purposes, just as much a "train" as a locomotive (or group of locomotives) pulling 100 cars of coal. Light engine movements occupy track space, and must meet and/or pass other trains as they move along a railroad's lines. Accordingly, in the real world, light engine movements are treated separately and normally are not permitted to occupy the same track block as another train. DuPont's proposal to have road trains and light engine movements share a single track block is analogous to allowing a small airplane to "share"

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[239] DuPont asserts that its assumption that light helper engines and road trains could, in all instances, share the same block is "based on Mr. McDonald's personal observation and experience." DuPont Opening Ex. III-C-5 at 5. However, DuPont does not identify the "experience" or "observation" upon which witness McDonald purports to rely.

a landing slot with a large airplane. The fundamental purpose of assigning trains (or airplanes) to blocks (or landing slots) is to maintain a safe operating distance between them. DuPont's assumption defeats that purpose. In any event, a light engine moving behind a road train in the same block would need to travel at reduced speed, thereby increasing the amount of time it occupied the track.

DuPont's assumption that hi-rail vehicles performing FRA-mandated track inspections would share track blocks with DRR trains is even more nonsensical. As DuPont witness McDonald surely knows, hi-rail vehicle movements are generally not regulated by the railroad's signal system. Rather, hi-rail vehicles occupy track pursuant to "track warrants" communicated to the operator of the vehicle by dispatching personnel. A track warrant issued to a hi-rail vehicle creates an "absolute block" that cannot be shared by a train. Hi-rail vehicles travel at a maximum speed of 35 MPH and make frequent stops as inspectors exit the vehicle to examine track, ties or other infrastructure. A hi-rail vehicle can exit the line only at a road crossing, where it is possible to switch from steel wheels to rubber tires. For these reasons, DuPont's suggestion that the DRR would permit trains and hi-rail vehicles to travel in the same track block is both contrary to prevailing practice and highly dangerous.

DuPont's self-serving assumption that light engines and hi-rail vehicles would never conflict with or delay DRR trains results in a further understatement of the DRR's track capacity requirements.

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As the foregoing discussion demonstrates, DuPont's RTC Model and simulation (1) are based on a fatally deficient operating plan from which tens of thousands of necessary trains (including 1,191 "peak period" trains) are "missing;" (2) fail to model the movement of DRR

road and local trains completely and accurately; (3) incorporate assumptions that violate applicable laws and regulations, industry "best practices" and even the laws of physics; (4) fail to account in any meaningful way for delays that DRR trains would experience on a daily basis as a result of random outages, foreign train crossings and restrictions governing freight operations on Amtrak's Northeast Corridor; and (5) contain other errors and faulty assumptions that undermine the validity of DuPont's RTC simulation. In short, the RTC simulation proffered by DuPont in support of its Operating Plan—and the outputs of that simulation—have no basis in reality, and the Board should disregard them.

Even if DuPont's RTC simulation were credible—and it clearly is not—DuPont has not presented evidence that supports its claim that the simulation "confirms" the adequacy of the DRR's track configuration and Operating Plan. According to DuPont, its RTC simulation proves that "[t]he DRR's trains operate in a manner that produces faster train speeds and transit times on average than NS demonstrated in the Base Year." DuPont Opening III-C-17(emphasis added). Based on that assertion, DuPont contends that "[t]he DRR's ability to provide service equal to or better than NS's and thus commensurate with its customers' requirements, therefore is confirmed." *Id.* DuPont is mistaken.

As an initial matter, "service quality" for general freight traffic is not determined exclusively by reference to train speeds or train transit times. The process of serving merchandise shippers involves much more than simply operating trains between origin and destination terminals. Rather, general freight service involves a multi-step "trip plan" for each car that includes not only line-haul movement, but also placement of an empty car for loading at origin, local train service to pick up the car once it is loaded, classification and switching of the car at one or more yards, movement on one or more road trains, local train service to deliver the

car to its final destination, and compliance with any special customer instructions during all phases of the movement. As NS's Reply Evidence demonstrates, DuPont's Operating Plan ignores entirely the intermediate classification and switching necessary to handle the DRR's general freight traffic, and its RTC simulation does not model accurately or completely the services that DRR trains would have to provide at customer locations. Moreover, DuPont does not even mention (much less account for) the special facilities and handling requirements associated with the TIH, automotive, and transload traffic that it selected for the DRR's traffic group. DuPont's failure to provide for those critical elements of general freight service renders the DRR's service, on its face, inferior to the real world service provided by NS, and its Operating Plan "infeasible." DuPont's proffer of transit times for only a handful of loaded and empty unit coal trains as proof that the DRR's service is equal to or better than NS's real world service is woefully inadequate.

Moreover, DuPont's assertion that the DRR's train speeds and transit times are faster "on average" than the NS's real world train service is not supported by the record. The only evidence that DuPont proffered to support that assertion is a workpaper titled "Wansley Yates Transit Comparison.xlsx." Figure III-C-21 is an extract from that workpaper.

Figure III-C-21
DuPont's Transit Time Analysis

DRR and NS Transit Times Between Bulls Gap, TN and Wansley/Yates, GA

	Train	Train Type	Actual Transit Time (hours:minutes) 1/	DRR Transit Time (hours:minutes) 2/	Reduction In Actual Transit Times 3/
	(1)	(2)	(3)	(4)	(5)
1.	C99BULWAN	Loaded Coal	39:02	17:20	21:41
2.	C100BULYAT	Loaded Coal	30:14	20:06	10:07
3.	C101BULYAT	Loaded Coal	40:21	18:33	21:47
4.	C397WANBUL	Empty Coal	35:00	11:29	23:30
5.	C399WANBUL	Empty Coal	40:22	10:20	30:01
6.	C406WANBUL	Empty Coal	32:23	20:20	12:02
7.	C407WANBUL	Empty Coal	42:05	12:33	29:31
8.	C409WANBUL	Empty Coal	32:20	12:54	19:25

1/ Based on NS train event data departure times between Bulls Gap, TN and Wansley and Yates, GA for loaded coal trains, and Wansley and Yates, GA and Bulls Gap, TN for empty coal trains.
2/ Based on DRR actual run times as reported in the RTC Report file.
3/ Column (3) - Column (4).

The data proffered by DuPont compare the DRR and NS transit times for eight coal trains—three loaded and five empty—that operated between Bulls Gap, TN, and Wansley/Yates, GA. This chart constitutes the entirety of DuPont's "proof" that the more than 5,088 peak period trains modeled in DuPont's RTC simulation performed better "on average" than NS's real world trains.[240] DuPont's attempt to persuade the Board that the DRR provides better service than NS based upon a minuscule sample consisting of three loaded coal trains and five empty unit train movements is ludicrous. The vast majority of the traffic selected by DuPont for the DRR is intermodal, automotive and general freight traffic. As the Board (and DuPont's experts) know,

[240] DuPont Opening workpaper "Wansley Yates Transit Comparison.xlsx" also contains a Tab "DRR 9 All Trains," which sets forth the RTC transit times for the 5,088 DRR peak week trains. However, DuPont presented no comparison between the performance of those trains and NS's historical times.

intermodal, automotive, and general freight traffic are all more time-sensitive than unit coal shipments. For that reason, the dispatching protocols followed by NS and other railroads consistently give top priority to intermodal and automotive traffic, followed by general freight traffic, with coal and other bulk unit trains generally accorded the lowest dispatching priority. More than 80% of the DRR's selected traffic consists of shipments in those higher priority groups. *See* DuPont Opening Table III-A-1. DuPont's reliance on time comparisons involving coal unit trains—and, in particular, empty coal trains—is nonsensical, and provides no evidentiary support whatsoever for a conclusion that the DRR's intermodal and general freight service is superior to NS's.

In any event, the transit times set forth in DuPont Opening workpaper "Wansley Yates Transit Comparison.xlsx" are the product of an RTC simulation that does not include 19% of the trains that would move over the DRR during the period covered by that simulation, does not model train movements completely or accurately, and incorporates a variety of nonsensical assumptions that understate the capacity required for the DRR to serve its selected traffic group. For these reasons, DuPont's transit time calculations are entitled to no evidentiary weight. Indeed, the numerous methodological flaws, glaring omissions, and erroneous assumptions that permeate DuPont's Operating Plan and RTC modeling exercise render DuPont's operating evidence worthless. That evidence provides no credible basis upon which to estimate the adequacy of the physical facilities posited by DuPont or the operating expenses that the DRR would incur during the DCF period.

NORFOLK SOUTHERN'S OPERATING PLAN FOR THE DRR

1. General Parameters and Methodology

DuPont's Operating Plan is fatally deficient and is infeasible in numerous respects. As a result, DuPont has failed to satisfy its evidentiary burden of presenting a prima facie case.

Nevertheless, the Board has stated that, even if the defendant carrier demonstrates that a complainant's operating evidence should be rejected—as is clearly the case here—the defendant should submit its own operating plan and present its own operating, maintenance, and capital cost estimates.[241] Although NS believes that DuPont's Operating Plan is so thoroughly deficient that dismissal of its Complaint is warranted, NS presents in this section of its Reply Evidence the complete and feasible operating plan for the DRR that DuPont failed to proffer in its Opening Evidence.[242] Based upon the Operating Plan set forth in this Part III-C, NS defined and quantified the track and facilities that the DRR would need to handle its selected traffic (*see supra* Section III.B), and developed an accurate estimate of the DRR's operating expenses (*see infra* Section III.D).

NS's Operating Plan was developed by a group of operating experts led by witness Ron Johnson. Drawing on their extensive experience with NS's day-to-day freight operations, personal observation of rail operations in the territory replicated by the DRR, the data furnished to DuPont in discovery, and DuPont's own Opening Evidence and workpapers, NS's operating witnesses developed an operating plan that accounts for all of the road and local train services, intermediate classification and switching of carload shipments, and pick-ups and set-offs at customer facilities and interchange points required to serve the DRR's selected traffic. NS's Operating Plan includes all of the main line and secondary track; yard facilities and personnel; intermodal, automotive, and transload facilities; locomotives and cars, crews and other operating

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[241] *See Duke/CSXT*, 7 S.T.B. at 430 ("When the plan presented in a SAC case by the complainant is unfeasible, it is generally incumbent on the defendant railroad to present a realistic alternative so that the SAC analysis may be completed."); *see also CP&L*, 7 S.T.B. at 242 ("[T]he shipper's operating plan for the stand-alone railroad (SARR) designed here is unworkable, and the Board's SAC analysis is therefore based on the operating plan proposed for the SARR by NS.").

[242] *Id.*

personnel; repair facilities; and management and administrative support that the DRR would need to provide service in the least cost, most efficient manner, consistent with customer requirements and in accordance with applicable laws and safe operating practices. Given DuPont's total failure to address in any meaningful fashion the operations that the DRR would be required to perform, NS concluded that DuPont's Operating Plan was irreparably deficient. Rather than attempting to modify or supplement that plan, NS developed, from the ground up, a complete Operating Plan that is capable of meeting the service requirements of the DRR's customers.

NS's Operating Plan for the DRR consists of four major elements:

(1) A comprehensive car blocking and train service plan that provides for the complete movement of every carload in the DRR's selected traffic group (and associated empty car movements) across the DRR network, and a local train service plan that provides pick ups and set offs at all customer facilities and interchange locations.

(2) A network of yards, intermodal and automotive terminals, transload facilities, industrial support tracks, and other facilities adequate to support the DRR's road and local train operations, locomotive fueling and servicing, locomotive and car inspections, and car repair functions, as well as the intermediate classification and switching activities that DuPont completely ignored in its Operating Plan.

(3) A specification of the locomotives, equipment, and personnel (including dispatchers, crew management personnel, operations control center staff, locomotive operations managers, division superintendants, car inspectors and repair personnel, and safety and training personnel) required to support the DRR's operations.

(4) An RTC Model simulation based upon NS's complete and feasible Operating Plan, which demonstrates the adequacy of the facilities, equipment, and personnel posited by NS.

The DRR's car blocking and train service plan was developed by witnesses Ron Johnson, Dewey Smith, and Clark Cheng of NS, and Benton Fisher of FTI Consulting. The sizing and configuration of the DRR's yard facilities was developed by NS witness Stefano Rieppi, with

inputs provided by witnesses Johnson and Smith. Witnesses Johnson and Dale Schaub of NS developed the DRR's locomotive, car fleet, and personnel requirements. NS's RTC Model and simulation of the DRR's peak period operations were developed by witness Dave Wheeler and NS witness Michael Williams. The background and qualifications of the witnesses sponsoring NS's operating evidence are set forth in Part IV.

The methodologies that NS employed in developing each element of its Operating Plan are described in the following sections. NS Reply Exhibit III-B-2 is a set of maps that depicts the DRR's rail lines; yards; interchange points; and intermodal, automotive, and transload facilities.

a. DRR Car Blocking and Train Service Plan

The first step that NS undertook in developing its Operating Plan was to analyze the traffic that DuPont selected for the DRR. The selected traffic includes commodities that move in every type of service that NS offers today: unit train shipments of coal, grain, and ethanol; intermodal traffic moving in both "trainload" and multi-car shipments, automobiles transported in specialized Multilevel rail cars, and "Triple Crown" traffic moving in RoadRailer equipment or conventional trailers. While all of these categories of traffic move over the same NS track network, each has unique operating characteristics and handling requirements. Where the volume of cars (or units) moving between the same origin and destination is sufficiently large, traffic can be transported as a single "block" of cars in a "unit train" for its entire journey. Unit train service is most common in connection with shipments of coal and grain, although those commodities may also move in single or multiple car shipments. Intermodal and Triple Crown shipments also travel frequently (but not exclusively) in "trainload" service. Conversely, merchandise and automotive shipments normally move in smaller "blocks" and travel in more than one train between origin and destination, requiring the carrier to classify and block those

cars at intermediate locations along their route of movement. Accordingly, the operations required to transport those traffic types are more complex, and require more facilities and labor, than "trainload" shipments. Because DuPont elected to posit a SARR that is, first and foremost, a "carload" railroad, the DRR's operations are more complex, time consuming and expensive than those of any prior SARR. NS's Operating Plan addresses the distinct requirements of the DRR's carload, intermodal, and unit train traffic.

i. Carload Traffic

In order to enable the DRR to transport massive volumes of carload traffic efficiently across its system, NS developed a detailed car blocking and train service plan for that traffic.[243] NS's Operating Plan is specifically tailored to address the requirements of the carload freight that DuPont actually selected. Starting with DRR's selected traffic file, NS built a plan for that traffic "from the ground up" rather than relying (as DuPont did) upon historical train movement data as a surrogate for the DRR's operations.[244] NS's Operating Plan is designed to accommodate the volume of carload traffic that the DRR would handle in the peak year (June 1, 2018 to May 31, 2019).

In developing the DRR's carload blocking and train service plan, NS utilized a program called "MultiRail." MultiRail is a sophisticated modeling tool that integrates information regarding a railroad's traffic, network configuration, and customer service requirements to

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[243] NS's carload Operating Plan incorporates shipments of coal, grain, ethanol, and intermodal traffic that move in single car and multi-car shipments (rather than in trainload service). As discussed below (at III-C-167 to III-C-170), NS's Operating Plan also accounts for the services and facilities needed to handle traffic moving in trainload shipments.

[244] The traffic incorporated in NS's Operating Plan was obtained by identifying the waybills for DuPont traffic summarized in DuPont Opening Table III-A-1, breaking down each of these waybills by car or container, and incorporating operating details for each shipment. The resulting data set can be found in NS Reply WP "2010_DRR_Shipments_Op_Plan_ 052412.txt."

generate blocking plans and train schedules that are optimized to serve an identified traffic group.[245] The MultiRail program facilitated the task of analyzing the specific services required by the nearly three million carloads of general freight traffic that DuPont selected for the DRR. MultiRail has been used by all of the North American Class I railroads in connection with their network planning and service design activities.

The following is a summary description of the methodology that NS employed in developing the DRR's carload blocking and train service plan.[246]

First, the DRR's selected 2010 carload traffic was analyzed and broken out for each shipment; the resulting carload traffic was imported into the MultiRail program.[247] NS witness Cheng began with DuPont's Base Year traffic file. These Base Year traffic volumes were increased based on commodity group-specific growth factors provided by witness Benton Fisher,

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[245] MultiRail was developed by Oliver Wyman, and is commercially available. http://rail.railplaning.com/multi-rail/. *See* NS Reply WP "MultiRail Freight Edition.doc." MultiRail has been used by parties to create blocking plans and train schedules in a number of prior STB proceedings. *See, e.g., Seminole Electric Cooperative, Inc. v. CSX Transportation, Inc.*, STB Docket No. 42110 (Reply Evidence of CSX); *Canadian National Railway Company, Grand Trunk Corporation and Grand Trunk Western Railroad Incorporated—Control—Illinois Central Corporation, Illinois Central Railroad Company, Chicago, Central and Pacific Railroad Company and Cedar River Railroad Company*, S.T.B. Fin. Docket No. 33556 (served May 25, 1999). NS has arranged with Oliver Wyman for both DuPont and the Board to be permitted limited access to MultiRail for purposes of this case.

[246] The methodologies and processes that NS employed in conducting its MultiRail analysis of the DRR's traffic are described in detail in NS ReplyWorkpaper "Modeling Operating Plan in MultiRail for DuPont Case" and in other files in NS Reply WP folder "MultiRail."

[247] The DRR's coal, grain, and ethanol unit train traffic was not input to MultiRail, as that traffic moves in trainload service between a single origin (or on-SARR junction) and a single destination (or off-SARR junction), so that a "trip plan" for each individual car was not necessary. Where coal, grain, or ethanol shipments moved in smaller quantities, those shipments were included in the MultiRail analysis and blocked for transportation in the DRR's general freight road trains. As discussed below (at III-C-167 to III-C-169), the DRR's trainload intermodal traffic was analyzed separately by MultiRail to determine train schedules and terminal handling for those trains.

to determine the peak year traffic volumes that needed to be accounted for in the DRR's car blocking and train service plan.[248] The number of empty car movements associated with the DRR's carload shipments was developed by applying NS's actual 2010 loaded car-mile ratios, by car type and ownership type, as reported in NS's R-1 Annual Report, Schedule 755.[249] The resulting loaded and empty peak year volumes were then input to the MultiRail program for analysis. As Figure III-C-22 shows, the traffic selected by DuPont consisted of 92% of all traffic that NS handled in the territory replicated by the DRR.

Figure III-C-22[250]
Percentage of NS Traffic Selected by DuPont

	Carloads/Containers (000s)		
Commodity Group	**DRR**	**NS System**	**% of NS**
Intermodal (IM)	2,929.5	2,935.8	100%
Coal (80)	1,187.3	1,540.9	77%
Agricultural Products (10)	576.7	617.8	93%
Chemicals (40)	388.3	400.0	97%
Paper (30)	294.8	314.9	94%
Metals (20)	347.1	359.3	97%
Automotive (60)	280.3	287.6	97%
Construction Materials (25)	195.2	262.0	75%
Total	**6,199.2**	**6,718.3**	**92%**

Next, NS input to the MultiRail program the physical network for the NS system, and identified the segments that DRR would replicate for its constructed network. NS also input segments owned by other railroads that DRR would operate over via trackage rights, in order to model properly the train movements on those lines, and to determine the number of crews,

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[248] The commodity group-specific growth factors applied by witness Cheng are set forth in NS Reply WP "Modeling Operating Plan in MultiRail for DuPont Case" at 10. The DRR's peak year traffic volumes are discussed in detail in Section III-A above.

[249] The specialized RoadRailer equipment used in providing Triple Crown service moves empty via the reverse of the loaded routing. *See* NS Reply WP "NS Sch 755 CarMiles.xls."

[250] *See* NS Reply WP "DRR Selected NS Traffic.xlsx."

locomotives, and fuel required for the DRR's operations. The physical network input to MultiRail also included the yard locations identified by NS as necessary to support the DRR's train operations, and the intermodal, automotive, and transload facilities that the DRR would need to serve those segments of its traffic group.

NS then input an initial list of "blocks" to be created by, and moved along the DRR network in, the MultiRail program. Because DuPont's selected traffic group includes the majority of the carload traffic that NS actually handles in the territory replicated by the DRR, NS started with a list of the blocks that NS builds in its daily operations today, and adjusted that list to eliminate blocks that would not be needed to handle the DRR's selected traffic. The initial list of blocks input to MultiRail included both "internal" blocks to move cars between points along the DRR network, and "external" blocks of cars to be interchanged with connecting rail carriers. Thus, the DRR blocking plan developed by NS accounts for both traffic blocks that would be built by other railroads (including the residual NS) off-SARR and received by the DRR and blocks that the DRR would reciprocally be required to build for delivery to NS and other railroads pursuant to the NS intercarrier arrangements that the DRR adopted. This assured that the DRR's interline traffic would move in the most efficient and lowest cost manner possible, and in a manner consistent with NS's intercarrier agreements (which the DRR purports to adopt).[251]

After the initial DRR blocking plan was input to MultiRail, the DRR's carload traffic was "flowed" through the program, which assigned each individual car to one or more blocks as necessary to move it from origin (or on-SARR junction) to destination (or off-SARR junction).

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[251] The blocks that NS and connecting carriers build for one another on a reciprocal basis pursuant to NS's intercarrier agreements are described III-C-72 to III-C-74.

In each case, MultiRail selected the least-cost, most-efficient routing available. This process generated, for each car, a "blocking sequence" that defined its movement across the DRR system.[252] Cars that failed to flow completely were flagged in a "Traffic Routing – Flows with No Block Option Report" generated by MultiRail. Witness Cheng reviewed that report and defined additional "blocks" as necessary to complete the movement of all cars. In an iterative process, traffic was flowed through MultiRail again until every car in the DRR's traffic group flowed successfully through the MultiRail program and was assigned a complete "blocking sequence."

When all of the DRR cars flowed successfully through the MultiRail program, NS applied a number of "quality control" measures to enhance the efficiency of the DRR's blocking plan. For example, MultiRail generates a "Traffic Circuity Report" that identifies unnecessarily circuitous routings. NS used the "Traffic Circuity Report" to adjust the routing of certain cars to provide more efficient handling. In addition, the "Block Bypass Report" and "Excessive Handling Report" generated by MultiRail identified opportunities to consolidate or eliminate blocks, thereby enabling certain groups of cars to "run through" classification facilities without further handling. NS used the Block Bypass Report to optimize the handling of individual cars (or blocks of cars). The foregoing steps produced a comprehensive "blocking plan" that provides for the movement of every carload shipment across the DRR network in an efficient manner, and enables the DRR to track those movements.[253]

Once a detailed blocking plan for all DRR carload traffic was created, the next step was to design a train service plan capable of transporting those traffic blocks across the DRR

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[252] *See* NS Reply WP Folder "MultiRail," "Block_NS_DRR.mbp."

[253] NS Reply WP Folder "MultiRail," "Block_NS_DRR.mbp"identifies the general freight traffic blocks incorporated into NS's Operating Plan.

network. As it did in developing its blocking plan, NS utilized MultiRail in designing the DRR's train service plan. Because the DRR's selected traffic includes the vast majority of the carload traffic that NS handles in the DRR's service territory today, NS input an initial list of DRR trains based on NS's real world train schedules (which were produced to DuPont in discovery).[254] Witness Smith assigned one or more blocks of cars to each train, based upon the train's direction of movement, the distance it would travel along the DRR network, and the intermediate stops it was scheduled to make en route. NS applied a number of "quality control" measures to ensure that each and every block generated by MultiRail was moved along the DRR network as required. For example, MultiRail generated a "Block Train Validity Check Report" that identified any "stranded" blocks. Based on the block-to-train assignments, witness Smith also identified the yard locations at which individual blocks of cars would be picked up or set off by road trains and at which individual cars would be transferred between blocks. In an iterative process similar to that used in developing the DRR's blocking plan, trains were added or adjusted as necessary to provide complete, efficient on-SARR service for all DRR traffic blocks.

Local train service requirements were based upon several factors. First, witness Johnson analyzed the daily volume of merchandise cars that would flow through each terminal location. In addition to daily traffic volume, witness Johnson considered the number of distinct customer facilities that would have to be served by each local train assignment, as well as the direction of travel, and distance of customer facilities from the subject DRR serving yard. For example, a single local train operating in "turn service" might be capable of picking up and setting off a group of 40 merchandise cars at several customer facilities located along the same secondary line. However, as often occurs in the real world, if the customers are more widely dispersed

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[254] *See* NS Reply WP Folder "Documents Produced in Discovery III-C," "Schedule.xls."

(*e.g.*, some customers are located on a branch line east of the serving yard, while others are located on a different branch west of that yard), a second local assignment might be required to pick up and set off the same number of cars on a daily basis. Finally, in determining the number and frequency of local trains, railroads must take into account the particular work that each local assignment must do along its route of movement. As discussed above (at III-C-127-128), a local train may be required to perform a variety of specialized tasks, such as "spotting" cars on specific tracks in a specific order, to satisfy a particular carload customer's requirements.

Indeed, DuPont itself requires NS to comply with a variety of special requirements in providing local service to its facilities. For example, at DuPont's {

} These functions—and similar location-specific requirements imposed by other DRR customers—clearly cannot be completed properly within the generic 30 minutes allotted by DuPont's RTC simulation for service to customer facilities. The DRR local train service plan designed by witnesses Johnson and Smith takes account of such location-specific service requirements, and accounts for both the level of service and the time required to meet the needs of the NS customers whose traffic DuPont selected for the DRR.[255]

A realistic train service plan must also consider not only the number of road and local trains physically required to handle a particular traffic group, but also the schedule upon which those trains will operate. To provide the most efficient service to their customers, railroads carefully coordinate road train schedules with the schedules on which local trains serving customer locations operate. This minimizes both the "dwell time" spent by road trains at intermediate terminals, and the time required to deliver cars to customer facilities following their arrival at a serving yard (or, conversely, the time between picking up a car at a customer facility and the time it departs in a road train). NS's MultiRail analysis not only identified the trains that the DRR would need to operate, but also developed a schedule upon which they would operate. By contrast, DuPont's Operating Plan and RTC simulation evidence do not reflect any effort to coordinate the schedules of DRR trains.

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[255] *See* NS Reply Ex. III-C-14.

Once all of the required trains were input, and blocks were assigned to the trains required to move them, NS conducted a simulation of the DRR's peak year train operations utilizing MultiRail's "SuperSim" (or trip planning) function. The "SuperSim" analysis simulated the movement of DRR trains and the transfer of blocks of cars between trains (and of individual cars between blocks) during a typical seven day period during the peak year. The simulation confirmed that NS's Operating Plan accounted for the complete movement of every carload shipment. It also generated "Terminal Clock Reports" that identified the times at which DRR trains (and the blocks of cars traveling in them) arrived at, and departed from, intermediate terminals along the network.[256]

The "SuperSim" element of NS's MultiRail analysis generated a "trip plan" for each individual DRR carload shipment. That "trip plan" includes, for each car, scheduled train services that provide line haul transportation (on one or more trains) along the DRR network; a blocking sequence that identified the intermediate yards at which the car must be classified; the train work locations where the car must be transferred between trains; and a local train service plan to deliver empty cars for loading at origin, pick up loaded cars for line-haul movement, and deliver loaded cars to destination customer facilities. Having such a trip plan for each car enables the DRR to track the car's movement as it proceeds along the network, and to comply

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[256] *See* NS Reply WP folder "MultiRail, file "Terminal Clock Reports." NS's MultiRail analysis assumes that cars classified or swapped in blocks at "hump" yards spend a total of 10 hours of dwell time in the yard (4 hours in the receiving yard, 2 hours going through the classification "bowl," and 4 hours in the forwarding yard prior to departure). At "flat switching" yards, the assumed total dwell time for cars is 8 hours. These dwell time assumptions represent the minimum dwell time for cars moving through yards in NS's real world operations. Publicly available data indicate that NS's average terminal dwell time is 22.1 hours, the lowest among the four major U.S. Class I carriers. *See* NS Reply WP "NS Performance Measures.pdf." Performance Measure Reports are published by the AAR and are available at: http://aar.org/rpm.aspx.

with federal regulations governing the movement of TIH shipments. NS's Operating Plan also gives the DRR the ability to provide customers real time access to information regarding the location of their shipments—a service that shippers have come to expect in today's competitive general freight transportation marketplace.

As it did for its blocking plan, NS validated its train service plan by performing several quality checks on the output of the MultiRail program. For example, NS reviewed a "Train Volume Summary Report" in MultiRail to identify trains that were "too long" or "too short" in comparison to NS's real world trains.[257] Where appropriate, trains were added, consolidated, or deleted to produce appropriately sized trains. NS consulted the Terminal Clock Reports to identify situations in which road trains would experience excessive dwell time at a particular location, and adjusted the schedules of road and/or local trains as necessary to improve overall system fluidity and efficiency. These adjustments reduced the DRR's locomotive, car, and crew expenses.

NS performed two separate analyses of the DRR's carload traffic using the MultiRail process described above. One plan, based on the DRR's projected peak year traffic volumes, was used to develop the DRR's Operating Plan and infrastructure requirements, and to conduct NS's RTC Model simulation.[258] A second analysis, based on Base Year traffic levels, was utilized by witness Benton Fisher in calculating various DRR operating expenses.

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[257] NS's Operating Plan adopts the same assumption regarding maximum train length as DuPont—*i.e.*, the maximum length of DRR trains is based upon the longest train, by train symbol, operated by NS in the Base Year. *See* DuPont Opening WP "Non-Coal List—March1.xlsx," worksheet "Statistics."

[258] MultiRail simulates the daily operations of the DRR under "ideal" conditions—*i.e.*, it assumes that all trains run on schedule, and are not affected by events such as random track outages, locomotive failures and maintenance activities. NS's RTC simulation tests the adequacy of the DRR's track configuration taking such delay factors into account.

NS's MultiRail analysis produced a number of outputs that were used to develop other elements of NS's Operating Plan. Witness Rieppi used information generated by MultiRail regarding the time at which trains arrived at, or departed from, intermediate terminals, and the blocks (and block sizes) arriving and departing on each train, to size and configure the DRR's classification yards. The RTC Model developed by witnesses Wheeler and Williams utilized a variety of outputs from the MultiRail process, including (1) the track network as developed in MultiRail; (2) a list of the DRR's road and local trains and train schedules; (3) the number of cars, trailing tons and trailing length of each train; (4) the number of locomotives on each train based on NS tonnage ratings and helper locomotive requirements provided by witness Clark Cheng; and (5) the work events performed by each train as it travels along the DRR network.[259]

ii. Intermodal Traffic

The traffic selected by DuPont for the DRR includes approximately 5.2 million units of intermodal traffic. DuPont Opening III-C-3, Table III-C-1. More than two million of those intermodal shipments are entirely local to, or interline forwarded or received by, the DRR. *Id.* While a substantial portion of the DRR's intermodal traffic moves in "trainload" shipments between a single origin (or on-SARR location) and a single destination (or off-SARR point), some intermodal shipments selected by DuPont move in smaller multi-car "blocks" in NS general freight trains. The Operating Plan for those less-than-trainload intermodal shipments was developed as part of NS's carload blocking and train service plan discussed above. The

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[259] The specific MultiRail outputs relied upon by witness Rieppi in analyzing the DRR's yard requirements are set forth in NS Reply WP Folder "MultiRail." The specific MultiRail outputs relied upon by witnesses Wheeler and Williams in developing NS's RTC Model simulation of the DRR's operations are set forth in NS Reply WP Folder "RTC."

Operating Plan for trainload movements of intermodal traffic was developed in the following manner.

As it did in developing the DRR's carload blocking and train service plan, NS began by analyzing the intermodal traffic that DuPont selected for the DRR and breaking out for each shipment the flat car that DuPont associated with each container or trailer. Consequently, the traffic records for intermodal shipments included both a "Container/Trailer Waybill" for each individual container or trailer moving in intermodal service and a "Flat Car Waybill" for each flat car carrying those containers and trailers. The vast majority of the DRR's selected Container/Trailer Waybill records could be matched to records for the flat cars on which they moved. [260]

The number of empty flat car movements associated with the DRR's intermodal shipments was developed by applying a triangulation methodology that minimized empty miles and addressed directional imbalances in flat car movements affecting individual DRR intermodal terminals and/or the origin-destination "lanes" in which the DRR's intermodal traffic travels.[261]

Once the records for the DRR's "trainload" intermodal traffic were reconciled, and the corresponding empty movements were estimated, the DRR's intermodal trains were input to MultiRail and flowed across the DRR network. While those trains moved largely intact from origin (or on junction) to destination (or off junction), there were some instances in which blocks

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[260] The vast majority of the Container/Trailer waybills that could not be matched to flat-car waybills were Triple Crown shipments. The process applied by NS to reconcile discrepancies between the Container/Trailer Waybills and Flat Car Waybills associated with DuPont's selected intermodal traffic is described in NS Reply workpaper "Modeling Operating Plan For DuPont Case" at 9.

[261] The result of this optimization was a lower empty return ratio for DRR than NS actually experienced in 2009-2010. The triangulation methodology employed by NS to develop empty intermodal flat car movements is described in NS workpaper "Modeling Operating Plan For DuPont Case" at 9.

of intermodal flat cars were "swapped" between trains at intermediate yards or intermodal terminals. The MultiRail simulation accounted for such block-swapping, and developed a "trip plan" for each intermodal shipment that included its arrival and departure time at each intermediate terminal. Flowing the DRR's intermodal traffic through MultiRail enabled NS to develop data for intermodal shipments similar to that generated for the DRR's carload traffic, including a list of DRR intermodal trains; their length, trailing tons and locomotive consist; the intermodal containers and/or trailers moving on each train; and any work events performed by each train en route. That information was utilized by witnesses Johnson and Smith in designing the DRR's intermodal facilities, and by witnesses Wheeler and Williams in performing NS's RTC Model simulation of the DRR's operations. As with carload traffic, NS's Operating Plan for intermodal traffic accounts for all of the services, facilities, and time required to handle that traffic in accordance with customer requirements.

iii. Unit Train Traffic

The traffic selected by DuPont for the DRR also includes 1.6 million cars of coal, most of which moves in unit train service.[262] Because unit train shipments, by definition, move intact between a single origin (or, on-SARR location) and a single destination (or, off-SARR point), it was not necessary to develop "trip plans" in MultiRail for individual cars traveling in a unit train. Rather, NS incorporated the intact movement of unit train traffic between SARR origin and SARR destination directly into its Operating Plan and RTC Model simulation. While DuPont accounted for the line-haul movement of unit trains across the DRR network, the origin and

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[262] *See* DuPont Opening III-C-3, Table III-C-1. As discussed above (at III-C-157, n. 243), DuPont also selected smaller volumes of grain, ethanol, and sulfur that move in less-than-trainload quantities. Those shipments were incorporated into the carload Operating Plan presented by NS.

destination dwell times assigned to those trains in DuPont's RTC simulation was significantly understated. NS's Operating Plan adjusts those dwell times as necessary to reflect real world operations at coal origins and destinations served by the DRR.

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The analysis of the DRR's traffic performed by NS utilizing the MultiRail program enables the Board to trace the movement of each individual carload of general freight traffic from its arrival on the DRR until it is delivered to a destination customer or interchanged with a connecting carrier. In contrast to DuPont's fatally deficient Opening Evidence, NS's MultiRail analysis accounts for all of the road and local train services, intermediate classification and switching of individual cars, "swapping" of blocks between trains, and pick ups and set offs at customer facilities and interchange points that are necessary to handle the massive volume of carload traffic that DuPont selected for the DRR. The data generated by MultiRail also reflects the time required to perform those activities—a critical operating plan element that DuPont failed to address at all. The results of NS's MultiRail simulation were used in designing the DRR's yards and intermodal facilities, and in assessing the adequacy of the DRR network in NS's RTC Model simulation.

iv. Development Of DRR Yard Facilities

A critical element of a "feasible" operating plan—particularly for a railroad (like the DRR) that proposes to handle millions of cars of "carload" traffic—is a network of yards, and a yard service plan, that are adequate to support the carrier's road and local train operations. The daily activities at a SARR's yards include a variety of tasks necessary to service inbound and outbound trains (such as fueling locomotives, performing required inspections and serving as a crew change location); "swapping" blocks of cars between trains; "classifying" cars delivered by road trains for further movement along the network (and organizing those cars into blocks to

facilitate their movement); serving as a "home" terminal (and crew reporting point) for local trains; receiving cars picked up by local trains at customer facilities and classifying them for movement in outbound road trains; switching cars delivered by road trains into local trains for delivery to customer facilities; and performing "running" repairs to freight cars so they can be placed back into service.

DuPont's Operating Plan does not explain how the DRR would perform these essential functions, nor does it demonstrate that the yards posited by DuPont are sufficient to support the DRR's carload operations. Indeed, as discussed above, DuPont's Opening Evidence does not even mention car classification and blocking among the tasks that the DRR would perform at intermediate yards, even though those activities are essential to the operation of any carload rail network.[263] And DuPont affirmatively disavows any obligation for the DRR to provide personnel and facilities to repair foreign carrier cars that are "bad ordered" while on the DRR's lines. *See supra* III-C-87 to III-C-91. The only evidence that DuPont proffered to support its proposed design and staffing for the DRR's yards is a series of unsupported spreadsheet calculations. As NS demonstrated above (at III-C-36 to III-C-52), the yard sizes and configurations, yard locomotive fleet and estimated yard crew requirements generated by DuPont's nonsensical mathematical approach are completely divorced from the workload that the DRR would have to perform on a daily basis.

In contrast, NS developed a network of yards for the DRR that is optimally sized and configured to accommodate the specific traffic group selected by DuPont. NS's yard sizing and configuration is based upon a detailed analysis of the DRR's anticipated workload and inventory

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[263] *See supra* III-C-54 to III-C-71; *see also* NS Reply Ex. III-C-1 "Carload Operations Overview."

at each location, and takes into account not only the number of cars that would move through each DRR yard daily, but also the number and size of the blocks in which those cars would arrive and depart, the time of day at which trains (and blocks) would be scheduled to arrive and depart, and the amount of time that blocks and cars would dwell (and, therefore, occupy track space) at each yard. As the following discussion shows, NS's location-specific analysis of the DRR's yard requirements results in a substantial increase in the size of many DRR yards, due primarily to the failure of DuPont's "yard matrix" to take into account the primary function performed at those yard–car classification and blocking. At the same time, NS's analysis identified numerous opportunities to improve the DRR's efficiency by downsizing, or eliminating altogether, yards that were "overbuilt" by DuPont. In total, NS's Operating Plan includes a total of 71 DRR yards, compared to the 123 yards posited by DuPont.

Following is a summary description of the methodology that NS employed in sizing and configuring the DRR's yards:[264]

The first step in NS's analysis of the DRR's yard requirements was to determine the type of yard required at each location. NS and other Class I carriers operate two basic types of switching yards, "hump" yards, and "flat switching" yards. At a hump yard, cars are classified via a process in which a yard locomotive pushes cars (or blocks of cars) up the front side of a "hump" track.[265] Cars are blocked by using a system of power switches and car retarders to direct individual cars onto the appropriate classification track on the other side of the "hump" with other cars destined to the same location further along the network. A hump yard consists of

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[264] The methodology that NS witness Rieppi employed developing the size and configuration of the DRR's yard facilities is described in detail in NS Reply workpaper "Terminal Capacity Requirement Tracking Process For Hump Classification Yards" and NS Reply workpaper "Terminal Capacity Requirement Tracking Process For Flat Classification Yards."

[265] *See* NS Reply Ex. III-C-1 "Carload Operations Overview."

(1) a "receiving yard" area, where inbound trains (and cars brought to the yard by local trains or foreign carriers) are received prior to classification; (2) a "classification yard" area (sometimes referred to as the "bowl") where cars are classified by moving them over the hump track onto a classification track; and (3) a "forwarding yard" area where cuts of cars that have been classified are assembled into outbound trains for further transportation along the carrier's network.[266] Hump yards may also contain a variety of other tracks and facilities, including long tracks that can be used to stage trains or hold them for a crew change or interchange with a connecting carrier; "running tracks" that enable trains carrying traffic that does not require classification to bypass the classification area; and "rip" tracks onto which bad order cars are placed for repair or other disposition. Hump yards may also contain crew facilities, facilities for fueling and servicing locomotives, and tracks upon which running repairs to rail cars can be performed. DuPont's unsubstantiated and illogical yard design did not provide for even a single hump yard anywhere on the DRR's 7,300-mile owned network.

"Flat switching" yards are simpler in design, and come in a variety of sizes, based on the needs at a particular location.[267] As its name suggests, a flat switching yard consists of tracks on flat ground, and is not equipped with a hump track or power switches. Cars are classified manually by moving them between parallel tracks that are connected by "ladder" tracks at one or both ends. Flat switching is more time consuming and far less efficient than switching at a hump yard. At larger flat switching yards, specific tracks are designated for receiving, classifying, or

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[266] NS Reply Ex. III-C-13 is a photograph of NS's Linwood hump yard at Spencer, NC. The configuration of Linwood Yard is typical of the hump yards operated by NS and other Class I railroads.

[267] *See* NS Reply Ex. III-C-1 "Carload Operations Overview."

forwarding cuts of cars, while at smaller flat switching yards, tracks are used interchangeably for any of those tasks.

NS determined whether to site a hump yard or flat switching yard at each DRR yard location based upon the anticipated daily volume of activity at that location. Specifically, NS categorized each DRR yard as a hump yard or flat switching yard based on the aggregate volume of cars in outbound blocks departing the yard on a daily basis.[268] As Figure III-C-23 shows, if the aggregate daily volume in outbound blocks was at least 900 cars, then the terminal was designated and configured as a hump yard. Yards with an aggregate daily volume of fewer than 900 cars were designated and configured as "Small Flat," "Medium Flat," or "Large Flat" yards, based upon the volume thresholds set forth in Figure III-C-23. At locations where the aggregate daily outbound volume was less than 50 cars, NS determined (in most cases) that a least cost, most efficient railroad would not construct a yard to perform the required switching activity, and replaced the yard posited by DuPont with one or more "industrial support" tracks.

Figure III-C-23
DRR Yard Designations Based On Aggregate Daily Outbound Block Volume

Category	Volume (Cars)	Number of Yards
Hump	900 or more	8
Large flat	601-900	5
Medium flat	201-600	13
Small flat	51-200	45
Industrial support	0-50	70

Once the type of yard facility required at each location was determined, NS witness Rieppi conducted a detailed, location-specific analysis to develop the size and configuration for

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[268] Aggregate outbound volume provides an appropriate measure of the daily workload at a particular yard, because it reflects the number of cars that must be "handled" (*i.e*, classified and switched into outbound trains) at that yard each day.

each individual DRR yard. Following is a summary description of the methodology that NS witness Rieppi employed in developing the capacity requirements and track configuration for each DRR yard.[269]

Witness Rieppi's evaluation of the track capacity requirement at DRR yards consisted of three related analyses. First, he determined the "static" track capacity requirement for each yard. "Static" capacity refers to the number of track feet required to hold a given inventory of rail cars—*i.e.*, to "park" the cars end-to-end. For example, if at a given point in time there are 500 rail cars in a yard, and those cars are, on average, 60 feet in length, the "static" track capacity required to accommodate those cars is 30,000 feet of track (500 cars x 60' per car = 30,000 feet). The "static" capacity of a yard does not take into account the additional footage required to move cars around during the classification process. In order to determine the "practical" track capacity of a yard—*i.e.*, the number of track feet required to enable the carrier to process (*i.e.*, receive, classify and prepare for departure) a given inventory of cars—the "static" capacity must be increased by a "fluidity factor" that makes allowance for the movement of cars within the yard. The second analysis performed by witness Rieppi applied a widely-accepted fluidity factor to the "static" capacity of each DRR yard to determine its "practical" capacity requirement. Once the "practical" track capacity requirement for each yard was determined, witness Rieppi performed a third analysis to determine the optimal configuration for that "practical" capacity, based upon the unique characteristics of the car classification and blocking performed at each yard, as reflected in the number and size of the blocks handled at that particular location.

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[269] The methodology that witness Rieppi employed is described in detail in NS Reply workpaper "Terminal Capacity Requirement Tracking Process For Hump Classification Yards" and NS Reply workpaper "Terminal Capacity Requirement Tracking Process For Flat Classification Yards."

v. Hump Yards

Witness Rieppi calculated the "static" capacity requirement for each DRR hump yard based upon outputs from NS's "SuperSim" simulation of the DRR's operations. Utilizing information regarding the daily arrivals, departures, and classification volume for each terminal set forth in the report titled "Yard Connections With Blocks By Outbound Train" generated by MultiRail, witness Rieppi determined the inventory of cars that would be present in a particular yard during the peak hour of each day during the "SuperSim" simulation period.[270] The car inventory present during the peak hour of a given day defines the minimum "static" capacity required to accommodate the volume of carload traffic moving through the yard on that day. Witness Rieppi averaged the peak hourly inventories for the days included in NS's "SuperSim" simulation, to arrive at an "average peak daily inventory" for each hump yard.[271] Because NS's "SuperSim" process was based upon an average week (rather than the peak week) during the peak year, the average peak daily inventory developed by witness Rieppi for each yard is conservative—it represents the number of cars that the DRR would need to accommodate during the busiest hour of a typical day during the peak year (rather than the maximum capacity required for the peak hour of the peak week). DRR Witness Rieppi then multiplied the average peak daily inventory by an assumed average car length of 60 feet to determine the "static"

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[270] *See* NS Reply Exhibit III-C-12 "DRR Yard Requirements"; *see also* NS Reply WP folder "MultiRail," file "Yard Connections With Blocks By Outbound Train."

[271] In calculating that average, witness Rieppi excluded the first and last days of the simulation period. The first day of the "SuperSim" period is a "warm-up" day during which only a limited number of blocks and train connections are made. Likewise, the last day of the simulation is a "cool-down" period. Therefore, the level of activity during those two days of the simulation are not representative of the week as a whole.

capacity requirement for each hump yard.[272] The "static" capacity requirement was calculated separately for the "receiving" yard area, classification "bowl," and "forwarding" yard area at each hump yard.

To determine the "practical" track capacity required at each hump yard, witness Rieppi added to the "static" capacity developed in the process described above a "fluidity factor" of 0.6. This fluidity factor is based upon commonly accepted principles regarding the amount of track (in relation to "static" capacity) required to maintain fluidity within a rail facility. The 0.6 fluidity factor applied by witness Rieppi is based upon NS's real world experience in a variety of operational settings.[273] A fluidity factor of 0.6 is also supported by a number of independent sources. For example, a 2006 study of statewide rail capacity conducted by the Washington State Transportation Commission made the following observation regarding "practical" capacity requirements within a rail yard:

> Tacoma Rail uses a rail industry rule of thumb for infrastructure utilization which states that available track should not be utilized in excess of 60 percent by railcars. Utilization in the range of 50 to 60 percent indicates mild congestion. At that level, there are some restrictions on operations. Ratios in excess of 60 percent indicate significant congestion and reduced responsiveness. At a time of significant utilization, railcars have to be moved and shuffled excessively to make room for other cars while attempting to keep cars in logical sequences. Utilization in excess of 80 percent indicates a yard is in gridlock and all activities are severely delayed.[274]

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[272] Automotive and intermodal cars (which are longer than standard freight cars) are not normally classified in the same manner as merchandise shipments. Accordingly, witness Rieppi's choice of 60 feet per car in measuring the "static capacity" of DRR yards is appropriate. Facility requirements for the DRR's automotive and intermodal terminals were analyzed separately by NS witnesses Johnson and Schaub.

[273] *See* NS Reply WP "Terminal Capacity Requirement Tracking Process For Hump Classification Yards," at 12-13.

[274] *See* NS Reply WP "Statewide Rail Capacity and System Needs Study.pdf" at A-27.

A minimum fluidity factor of 0.6 for rail yards has also been endorsed by the Department of the Army. A 2003 study titled "Army Rail Operations" discussed a variety of planning factors for rail classification yards, and concluded that "[d]aily yard capacity is equal to 1.6 times SYC [Static Yard Capacity]. This Figure takes into account that the number of cars in a yard at any given time will not exceed 60 percent of the static capacity."[275]

Witness Rieppi calculated the "practical" track capacity requirement separately for the receiving yard area, classification bowl, and forwarding yard area within each DRR hump yard. The resulting "practical" capacity requirements represent the total number of track feet that the DRR must build to support the required car classification and blocking activities at each location.[276]

Having determined the "practical" track capacity required at each hump yard, witness Rieppi performed a third analysis to determine the specific configuration (number and length of classification tracks) that would optimize the utilization of each yard's available capacity. For the classification "bowl" portion of each yard, witness Rieppi based this analysis on information reported by MultiRail regarding the number of blocks per day, and the average size of those blocks, that the DRR would be required to handle.[277] Consistent with NS (and industry) practice, witness Rieppi assumed that tracks within the "bowl" would have a minimum length of 2,000 feet and would, in most cases, be no longer than 3,000 feet.[278] Based upon those real world

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[275] *See* NS Reply WP "Army Rail Operations.doc."

[276] Witnesses Rieppi and Johnson also determined the number and length of tracks that the DRR would need to support other activities performed at each hump yard.

[277] *See* NS Reply WP "Terminal Capacity Requirement Tracking Process For Hump Classification Yards," at 5.

[278] DuPont's "yard matrix" assumes that some classification tracks would be less than 2,000 feet in length, even at the DRR's "major" classification yards. Classification tracks as short as 1,300

parameters, witness Rieppi assigned blocks sequentially to each classification track until its capacity was occupied. For example, a block of 40 cars (of 60' each) would occupy 2,400 of track space, leaving little additional capacity for a second block on a 2,500-foot classification track. Conversely, a 3,000 foot classification track can hold one block of 12 cars and three additional blocks of ten cars. Witness Rieppi continued this process of assigning blocks of cars to classification tracks within a yard (the "block to track" process) until all of the blocks were assigned to a track. When all blocks had been assigned, any remaining footage in the "practical" track capacity of the "bowl" area (as calculated above) was allocated among the tracks created in the "block to track" assignment process.

For tracks within the "receiving yard" and "forwarding yard" areas of a hump yard, witness Rieppi allocated the "practical" track capacity in the following manner: Based on NS's experience (and consultation with witness Johnson), witness Rieppi assumed that the "long" tracks within the "receiving yard" and "forwarding yard" would be 8,000 feet or 9,000 feet in length (depending on the size of the DRR trains arriving and departing each location).[279] He then divided the required "practical" track capacity (calculated separately above for the

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feet were assigned to nearly half of the DRR's yards, and 10 yards have no classification track longer than 1,700 feet. *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRK LENGTH." DuPont's classification track lengths are transparently the product of a "mathematical" exercise that assigns track lengths in 200-foot increments, without any consideration of the number of cars (or size of blocks) that those tracks would need to hold on a daily basis. Based upon NS's experience, witness Rieppi concluded that classification tracks of less than 2,000 feet would have limited utility in the context of a general freight operation of the magnitude contemplated by the DRR's selected traffic. Moreover, the "ladder" design implied by DuPont's staggered classification track lengths is inappropriate for a hump yard, at which classification tracks are generally equal in length. (A "ladder" design is sometimes used in constructing flat switching yards.).

[279] Sizing "long" tracks at 8,000 feet or 9,000 feet is also consistent with the length of the DRR's merchandise trains, most of which are 8,000-9,000 feet in length. *See* DuPont Opening WP "Base Year Train List_Statistics_Open_Errata.xlsx."

"receiving yard" and "forwarding yard") by the assumed track length (8,000 or 9,000 feet) to arrive at an initial estimate of the number of "long" tracks required in the "receiving yard" and "forwarding yard," respectively. For example, if the "practical" track capacity requirement for the "receiving yard" at a facility with 8,000 foot "long" tracks was 40,000 feet, witness Rieppi's methodology estimated a need for five tracks. Those estimates were adjusted upward or downward as necessary to take account of factors affecting the demand for "long"' track capacity at particular locations. For example, if train arrivals at a yard were concentrated during certain times of the day (rather than being evenly distributed), the "receiving yard" at that location might require more long tracks than then number indicated by witness Rieppi's initial estimate. Witness Rieppi evaluated the potential impact of such factors (as reflected in the MultiRail "SuperSim" simulation) at each hump yard location, and adjusted the number of tracks allocated to the "receiving yard" and/or "forwarding yard" as necessary to support fluid DRR train operations.

vi. Flat Switching Yards

Witness Rieppi employed a similar methodology in sizing and configuring the DRR's flat switching yards. He began by calculating the "static" capacity requirement for each DRR flat switching yard based upon the outputs from NS's "SuperSim" simulation of the DRR's operations. Utilizing information regarding the arrivals, departures, and classification volume for each flat yard location set forth in the "Yard Connections With Blocks By Outbound Train" report generated by MultiRail, witness Rieppi determined the inventory of cars that would be present in a particular flat switching yard during the peak hour of each day during the

"SuperSim" simulation period.[280] He then averaged the peak hourly inventories for the days included in NS's "SuperSim" simulation, to determine the average peak daily inventory for each flat switching yard.[281] (Using the average peak daily inventory for a typical day during the peak year, rather than the maximum capacity required for the peak hour of the peak week, produced a conservative estimate of each flat switching yard's "static" capacity requirement.) The average peak daily inventory was multiplied by an assumed average car length of 60 feet to determine the overall "static" capacity requirement for each flat switching yard.

Witness Rieppi calculated the "practical" track capacity requirement for each flat switching yard by adding to the "static" capacity for that yard the same "fluidity factor" of 0.6 that he used in sizing the DRR's hump yards. The resulting "practical" capacity requirement represents the total number of track feet that the DRR must build to support the required car classification and blocking activities at each flat switching yard.[282]

After determining the "practical" track capacity required at each flat switching yard, witness Rieppi performed a third analysis to identify the specific configuration that would optimize the utilization of each yard's available capacity. He began by estimating the portion of a particular yard's overall "practical" track capacity that would be required for staging, arrival, and departure tracks. Three 5000-foot dedicated arrival tracks and three 5000-foot dedicated

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[280] *See* NS Reply Exhibit III-C-12 "DRR Yard Requirements," sub-folders "DRR Small Flat Yards," "DRR Medium Flat Yards," and "DRR Large Flat Yards."

[281] As he did in calculating that average peak daily inventory for hump yards, witness Rieppi excluded the first and last days of the "SuperSim" simulation period.

[282] Witnesses Rieppi and Johnson also determined the number and length of tracks that the DRR would need to support other activities performed at each flat switching yard.

departure tracks were provided at each "Large Flat" yard (600 or more cars per day).[283] At "Medium Flat" yards (201-600 cars per day), witness Rieppi assigned two 5000-foot staging tracks that would have "flexible" uses—*i.e.*, those tracks can be used interchangeably to receive trains, stage trains dwelling at the yard, or prepare trains for departure. "Small Flat" yards (50-200 cars per day) were not assigned any dedicated staging, arrival, or departure tracks—all tracks at "Small Flat" yards are designed to be used interchangeably. As he did in designing the DRR's hump yards, witness Rieppi adjusted these estimates upward or downward as necessary to take account of factors (such as arrival and departure schedules of trains stopping at a particular location) affecting the demand for track capacity.

After an appropriate number of track feet was assigned to staging, arrival, and departure tracks at each yard flat switching location, witness Rieppi allocated the remaining "practical" track capacity to classification trackage. For example, if a particular "Large Flat" yard had a "practical" capacity requirement of 70,000 feet, witness Rieppi subtracted the 30,000 track feet assigned to the three 5,000-foot arrival tracks and the three 5,000-foot departure tracks to arrive at a total of 40,000 feet to be allocated to classification tracks at that location. For "Large Flat" and "Medium Flat" yards, witness Rieppi employed the same methodology that he used to determine the configuration of the classification tracks at DRR hump yards. Specifically, based on the number of blocks per day at each yard, and the average size of those blocks, witness Rieppi assigned blocks sequentially to each classification track until its capacity was occupied. When all blocks were assigned, any remaining footage in the "practical" track capacity of the

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[283] Witness Rieppi adopted a standard 5000-foot length for "long" tracks at "Large Flat" and "Medium Flat" yards in consultation with witness Johnson. Trains in excess of 5,000 feet can be split upon arrival and placed on two arrival tracks (as NS often does in its real world operations).

yard was either allocated among the tracks created in the "block to track" process, or allocated to an additional classification track.

For "Small Flat" yards with 150 cars or less per day, witness Rieppi employed a simplified approach. Specifically, witness Rieppi divided the "practical" track capacity requirement by an assumed track length of 2,000 feet to arrive at an initial estimate of the number of tracks required at that yard. For example, if the "practical" track capacity requirement for a particular yard was 6,000 track feet, witness Rieppi allocated three 2,000-foot tracks to that facility. Where the "practical" track capacity requirement was not divisible by 2,000, and the remaining footage after designating one or more 2,000-foot tracks was greater than 1,000 feet, witness Rieppi divided the remaining track footage over the number of 2,000-foot tracks previously created. Where the remainder was less than 1,000 feet, it was dropped. For example, the "practical" track capacity requirement estimated by witness Rieppi for the DRR's yard at Millen, GA, was 10,627 feet.[284] Utilizing an assumed track length of 2,000 feet, witness Rieppi assigned five tracks (totaling 10,000 track feet) at Millen, GA. *Id.* Because the remainder (627 feet) was less than 1,000 feet, it was not added to the five 2,000-foot tracks provide for at Millen, GA (in order to produce a conservative estimate of the required yard capacity).

vii. Track Allocation For Ancillary Functions

In addition to receiving and staging trains, classifying and blocking cars for movement along the network, and preparing outbound trains for departure, the DRR would perform a number of ancillary support functions at its yard facilities, including staging and servicing locomotives, performing minor repairs to railcars and car storage. The design and configuration

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[284] *See* NS Reply Exhibit III-C-12 "DRR Yard Requirements," "Millen_GA_Requirements_Analysis_ Final.xlsx."

of the DRR's yards incorporates appropriate track capacity to support those functions. The number and length of tracks dedicated to ancillary functions at each DRR yard were developed by witness Rieppi in consultation with witnesses Johnson and Schaub based upon their real world experience.

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The hump yards, and small, medium, and large flat switching yards developed by witness Rieppi reflect the service requirements of the specific body of carload traffic that DuPont selected for its SARR. Witness Rieppi's location-specific analyses prescribe a group of yards that are sized reasonably (but conservatively) to accommodate the DRR's daily terminal workload, and configured in a manner that optimizes the utilization of those facilities and enhances the efficiency of the DRR's operations. At the same time, NS's yard service plan presents a least cost, most efficient solution to the DRR's yard capacity requirements by eliminating a significant number of the yards posited by DuPont's purely "spreadsheet" approach to terminal design. Indeed, while DuPont's Operating Plan included 123 yards that collectively are incapable of supporting the DRR's train operations, NS's Operating Plan reduces the number of yards to 71, while replacing many smaller DRR yards with "industrial support tracks" at 70 locations. NS Reply Exhibit III-C-12 sets forth the specifications for each DRR yard developed by witness Rieppi. NS Reply Exhibit III-C-11 compares the yards posited by DuPont (based upon its unsupported spreadsheet methodology) and the DRR yard network developed pursuant to NS's location-specific analysis of the DRR's requirements.

b. Traffic Flow and Interchange Points

NS's Operating Plan accommodates the DRR's peak year traffic volume of approximately eight million carload, intermodal, and unit train coal shipments in the least cost, most efficient manner, consistent with all applicable laws and regulations, rail industry "best

practices," and customer requirements. The DRR operates a total of 215,376 trains (127,742 road trains and 87, 634 local trains) over a rail network consisting of 7,343.55 miles of proprietary track and 818.87 miles over lines of other carriers,[285] (with respect to which the DRR "steps into NS's shoes" as a trackage rights tenant). The DRR originates, terminates, interchanges and classifies and/or blocks traffic at 71 yards and 70 industrial support facilities, and serves more than 6,000 customer facilities at more than 700 unique stations[286] and more than 150 interchange points.[287] NS's Operating Plan provides complete and uninterrupted train service for all of the DRR's selected traffic. (As discussed above, DuPont's Operating Plan failed to include literally tens of thousands of trains that the DRR would need to operate in order to serve its customers.)

NS's plan accounts for all of the road and local train services, intermediate classification and switching, and location-specific pick ups and setoffs required to meet the needs of the DRR's customers. NS's MultiRail analysis created a "trip plan" for each individual freight car (other than cars moving in unit train service), so that the DRR is capable of tracking the movement of each car, assuring that it is classified into the correct block (and train) at each intermediate yard, and providing customers with real time access to information about the status of their shipment.

DuPont's narrative evidence states that the DRR interchanges traffic "with other railroads across the DRR system." DuPont Opening III-C-4. DuPont's workpapers identify 66 "major"

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[285] Of that 818.87 miles of trackage rights, 111.3 miles is partially owned by NS. As such, the DRR will have to pay a proportional share of the expenses associated with that mileage equivalent to NS's share in the real world.

[286] *See* NS Reply WP "DRR Local Customers.xls."

[287] *See* NS Reply WP "Reply Train Interchange Events.xlsx;" "DUPONT RR Route Miles Opening Grading errata Reply.xlsx," Tab "New Interchange Tracks."

interchanges which, DuPont states, "reflect[] high volume interchange locations based on DRR traffic plus DuPont issue traffic interchange locations." DuPont Opening WP "DRR Interchanges.xlsx." The list of DRR interchanges set forth in DuPont Opening workpaper "DRR Interchanges.xlsx" is incomplete.

DuPont's list of interchange points does not include several interchanges with NS created by the "internal cross-over" segments posited by DuPont for "leapfrog" trains. *See supra* III-C-102-117. Specifically, DuPont does not identify Goshen, IN, Emory Gap, TN, Salisbury, NC, or Asheville, NC, as interchange points, even though (according to DuPont) trains would "leapfrog" between the lines of the DRR and the residual NS at those locations. Nor does DuPont's Operating Plan account for numerous interchange points necessitated by its decision not to include certain NS branch lines in the DRR network, even though DuPont selected virtually all of traffic that moves to and from customers located along those branch lines. Instead, DuPont's Operating Plan contemplates that the DRR would handle the traffic as far as the point(s) where such excluded branch line(s) intersect the DRR main line, and interchange cars to/from NS at that location, with NS serving the customer facilities.

For example, the DRR's selected traffic includes shipments originating or terminating at {{ }}. NS serves those locations today via a branch line extending from the NS main line at {{ }} DuPont's configuration for the DRR does not include the Seneca branch; rather DuPont assumes that the DRR would interchange traffic moving to/from {{ }} Likewise, the DRR's selected traffic includes shipments originating or terminating at two stations {{

}}[288] DuPont's configuration for the DRR does not include that branch line, so that the DRR would have to interchange traffic moving to/from {{ }}.

DuPont's Operating Plan does not account for the additional costs associated with those new interchange points. Because NS does not interchange traffic at {{ }} (or at various other points where branch lines excluded by DuPont from the DRR network intersect the NS main line), NS does not have interchange facilities at those locations. The DRR would be required to construct tracks to support interchange with the residual NS at the new interchanges it created. NS's track configuration includes interchange tracks at 143 locations, and its engineering evidence accounts for the cost of constructing them.[289]

c. Joint Use and Interchange Agreements

DuPont asserts that the DRR's Operating Plan reflects "interchange relationships with other Class I carriers and various regional and short line railroads" that are "based on NS's joint use and interchange agreements with such carriers." DuPont Opening III-C-4-5. DuPont posits that the DRR "steps into the shoes of NS and utilizes existing joint use and trackage agreements." *Id.* at III-C-5. NS has demonstrated that DuPont's Operating Plan violates the terms of NS's intercarrier agreements in numerous ways. NS's Operating Plan corrects those errors in DuPont's Operating Plan, and provides for the DRR to assume both the benefits and the obligations of NS under its intercarrier agreements. NS's Operating Plan also eliminates DRR routings posited by DuPont that are based upon the exercise of trackage rights in ways that violate the terms of NS's trackage rights agreements. *See supra* III-C-143-148.

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[288] *See* DuPont Opening WP "2010 Coal 80-Chem 40-Auto 60.xlsx."

[289] *See* NS Reply Ex. III-B-3.

d. Track and Yard Facilities

i. Main Line Track

NS's Operating Plan and RTC simulation identify significant main line and secondary track, yard tracks and facilities, and intermodal, automotive, and transload facilities that the DRR would need to serve its selected traffic, but which DuPont failed to include in the DRR's physical plant. As NS demonstrated above, DuPont's Operating Plan and RTC simulation failed to account for 1,191 trains—or 19% of the trains that the DRR would operate during the peak period. That fatal error alone renders DuPont's track configuration evidence worthless.

In addition, DuPont failed to account for the costs of building main line track that is part of NS's Partially Owned Lines, including the Conrail Shared Asset Area, the IHB, the BRC, and the TRRA. DuPont assumes that the DRR could exercise all of NS's rights and privileges as a co-owner of the Partially Owned Lines (including the right to operate trains over those lines) without paying anything for NS's ownership interest or shouldering NS's responsibilities as an owner. As NS has explained, the DRR is responsible for the partial ownership costs that NS bears in the real world, and must replicate NS ownership over those areas. *See* NS Reply III-F. NS has included those lines in its DRR Operating Plan but (unlike DuPont) has also accounted for the costs of building the main line track over those segments and has attributed to the DRR a portion of the costs based on NS's ownership stake. *Id.*

Finally, DuPont failed to build NS's main line track between Ashland Avenue Yard and Ogden Junction in Chicago. As NS demonstrated above (at III-C-143-145), that line segment is necessary to serve selected traffic that the DRR would interchange with UP and BNSF.

NS's Operating Plan, RTC simulation, and engineering evidence account for all the main line and secondary track that the DRR would need to execute a feasible operating plan.

ii. Side Tracks and Spurs

The general freight traffic selected by DuPont for the DRR originates or terminates (or both) at more than 6,000 customer facilities at more than 700 unique station locations along the DRR network.[290] The track configuration proffered by DuPont in its Opening Evidence does not include the railroad-owned spur tracks or industrial tracks required to provide local service at those locations.[291] While DuPont's RTC simulation shows DRR trains moving to and from customer locations in performing work events, DuPont's engineering evidence does not account for the cost of constructing and maintaining the carrier-owned spur and industrial tracks necessary to access the DRR's customer facilities. *See* DuPont Opening WP "DRR Opening Sticks errata.pdf."[292] Without those tracks, service to the DRR's general freight customers is not only not "feasible," it is physically impossible.

NS addresses this glaring deficiency in DuPont's track configuration and Operating Plan by including in the DRR's physical plant the sidings, spurs, and industrial lead tracks that the DRR would need to serve its general freight customers.[293]

iii. Yards

As NS demonstrates above (at III-C-36-52), DuPont's opening submission is devoid of any evidence demonstrating that the yards posited by DuPont are appropriately sized and configured to support the necessary classification and blocking of three million carloads of

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[290] *See* NS Reply WP "DRR Local Customers.xls."

[291] *See* DuPont Opening III-B-5-6. The spurs and industrial tracks that are owned by NS at customer facilities were shown on the track charts provided to DuPont in discovery. *See* NS Reply WP Folder "Documents Produced in Discovery III-C," Sub-folder "Track Charts."

[292] DuPont's Opening Evidence includes turnouts at many customer locations, but not the connecting spur and/or industrial tracks needed to access customer facilities.

[293] *See* NS Reply Ex. III-B-1.

general freight traffic per year, "swapping" of blocks of cars between DRR road trains, and the extensive operations required to provide local train service in accordance with the needs of the DRR's customers. Rather, the size and configuration of DRR yards, and DuPont's estimates of the DRR's yard locomotive and yard crew requirements are based entirely upon unsupported "spreadsheet" calculations that produced nonsensical results. For example:

- DuPont's "yard matrix" assigns identical classification facilities to the DRR's "major" yards at Elkhart, IN, Conway, PA, and Roanoke, VA, even though the number of cars per day to be classified at those locations (2,274 at Elkhart, 1,545 at Conway, 583 cars at Roanoke) varies widely.[294]

- DuPont's "yard matrix" assigns only four classification tracks at Bellevue, OH, where the DRR would be required to classify 1,760 cars per day in the peak year.[295]

- DuPont's "yard matrix" does not assign any classification tracks, car inspectors or yard locomotives or crews to the DRR's Enola yard, where the DRR would be required to classify 942 cars per day.[296]

As these examples illustrate, the failure of DuPont's operating "experts" to analyze the classification and car blocking operations that the DRR would need to perform—or even to consult the historical yard activity data provided by NS in discovery—resulted in a massive understatement of the capacity requirements at most DRR yards. At the same time, DuPont's nonsensical "yard matrix" exercise "oversized" other DRR yards and/or prescribed yards at

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[294] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRK LENGTH," Lines 1, 2 and; NS Reply Exhibit III-C-12 "DRR Yard Requirements," "Conway_PA_Requirements _Analysis_Final.xlsx," "Ekhart_IN_Requirements_Analysis_Final.xlsx," and "Roanoke_VA_ Requirements_Analysis_Final.xlsx."

[295] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRK LENGTH," Line 6; NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 2.

[296] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "CLASS TRK LENGTH," Line 56; Tab "DRR YARDS," Line 56; NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 8.

locations where they are not needed to support the DRR's train service. For example, DuPont's "yard matrix" calls for a yard with 7.12 miles of track at Greenville, SC, where, according to DuPont's Operating Plan, the only daily activity would be a handful of crew changes.[297] Likewise, DuPont built a yard with 7.69 miles of track at Bristol, VA, to serve as a crew change point.[298] A least cost, most efficient railroad would not build more than seven miles of yard track at either of those locations, and the DRR posited by NS does not.

The most serious deficiency in DuPont's yard service plan is its failure to provide a single "hump" yard anywhere on the DRR network.[299] As NS demonstrates above, "hump" yards enable a railroad to process large volumes of railcars far more efficiently than is possible at a "flat switching" yard. The absence of a hump yard anywhere along the DRR's 7,300-mile owned network is a fatal deficiency that renders DuPont's Operating Plan highly inefficient and infeasible for carload traffic.

In contrast to DuPont's nonsensical approach, NS witness Rieppi conducted a detailed analysis of the track capacity and configuration requirements at each individual DRR yard location, which is described above (at III-C-170-184). Based upon the volume of cars classified per day, he prescribed either a "hump" yard or a small, medium, or large flat switching facility at each location. He then evaluated the number of cars that would be present in a yard during the peak hour of each day, and the time that those cars would dwell in the yard, to determine the

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[297] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "DRR YARDS," Line 96.

[298] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "DRR YARDS," Line 64; DuPont Opening WP "Inspection Crews.xlsx."

[299] DuPont's "yard matrix" does not indicate that any DRR yard is equipped with a "hump" track. Moreover, DuPont's configuration specifies that all "[i]nterior yard switches and set-out track switches are hand-thrown switches." DuPont Opening III-B-8 (emphasis added). The specification of hand-thrown switches precludes "hump" operations, which require the use of power switches to direct cars moving over the "hump" track to the appropriate destination track.

"static" and "practical" track capacity required at each location. Witness Rieppi then allocated the required track capacity among the classification, arrival, and departure tracks based upon a more detailed examination of the number and size of the blocks of cars that would need to be accommodated at each facility. The result of this detailed analysis is a network of yards that is optimized to handle the specific traffic group selected by DuPont for the DRR.

NS's analysis posits that the DRR would require a total of 71 "hump" and "flat switching" yards. Figure III-C-24 summarizes the yards contemplated by NS's Operating Plan.

Figure III-C-24
DRR Yards by Type – NS Reply

Hump	8
Large Flat	5
Medium Flat	13
Small Flat	45
Total	71
Source: NS Reply WP "NS Yards List Reply.xlsx"	

NS's Operating Plan eliminates 45 yards posited by DuPont and adds 16 at locations where traffic volumes require.[300] In addition, NS replaces 20 yards with "industrial support" facilities at 19 locations[301] that contain substantially less track capacity. For example, NS replaces the 7.12 track-mile yard that DuPont posits at Greenville, SC, with two industrial support tracks totaling 2,000 feet (or 0.38 miles) of track.[302] In NS's efficient Operating Plan,

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[300] NS's Operating Plan also consolidates eight of the yards posited by DuPont into four yards. NS Reply Exhibit III-C-11, "Classification and Assignment Comparison at Common DRR Yards," illustrates the classification track, yard crew, and yard locomotive assignments at common yards identified by both DuPont and NS along the DRR.

[301] NS combined DuPont's yards at Park Manor/63rd Street and Colehour in Chicago into one Industrial Support Track.

[302] NS Reply WP "DRR Yard List Reply.xls" tab "Ind. Support Yards."

the crew changes posited by DuPont at Greenville, SC, take place on the main line, and the industrial support tracks are sufficient to enable the DRR to switch 13 cars per day into and out of trains at that location.[303] Likewise NS's Operating Plan replaces the 7.69 track-mile yard constructed by DuPont at Bristol, VA, with 2,000 feet (or 0.38 miles) of "industrial support" track. That trackage is adequate to accommodate the peak year switching volume of 16 cars per day at Bristol, VA, while crew changes can be accomplished on the main line.[304] At Sandusky, OH, where the DRR's peak year switching activity would average only eight cars per day, NS replaces the 5.40-track mile yard that DuPont posited with two industrial support tracks totaling 1,000 feet (or .19 miles).[305]

Figure III-C-25 indicates the DuPont yards that NS replaced with industrial support tracks. As indicated, the 20 yards posited by DuPont contained an aggregate of 73.45 miles of track. NS replaced that 73.45 miles of track with a total of 9.37 miles of industrial support track.

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[303] NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 114; NS Reply WP "DRR Yard List Reply.xls" tab "Ind. Support Yards." By developing a scheduled train service plan, NS's Reply Evidence makes it possible to space trains in a manner that permits the DRR to complete crew changes on the main line on less busy segments of the DRR network. By contrast, DuPont's operating plan reflects little (if any) consideration of the schedules on which DRR trains would operate.

[304] NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 114; NS Reply WP "DRR Yard List Reply" tab "Ind. Support Yards."

[305] *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx," Tab "DRR YARDS," Line 107; NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards" Line 131.

Figure III-C-25
DRR Yards Replaced by Industrial Support Track

Yard Name	Location	DuPont Size	NS Size	DuPont Track Mileage	NS Track Mileage
Alliance Int.	Alliance, OH	Other Yard	Industrial Support Track	1.8	0.19
Avon Lake Auto	Avon Lake, OH	Other Yard	Industrial Support Track	3.51	1.23
Bayside	Bayside (Sandusky), OH	Other Yard	Industrial Support Track	5.4	0.19
Binghamton	Binghamton, NY	Other Yard	Industrial Support Track	0.7	0.47
Bristol	Bristol, VA	Other Yard	Industrial Support Track	7.69	0.38
Bryan	Bryan, OH	Other Yard	Industrial Support Track	0.85	0.47
Bulls Gap	Bulls Gap, TN	Other Yard	Industrial Support Track	4.3	0.38
Danville	Danville, KY	Other Yard	Industrial Support Track	6.61	0.38
Dickinson	Dickinson, WV	Other Yard	Industrial Support Track	3.19	0.57
Dundee	Danville, VA	Other Yard	Industrial Support Track	2.77	0.57
Edgemoor	Edgemoor, DE	Other Yard	Industrial Support Track	1.18	0.47
Greenville	Greenville, SC	Other Yard	Industrial Support Track	7.12	0.38
Kankakee	Kankakee, IL	Other Yard	Industrial Support Track	3.92	0.57
Kimbrough	Kimbrough, AL	Other Yard	Industrial Support Track	1.03	0.47
Moberly	Moberly, MO	Other Yard	Industrial Support Track	5.55	0.47
Park Manor/63rd Street Colehour	CP 513, IL Colehour (CP 506), IN	Other Yards (2)	Industrial Support Track	8.8	0.57
Radford	Radford, VA	Other Yard	Industrial Support Track	3.22	0.57
Salisbury (Spencer)	Salisbury, NC	Other Yard	Industrial Support Track	1.01	0.57
Shenandoah	Shenandoah, VA	Other Yard	Industrial Support Track	4.8	0.47
		TOTAL MILEAGE:		**73.45**	**9.37**

In short, NS's Operating Plan supports the DRR's train operations with a group of yards, and smaller industrial support facilities, that is tailored to the specific requirements of the traffic

that the DRR would handle at each location. The Board should adopt NS's yard locations, sizes and configurations in lieu of the unsupported (and facially nonsensical) yard evidence presented by DuPont.

iv. Intermodal Facilities

The traffic selected by DuPont includes 5,179,802 units of peak year intermodal traffic. DuPont Opening Table III-A-1. Nearly two-thirds of those intermodal shipments are either local, interline forwarded or interline received traffic (*i.e.*, they originate or terminate, or both, at a points served by the DRR).[306] DuPont's Opening Evidence fails to account properly for the intermodal terminal costs that a railroad the size of the DRR would incur. DuPont understates the cost of both the facilities and the personnel required to serve the DRR's intermodal traffic, which constitutes 52% of all peak year selected traffic. *See* DuPont Opening III-A-4.

The most glaring deficiency in DuPont's Operating Plan for intermodal traffic is its failure to provide any DRR-owned intermodal terminals along its 7,300-mile proprietary network. A Class I railroad like the DRR could not handle nearly three million units of intermodal traffic without such essential terminal facilities. Witness Johnson determined that the DRR would, in fact, need 31 intermodal terminals that are not accounted for in DuPont's Operating Plan. Figure III-C-26 below identifies the locations at which, NS posits, those facilities would be built.

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[306] DuPont's Table III-C-1 (on page III-C-3) incorrectly classifies large volumes of cross-over intermodal traffic (including the intermodal shipments that DuPont posits would move via "internal cross-overs" with NS at points within the DRR network) as "overhead" traffic. In reality, a substantial number of those shipments would originate and/or terminate at points served by the DRR.

Figure III-C-26
DRR Intermodal Terminals

	City, State	Facility Name	OS
Large Facilities			
1	Atlanta, GA	Inman	148H
2	Atlanta, GA	Austell	135H
3	Chicago, IL	47th	CD517
4	Chicago, IL	63rd/Englewood	CD515
5	Chicago, IL	Landers	9514
6	Elizabeth, NJ[307]	Elizabeth Marine	7WJ
7	Harrisburg, PA	Harrisburg	HP113
8	Harrisburg, PA	Rutherford	HP108
Medium-Sized Facilities			
1	Bethlehem, PA	BethIntermodal	72681
2	Buffalo, NY	Buffalo	SR419
3	Charlotte, NC	Charlotte	378
4	Cincinnati, OH	Cincinnati	A0
5	Cleveland, OH	Maple Heights	RD110
6	Columbus, OH	Rickenbacker	10646
7	Front Royal, VA	Front Royal	13060
8	Huntsville, AL	Huntsville	339A
9	Kansas City, MO	Voltz	9720
10	Louisville, KY	Appliance & Buechel	282W
11	Memphis, TN	Memphis	547A
12	Morrisville, PA	Morrisville	MV4
13	Pittsburgh, PA	Pitcairn	PT337
14	St Louis, MO	St Louis	9612
Small Facilities			
1	Baltimore, MD	Baltimore	IP1
2	Birmingham, AL	Birmingham	791
3	Chicago, IL	Chgo-Calumet	518
4	Cincinnati, OH	Sharonville	CJ247
5	Decatur, IL	Decatur	9141
6	Georgetown, KY	Georgetown	A67
7	Greensboro, NC	Greensboro	287
8	New Orleans, LA	New Orleans	A826
9	Toledo Airline, OH	Toledo	CD292

[307] The DRR will use the private Elizabeth Marine Terminal facility. It will pay operating expenses to the contractor, but will not be required to pay for construction. Thus, the DRR builds a total of 30 intermodal facilities.

The intermodal facilities posited by NS are designated as either large, medium, or small facilities, based upon on the DRR peak year volume of intermodal traffic handled at each location. There are 8 large facilities, 14 medium facilities, and 9 small facilities. The large facilities are located in Atlanta, GA, Chicago, IL, Elizabeth, NJ, and Harrisburg, PA. Based upon the volumes that the DRR would be required to handle at each location (and on NS's experience in serving that traffic), large facilities are sized to accommodate more than 150,000 lifts annually. The medium terminals are designed to handle between 50,000 and 150,000 lifts annually, while the small facilities are designed to handle less than 50,000 lifts annually.

Not only did DuPont fail to account properly for the size and type of facilities necessary to accommodate the DRR's intermodal traffic, but it also understated the operating costs that the DRR would incur in handling that traffic. *See infra* Part III-D. NS's Reply evidence presents a "realistic alternative"—and the only feasible Operating Plan and associated costs—for the DRR's intermodal traffic.

The intermodal lift and ramp costs, as well as the personnel costs associated with intermodal traffic are discussed in Part III-D.

v. Automotive Facilities

The traffic selected by DuPont for the DRR includes 97% of NS's real world automotive traffic.[308] But DuPont's Operating Plan does not fully account for the physical facilities or personnel required to handle this service-sensitive line of business. DuPont posits that the DRR would have 13 Automotive Terminals.[309] However, DuPont's "yard matrix" identifies only eight locations equipped to handle automotive traffic—Auto Service Hub Voltz, Auto Service Hub

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[308] *See* NS Reply WP "DRR Selected NS Traffic.xlsx."

[309] *See* DuPont Opening WP "AUTO DISTRIBUTION DETAIL–2008-2010.xlsx."

Fostoria, Auto Service Hub Shelbyville, Multi-Level Operations Petersburg, Multi-Level Operations Avon Lake, Multi-Level Operations New Orleans, Multi-Level Operations Poole Creek (Hapeville) and Multi-Level Operations Buffalo (Cheektowaga).[310] As it did in designing the DRR's yards, DuPont applied a "mathematical" approach to sizing and configuring the DRR's automotive terminals that does not take into account the volume of traffic handled at a particular location. Specifically, each of the eight automotive facilities posited by DuPont built is an identical 1.80 miles in length, with four tracks totaling 3.51 track miles.[311]

DuPont's failure to consider the location-specific requirements of the DRR's automotive terminals is particularly egregious, given that its own workpapers acknowledge the substantial difference in the daily workload at each facility. For example, during the Base Year, NS handled a total of 14,655 vehicles at the Elkhart facility, while the Voltz facility handled 433,176 vehicles, nearly 30 times as many vehicles as Elkhart.[312] Based upon that massive difference in volume, DuPont's decision to build identical facilities at those two locations is, on its face, nonsensical.

Moreover, none of DuPont's automotive terminals is equipped with crew facilities, yard buildings, or other facilities necessary to support the handling of automotive traffic. *Id.* For example, DuPont failed to account for the paved surfaces required to provide a clean and stable loading/unloading area for new vehicles. Its specifications also do not include for guard rails or fencing, both of which are necessary to provide security for high-value vehicles. Nor does DuPont's design include the spur tracks necessary to hold the rail cars associated with the

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[310] *See* DuPont Opening WP "DRR Yard Matrix_Errata.xlsx," Tab "DRR Yards."

[311] *See* DuPont Opening WP "DRR Yard Matrix_Errata.xlsx." Tab "DRR Yards," lines 14, 25, 37, 38, 48, 62, 81, 120.

[312] *See* DuPont Opening WP "AUTO DISTRIBUTION DETAIL – 2008-2010.xlsx."

volume of automotive traffic handled at these yards. In short, DuPont's automotive terminals are inadequate to provide the level of service demanded by automotive shippers.

NS's Operating Plan provides for eight automotive terminals along the DRR network, at Buffalo, NY, Chicago, IL, Fostoria, OH, Hapeville, GA, Kansas City, MO, New Orleans, LA, Petersburg, VA, and Shelbyville, KY.[313] Those facilities include one large automotive facility (Voltz in Kansas City), five medium-sized terminals, and 2 smaller automotive facilities. The size of each terminal was determined by witness Johnson based upon the average peak year daily inbound and outbound volume of automotive traffic produced to DuPont in discovery. Large facilities are sized to handle 90 or more rail cars per day.[314] Medium facilities are sized to handle volumes ranging from 15 to 89 rail cars per day. Small facilities are sized to handle 14 or fewer rail cars per day. Each of the terminals is equipped with all of the facilities needed to handle automotive traffic in conformity with customer requirements, including rail spurs, paved loading/unloading areas, guard rails and security fencing, storage for the haulage vehicles that load and unload new cars, and facilities for terminal personnel.

The DRR automotive facilities provided for in NS's Operating Plan are identified in Figure III-C-27:

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[313] *See* NS Reply WP "DRR Yard and Facilities Reply.xlsx" Tab "Auto Facilities."

[314] Annual vehicle volume was converted to railcar volume using a standard 11.5 vehicles per railcar—the average number of vehicles loaded on a railcar by NS in the real-world.

Figure III-C-27
Automotive Facility Locations on the DRR

Name	Location	Size
Buffalo	Buffalo, NY	Medium
Chicago	Chicago, IL	Medium
Fostoria	Fostoria, OH	Small
Poole Creek	Hapeville, GA	Medium
Voltz Auto	Kansas City, MO	Large
New Orleans	New Orleans, LA	Small
Petersburg	Petersburg, VA	Medium
Shelbyville	Shelbyville, KY	Medium

vi. Transloading Facilities

The traffic selected by DuPont for the DRR includes a variety of commodities that currently move through transloading facilities on the NS system. A transloading facility is a location at which a commodity is transferred from railcars to trucks, for delivery to nearby customer facilities (or vice versa). Transloading facilities enable customers who are not directly served by a railroad, or who require less-than-carload shipments of a commodity, to take advantage of the economies of line-haul rail service. A transload facility may be dedicated to a single customer's traffic, or serve multiple shippers of the same (or similar) commodities.

Transload facilities have a variety of specialized equipment that may include loading and unloading racks with specialized piping to handle tank cars (for commodities such as carbon dioxide and ethanol); conveyor belts to transfer dry bulk commodities; portable pumps and piping to allow partial unloading from railcar to truck; truck washing capability for food grade commodities and plastic pellets; and boilers to create steam for cleaning and to transfer commodities at certain temperatures. Regardless of the types of commodities handled at a particular location, transload facilities are also generally equipped with paved surfaces to allow

truck access, a building to support billing, communications and other office functions, and lighting and fencing to provide security.

DuPont's selected traffic group includes traffic that moves through the 14 transload facilities that NS operates in the territory replicated by the DRR. However, DuPont did not account for any of the costs of building or operating transload facilities.[315] The transload facilities on the NS network are an essential element of the rail service that NS provides in connection with a wide range of traffic. *See supra* III-C-66-68.

DuPont's Operating Plan fails to account for transloading activities at these (and other) locations that are essential to meet the needs of the DRR's customers. NS corrects this serious deficiency in DuPont's Operating Plan by providing transload facilities at the 14 locations along the DRR network at which transloading operations are conducted today, (and must be conducted for DRR's selected traffic). The transload facilities posited by NS for the DRR are summarized in Figure III-C-28.

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[315] Information regarding NS's transload facilities was provided to DuPont in discovery. *See* NS Reply WP Folder "Documents Produced in Discovery III-C," "Bulk Transfer Facilities (NS-DP-HC-10559 to 10585).pdf;" "Bulk Transfer Facilities.xlsx" and "Bulk Transfer Additional.xlsx."

Figure III-C-28
Transload Facility Locations on the DRR

Location	Service Provider	# of Tracks
Augusta, GA	{ }	4
Baltimore, MD	{ }	5
Buffalo, NY	{ }	5
Charlotte, NC	{ }	6
Chattanooga, TN	{ }	4
Chicago, IL	{ }	6
Cincinnati, OH	{ }	4
Columbus, OH	{ }	7
Dalton, GA	{ }	4
Doraville, GA	{ }	4
Edgemoor, DE	{ }	4
Louisville, KY	{ }	4
Ferguson, KY	{ }	7
Spartanburg, SC	{ }	4

Some of the facilities identified in Figure III-C-28 are, in the real world, part of an existing NS rail yard, while others are not.[316] At the six terminals which are part of an NS rail yard, the switching of rail cars in connection with the transloading process is performed by NS yard crews. NS accounts for those switching activities in estimating the DRR's crew assignments.

NS's Operating Plan is the only evidence that takes into account necessary transloading facilities and activities that will be required by the DRR, another reason why NS's Operating Plan should be accepted by the Board.

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[316] Where transload terminals are not part of an NS rail yard, NS operates as either the licensee or contractor at each of those facilities. *See* NS Reply WP "DRR Facilities List Reply.xls," Tab "TBT Facilities."

e. Crew-Change Location/Times

i. Road Crews

DuPont states that "[t]he DRR follows the efficient modern railroad practice of calling train crews sufficiently in advance of a train's arrival at the designated crew-change point so that the crew is ready to board the train when it arrives and the in-coming crew has de-trained." DuPont Opening III-C-6. While such a practice might be possible at locations where there are crew reporting terminals, DuPont has made no provision for reporting terminals at the locations at which its Operating Plan creates new interchanges with the residual NS. For example, DuPont proposes that the DRR will interchange trains with the residual NS at Secoast, VA, near Petersburg. However, NS's nearest crew base is in Crewe, VA, nearly 40 miles away.

DuPont states that its crew districts reflect "a least-cost SARR's flexibility to maximize the efficiency of its crew assignments within the constraints of the federal '12-hour' (hours of service law)." DuPont Opening III-C-6. NS accepts DuPont's specification of the DRR's 48 Crew Districts. However, DuPont's estimate of the number of train crews required by the DRR is vastly understated, for several reasons. DuPont's Operating Plan failed to take account of literally tens of thousands of road and local trains that the DRR would be required to operate. That omission alone resulted in a substantial understatement of the DRR's crew requirements. In addition, DuPont's RTC simulation failed to account for a variety of factors (including random outages and the time required to provide service at customer facilities), that would increase the number of crews needed to cover the DRR's train operations. And DuPont's calculations fail to account for the dead-heading of crews that will be required to move crews to locations where they are needed. NS's Operating Plan corrects these deficiencies, and accounts for the number of crews that the DRR would need. *See infra* Part III-D.

f. Switching and Yard Activity

i. Locomotive inspections and fueling

DuPont assumes that the DRR can service its locomotive fleet with only four locomotive shops. DuPont Opening III-C-7. But, as NS has shown, DuPont's locomotive fleet (and corresponding locomotive servicing and repair requirements) are based upon a faulty Operating Plan and RTC simulation that fail to account for nearly 20% of the DRR's peak year train activity. Moreover, DuPont's self-serving "750-mile rule" for allocating responsibility for locomotive inspections between the DRR and connecting carriers results in a major understatement of the number of locomotive inspections that would take place on the DRR. *See supra* III-C-82-87. As a result of these errors, DuPont significantly underestimated the need for locomotive repair shops on the DRR. The four locomotive shops posited by DuPont are insufficient to perform the necessary inspections and repairs required for DRR locomotives. Based upon NS's Operating Plan, which accounts for all of the required train services, and posits a DRR that "steps into NS's shoes" with respect to both benefits and obligations under NS's intercarrier agreements, the DRR would require ten locomotive shops, including three system shops and seven division shops.[317]

DuPont's Operating Plan also understates the number of locations at which locomotive fueling must be available. DuPont provides fixed fueling platforms at only six of the 123 DRR yards it posits. *See* DuPont Opening WP "DRR Yard Matrix errata.xlsx." DuPont's self-serving "750-mile rule" for allocating responsibility for locomotive fueling is responsible, in part, for the

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[317] *See* NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx." System shops are larger than division shops, and provide a greater variety of repairs. NS has included three system shops, at Elkhart, Chattanooga, and Conway yards. There are seven division shops located at Bellevue, Birmingham, Decatur, Enola, Macon, Linwood, and Roanoke.

serious deficiency in DuPont's locomotive fueling plan. Indeed, as NS has shown, the "750-mile rule" would excuse the DRR from refueling locomotives used in connection with 96% of its merchandise trains and two-thirds of its intermodal trains. *See supra* III-C-83-84.

NS's Operating Plan accounts for the fueling of all locomotives as necessary along the system. NS's Operating Plan provides fixed fueling platforms at 24 of the DRR's 71 yards, at the same locations as NS's fixed fueling platforms, identified from information produced to DuPont in Discovery. *See* NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," and "Fueling locations.xls."

ii. Railcar inspections

(a) Inspection procedures

DuPont's Operating Plan provides for 1,500-mile inspections of coal trains and 1,000-mile inspections of non-coal trains at six yards on the DRR system. DuPont Opening III-C-7. NS does not challenge the frequency of these FRA-mandated inspections, and NS accepts DuPont's description of car inspection procedures. However, to the extent that DuPont expects that the DRR would be able to perform sufficient inspections on "originating trains by car inspection crews at fifteen (15) yard locations" to "at all times [comply] with FRA-mandated safety and inspection rules," it is greatly mistaken. DuPont Opening III-C-7-8. The provision of car inspection capabilities at only 15 yards is utterly insufficient to ensure safe, reliable railcar inspections—and thus operations—along the DRR. The real-world NS has railcar inspection areas at 30 of its yards. Thus, DuPont has provided for only 50% of the car inspectors on the NS today, despite claiming 92% of NS's traffic (measured by volume), meaning that the level of car inspection posited by DuPont could not meet federal law requirements, let alone the obligations that railroads have with one another to meet inspection and maintenance requirements for

delivery of railcars in interchange. NS's Operating Plan provides for railcar inspection at 29 DRR yard locations. *See* NS Reply WP "DRR Yard List Reply.xlsm."

While DuPont asserts that the DRR complies at all times with FRA-mandated safety and inspection rules, its evidence shows that it has not provided sufficient car inspection capacity to conduct the number of inspections that would be required by law of a railroad this size. DuPont posits that the DRR would acquire its railcars under full service leases; however, that does not excuse the DRR from its obligation to inspect all railcars as required by FRA regulations.[318] When the FRA cites a carrier for operating a railcar that does not meet FRA requirements, the carrier is liable for the violation, regardless of which party owns the car. DuPont does not explain how the DRR could handle 92% of the cars that NS transports today in compliance with FRA inspection standards with only 50% of NS's real-world inspection resources.

While DuPont is entitled to assume that the DRR would operate as a least-cost, most-efficient railroad, it has provided absolutely no support for its assumption that it could cut car inspection locations in half and still operate safely. DuPont points to no industry standard or real-world experience that would support the notion that its level of car inspection is sufficient. Indeed, it cannot point to any such data, as the inspection facilities at these 15 yards would simply not have the capacity to inspect the number of cars needing inspection on a daily basis.

In an attempt to make the insufficient number of yard inspection locations, DuPont asserts that "road train crews perform inspection functions at other yards as necessary." DuPont Opening III-C-8. The assumption that train crews would perform detailed inspections at other locations is not sound. Car inspectors require specialized, quarterly training; DuPont's Operating Plan does not account for the cost of providing such training to train crew personnel. The brake

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[318] *See* 49 C.F.R. § 215 (railcar inspection regulations).

tests commonly performed by train crews are less rigorous than car inspections. For example, train crews do not replace brake shoes if they show wear during a brake test. NS discusses the role of the car inspector in more detail in Part III-D.

Thus, not only would the car inspection crews that DuPont places at 15 DRR yards have more cars to inspect because of the concentration of inspections at so few yards, but they would likely face a significantly higher number of repairs because parts will go without inspection for a longer period of time, meaning that inspections are likely to take longer and be more complex. DuPont's inadequate number of car inspection locations also increases the possibility of serious incidents on the railroad, in particular as its Operating Plan permits railcars to cycle between terminals that do not have inspectors. NS's Operating Plan follows the real-world practice of ensuring that railcars do not cycle through multiple terminals without undergoing a mechanical inspection.

Moreover, even to the limited extent that DuPont did provide for railcar inspectors, it vastly understated the number of inspectors necessary. DuPont calculated the number of inspectors necessary based upon the number of trains it determined would pass through a yard during the peak period. *See* DuPont Opening WP "Inspection Crews.xlsx." However, as NS has demonstrated, DuPont's calculations are utterly unsupported because DuPont dropped tens of thousands of trains from its Operating Plan. Any calculations DuPont generated based on the number of trains DuPont claimed would originate, terminate, or pass through any of its yards are therefore inaccurate on their face. Accordingly, DuPont's estimate of the DRR's inspection crew requirements cannot be accepted.

DuPont's failure to provide adequate inspection capability leaves the DRR vulnerable to transporting unsafe railcars with undetected defects. NS's Operating Plan provides twice as

many railcar inspection locations and has developed procedures to ensure that railcars operating on the DRR are properly inspected and are safe and meet FRA standards. The car inspection procedures that would be used on the DRR are detailed in the workpapers accompanying NS's Reply Evidence. *See* NS Reply WP "Car Inspection.doc" NS's Operating Plan presents the best evidence of the needs of a SARR the size of the DRR.

(b) Trains requiring inspection

DuPont's approach to train inspections is similarly flawed. DuPont assumes that "each of the DRR's yards where trains originate is an inspection point and all trains are inspected either by a car inspection crew or by the train crew." DuPont Opening III-C-8. As explained above, the DRR cannot substitute train crews for trained car inspection crews. DuPont assumes that the DRR would require a total of 269 inspectors, who would be stationed at 15 DRR yards.[319] NS generally accepts DuPont's methodology for determining the number of inspectors necessary at individual inspection points. However, as with its other calculations, DuPont has significantly understated the train volumes because DuPont failed to account for thousands of necessary trains in its operating plan. As such, DuPont's train-volume calculations are inaccurate.

Witness Johnson assigned inspectors to particular locations based on the daily number of merchandise and coal/other bulk cars that would require inspection at each facility.[320] NS's Operating Plan contemplates a total of 464 inspectors at the DRR's major merchandise yards. In addition, NS assigns "line of road" inspectors, who travel along the line and repair cars while on-line. DuPont ignored this necessity and makes no provision for the repair of cars that break

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[319] DuPont Opening WP "Inspection Crews.xlsx."

[320] *See* NS Reply WP "Car Inspection.doc."

down along their route of movement. In addition, NS included car inspection managers who are responsible for the supervision, safety, and efficiency of car inspectors. *See* NS Reply Part III-D.

g. Trains and Equipment

i. Train Sizes

In its RTC Model, DuPont based the maximum length of DRR trains on the longest train (by train symbol) shown in the historical train data furnished by NS in discovery. *See* DuPont Opening III-C-9, n.7. NS accepts DuPont's methodology as a reasonable approach to determining maximum train sizes. NS applied the same methodology in developing the DRR's trains for purposes of NS's Operating Plan and RTC simulation.

ii. Locomotives

DuPont posits that the DRR could operate an 8,100-mile rail network with a locomotive fleet consisting of 483 ES44AC road locomotives, 101 GP38 locomotives to power local trains and work trains, and 80 SW1500 switch locomotives to perform all required yard operations.[321] DuPont assumes not only that the DRR would operate road trains in a 1/1 "Distributed Power" ("DP") locomotive configuration, but that every connecting carrier would follow the DRR's example, equip its locomotives with DP capability, and interchange trains in the DRR's preferred DP locomotive configuration. DuPont Opening III-C-10; Ex. III-C-5 at 8, n.8. DuPont's Operating Plan includes 123 yards, but provides yard engines at only 40 of those facilities, leaving 83 DRR yards without any "resident" motive power.

NS accepts DuPont's specification of ES44AC locomotives for DRR road trains, and GP38 locomotives for local and work trains. However, virtually every other element of DuPont's locomotive plan is either wrong or fatally deficient. DuPont vastly understates the

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[321] *See* DuPont Opening III-C-10, Table III-C-3.

number of locomotives that the DRR would need to operate its road and local trains. DuPont's proposal to operate all DRR road locomotives in DP configuration is both wasteful and inefficient, and its assumption that other carriers would adopt that practice defies real world operating practices. DuPont's selection of SW1500 locomotives for the DRR's extensive yard service requirements is nonsensical—that antiquated locomotive model's limited availability, high failure rate and limited tractive power make it an illogical choice for a least cost, most efficient railroad.

(a) Road Locomotives

The peak year fleet of only 483 ES44AC locomotives posited by DuPont is utterly inadequate to handle the DRR's road train and helper service operations. DuPont's estimate of the DRR's locomotive requirements is based directly upon operating statistics generated by its RTC simulation.[322] As NS has demonstrated above, DuPont's RTC simulation suffers from numerous flaws—not the least of which is its failure to account for 1,191 peak period trains—that render its outputs meaningless. Accordingly, DuPont's estimate of the DRR's locomotive requirements is not supported by any credible evidence.

Various assumptions underlying DuPont's Operating Plan also contributed to a gross understatement of the DRR locomotive requirements. For example, DuPont's assumption that every train interchanged between the DRR and a connecting carrier would be a "run-through" train with the power intact (DuPont Opening III-C-5) had the effect of reducing the number of locomotives that the DRR would need. However, that assumption contradicts the clear terms of NS's interline service agreements, which do not in all instances provide for run-through power.

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[322] *See* DuPont Opening III-C-1 ("The RTC Model output was directly used to calculate the DRR's locomotive hours and car hours for the peak week . . . The resulting statistics were utilized to determine overall locomotive requirements.").

To the extent that the DRR "steps into NS's shoes" (as DuPont posits, DuPont Opening III-C- 4-5), locomotives would run through on interline trains only to the extent that they do so today. Likewise, DuPont's failure to account for the classification and switching of general freight cars at intermediate yards, and its assumption that 83 of the DRR's 123 yards could be operated without even a single yard engine, led to a gross understatement of the DRR's yard locomotive requirements.[323] As NS demonstrates below, the DRR would need a fleet of 173 SD40 locomotives to accommodate the classification, switching and other tasks performed at the DRR's yards. DuPont's failure to model the DRR's operations completely and accurately—and, in particular, its failure to account for the time required to serve customer facilities—resulted in a further understatement of the DRR's road and local train locomotive requirements.

The inadequacy of the locomotive fleet posited by DuPont is clearly demonstrated by considering the level of utilization implied by DuPont's estimate. To put that estimate into perspective, conducting the DRR's operations with a fleet of only 483 road locomotives, 101 GP38's for local service, and 80 switch engines would require DRR locomotives to achieve an average of 205,000 locomotive unit miles ("LUMs") per year. In reality, during the year 2011, NS's actual locomotive fleet averaged 47,000 LUMs for all locomotives, while CSXT averaged 54,000 LUMs for all locomotives.[324] As these figures demonstrate, DuPont's locomotive fleet assumptions for the DRR are demonstrably inconsistent with reality.

Not only is the road locomotive fleet posited by DuPont grossly inadequate, but its assumption that the DRR would deploy those locomotives in DP configuration on all road trains

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[323] *Compare* DuPont Opening III-B-7 (positing 123 DRR yards) *with* DuPont Opening WP "DRR Yard Assignments_Open.xlsx," Tab "locos" (assigning yard locomotives at only 40 locations).

[324] *See* NS Reply WP "R1 Loco Miles.xlsx."

(DuPont Opening III-C-10) is both unrealistic and highly inefficient. As NS explained above (at III-C- 79-84), the environment in which Eastern railroads operate is significantly different than that experienced by Western carriers. In particular, trains operated by Eastern railroads like NS (and the DRR) are generally shorter in length and travel shorter distances than trains typically operated in the West. Most of the general freight trains that the DRR would operate are 8,000-9,000 feet in length.[325] The average length of haul for DRR trains is only 286 miles for general freight trains, 223 miles for coal trains and 571 miles for intermodal trains.[326] Given those operating parameters, the cost of outfitting DRR (and other railroads') locomotives for DP operations, and the extra time (and yard expense) required to position locomotives and to initialize communications between units for DP operation, are simply not justified. That is why NS's use of DP today is confined to a limited number of road trains such as PRB coal unit trains and long intermodal trains. Because DuPont chose to base its Operating Plan on NS's "real world" trains, the same considerations make DP a poor choice for the DRR.

According to DuPont's RTC simulation, certain DRR local trains would operate with two GP38 locomotives deployed in a DP configuration.[327] Such a practice makes no sense—local trains are neither long enough, nor do they travel a sufficient distance, to benefit from the use of DP. It is also inconsistent with DuPont's narrative evidence, which states that "[t]he DRR will

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[325] DRR unit coal trains and intermodal trains are generally longer, and NS's Operating Plan incorporates a DP locomotive configuration for many of those DRR trains (as it does for such NS trains today). *See* DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," Tab "Base Year Statistics."

[326] *See* DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," Tab "Base Year Statistics."

[327] Analysis of the workpapers underlying DuPont's RTC simulation indicates that 35% of the DRR's local trains operate with two locomotives in a DP configuration. *See* NS Reply WP "RTC Local Train Configuration in DuPont RTC.xlsx."

operate its local trains with a single GP38 locomotive wherever possible." DuPont Opening Ex. III-C- 5 at 2 (emphasis added); *see also* DuPont Opening III-C-11 ("local trains and work trains are powered by GP38 locomotives, using one locomotive per train where possible.").

In designing NS's Operating Plan, witness Johnson rejected DuPont's assumption that all DRR road trains would operate with locomotives in a DP configuration. Rather, he assumed that the DRR would utilize DP in a manner similar to the "real world" operating practices of NS and other Eastern carriers. In NS's Operating Plan, DP is not used on DRR local trains. Witness Johnson's more realistic assumption enhances the efficiency of the DRR's operations, and eliminates expenses that the DRR otherwise would be required to incur to implement DuPont's ill-advised "all DP" locomotive plan (including the additional cost of equipping the locomotive fleets of connecting carriers for DP operations).

NS's Operating Plan provides sufficient power to conduct the DRR's road train operations safely and efficiently. In this case, NS developed the DRR's locomotive requirements by individual location (rather than on a "systemwide basis"), to account for the DRR's fleet needs at particular locations. The methodologies that NS used to develop the correct number of DRR road, local, helper, and yard locomotives is discussed in Part III-D.

DuPont's road locomotive estimate includes a spare margin of { } percent. DuPont Opening III-C-11. NS accepts that figure as an appropriate out-of-service factor, but corrects the erroneous manner in which DuPont applied it. The figure that DuPont calculated is the proportion of total time; the actual spare margin must be adjusted slightly upward. The correct spare margin is { }[328] In addition to this spare margin,

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[328] As an illustrative example, assume that DuPont had determined that out-of-service time represented 10 percent of total time. If a spare margin of 10 percent were applied to the utilized

DuPont applied a "peaking factor" of 5.4 percent to reflect the increased locomotive requirement during the peak week of the peak year. *Id.* DuPont's peaking factor fails to account for the peaks that exist in the Base Year, by basing its calculations not on the Base Year, but on the peak year. *See* NS Reply Part III-D.

In total, the DRR would require a fleet of 977 ES44AC locomotives to accommodate its road train and helper service operations.

(b) Helper Locomotives

DuPont's Operating Plan provides for helper service at five locations on the DRR system. DuPont Opening Ex. III-C-4 identifies the DRR's "helper districts," specifies whether one or two additional road locomotives would be added to the train at each location, and states the number of trains per day that would require helper service during the peak period.[329] DuPont's Operating Plan and RTC simulation allow twenty (20) minutes to add helper units to a DRR train, and fifteen (15) minutes to detach the helper units at the end of a helper district.[330]

NS accepts DuPont's proposal to use ES44AC units for the DRR's helper service. NS also accepts DuPont's assumption that it would require twenty (20) minutes to add helper units to a road train and fifteen (15) minutes to detach them at the end of a helper district. In addition, NS adopts the five "helper districts" specified by DuPont, and incorporates them into NS's Operating Plan for the DRR.

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time, the results would account for only 9 percent of locomotive time—as 10% x 90% = 9%—and total locomotive time would not be accounted for.

[329] *See* DuPont Opening Ex. III-C-4; DuPont Opening WP "Train Summary From TRAIN FILE. xlsx."

[330] *See* DuPont Opening Ex. III-C-5 at 4.

However, DuPont's Operating Plan does not provide helper service at several other locations at which such assistance would be required. NS produced to DuPont in discovery a list of all the locations at which NS trains currently require helper assistance.[331] Figure III-C-29 lists the helper districts along the NS lines replicated by the DRR that were identified in the discovery materials produced to DuPont, but which DuPont failed to include in its Operating Plan for the DRR:

Figure III-C-29
NS Helper Districts Omitted From DuPont's DRR Operating Plan

Pusher On Location	Pusher Off Location	Total Trains Requiring Assistance
Aragon, GA	Rogers, GA	26
Cowan, VA	Roanoke, VA	76
Dickinson, WV	Elmore, WV	10
Elmore, WV	Alloy, WV	7
Radford, VA	Roanoke, VA	2

DuPont made a methodological decision to base its Operating Plan on NS's historical train operations. In particular, the DRR's trains are "adopted" from a list of real world trains that NS operated during 2009-2010. The maximum size of DRR trains is the same as that of the trains operated by NS, and the terrain over which those DRR trains operate is exactly the same terrain that NS trains encounter in the real world.[332] The laws of physics dictate that, if an NS train requires helper assistance to negotiate a difficult grade along a particular segment of its network, the DRR—operating trains of the same size and trailing tonnage over the same terrain—would require helper service as well. In addition, DuPont's decision to reroute merchandise and unit coal trains from NS's Heartland Corridor route to the DRR line between

[331] NS Reply WP Folder "Documents Produced in Discovery III-C," "Helper Service Locations (NS-DP-C-10310).pdf."

[332] DuPont Opening III-C-9, n. 7.

Chillicothe, OH and PD Junction, WV results in a new location (between Dickinson, WV and Elmore, WV) where helper service would be required.

NS's Operating Plan corrects this deficiency in DuPont's evidence by adding to DuPont's list of helper districts the additional locations set forth in Figure III-C-29.

(c) Switch/Work Train Locomotives

DuPont's Operating Plan provides that "[t]he DRR uses SW1500 locomotives for switch service." DuPont Opening III-C-13. The only rationale articulated by DuPont for selecting SW 1500 units for yard service is its assertion that "[t]his type of locomotive is commonly used by Class I and other railroads for such service." *Id.*

DuPont's choice of SW1500 model locomotives for the DRR's yard engine fleet is inconsistent with the realities of real world railroading, for several reasons:

First, it is highly unlikely that the DRR could locate a sufficient number of serviceable SW1500 units to satisfy its yard locomotive requirements. The SW1500 model was manufactured by General Motors Electro-Motive Division between June 1966 and January 1974. During that time, a total of only 808 units were built.[333] The total number of SW1500's owned by U.S. railroads in 2009 (the start of DRR's operations) was only 519 units.[334] Even based upon DuPont's vastly understated yard locomotive requirement (80 units), the DRR would have to acquire 15% of all of the SW1500 units in existence in the Base Year. Doing so would be

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[333] *See* http://en.wikipedia.org/wiki/EMD_SW1500.

[334] *See* JAMES W. KERR, THE OFFICIAL LOCOMOTIVE ROSTERS & NEWS OF NORTH AMERICA (2009 ed.) The figure represents the total number of unit owned by U.S. carriers as of 2009, and does not reflect the number that were still in active service.

particularly challenging because many of those locomotives are no longer in service.[335] Indeed, NS has only two SW1500 units in its locomotive fleet today.[336]

Second, with only 1500hp, a single SW1500 unit cannot generate sufficient tractive power to perform most switching operations, even at a "flat switching" yard. (For that reason, it would be necessary to "double" those units to conduct flat switching.) And the limited tractive power of the SW1500 model makes it totally unsuitable for "hump" yard operations. DuPont's Operating Plan assigns only one SW1500 locomotive to 26 of the 40 yards at which it bothered to provide any yard engines.[337] Operating alone, a single SW1500 locomotive would not have the tractive power necessary to shove the large cuts of cars that the DRR would handle every day at locations like Linwood, NC (1,238 cars classified per day), Allentown, PA (781 cars per day), Decatur, IL (769 cars per day), or Sheffield, AL (677 cars per day).[338] Thus, even if DuPont's yard locomotive estimate were accurate—and it is not—the DRR would need twice as many SW1500 units (160) to perform the switching services that DuPont assumes would be handled by 80 SW1500 units.

Third, because GM-EMD ceased production of the SW1500 model in 1974, any available SW1500 locomotives would be (in the Base Year) at least 35 years old. Accordingly, they would experience a higher failure rate than other locomotive models that DuPont could have

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[335] *See* JAMES W. KERR, THE OFFICIAL LOCOMOTIVE ROSTERS & NEWS OF NORTH AMERICA (2012 ed.) (listing number of SW1500s owned by all Class Is and Shortlines of North America).

[336] *Id.* at 100. DuPont's assertion that SW1500s are "commonly used" for switching service is, at best, disingenuous. While SW1500s are used for switching operations—they were never designed for road service—the vast majority of switching and yard operations on NS and other Class I railroads is performed with different, more powerful locomotive types.

[337] *See* DuPont Opening WP "DRR Yard Assignments_Open.xlsx," Tab "Locos."

[338] *See* DuPont Opening WP " DRR Yard Assignments_Open.xlsx;" DuPont Opening WP "DRR Yard Assignments_Open.xlsx," Tab "Locos;" NS Reply Ex. III-C-10, "Reply NS Yards—Operations.xlsx," Tab "Yards."

chosen for the DRR's yard service. Indeed, in 2010, NS's fleet of SW1500 locomotives had a failure rate of {{ }} percent (one of the highest failure rates among any NS locomotive type).[339] At a minimum, selecting SW1500s for yard service would require the DRR to allow for a much higher "spare margin" to account for the increased frequency of failures experienced by those locomotives in real world operations.

In short, it would be irrational for a least cost, most efficient railroad commencing operations in 2009 to choose the SW1500 model to handle yard operations across a newly constructed 7,300- mile owned rail network. Witness Johnson rejected the use of SW1500s for switching service, and instead equipped the DRR's yards with an appropriate number of SD40 locomotives. SD40s are used for yard switching operations at locations across the NS system today, and would provide more economical and reliable service for the DRR.

As discussed above, DuPont's Operating Plan fails to account for most of the work required to classify and switch general freight cars moving through the DRR's yards. As a result, DuPont's estimate of the DRR's yard locomotive fleet requirements is vastly understated. NS corrects this deficiency by providing a fleet of 173 SD40 locomotive units for switching operations at the DRR's yards. The number of yard locomotives allocated to each yard facility in NS's Operating Plan is set forth in NS Reply Exhibit III-C-11. The number of yard assignments, yard locomotives and yard crews (per shift) contemplated by NS's Operating Plan was developed by NS witnesses Johnson and Schaub, based upon the average number of car

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[339] *See* NS Reply WP "Failure Rate for NS and Non-NS Units – YTD 2010.pdf."

handlings at each yard during each shift. Witness Johnson accepts DuPont's use of a 15% additive to account for spare units that would be needed.[340]

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Figure III-C-30 summarizes the estimates of DuPont and NS regarding the number of locomotives that the DRR would require to execute a feasible operating plan for the DRR's selected traffic group.

Figure III-C-30
DRR Locomotive Requirements

Locomotive Type	DuPont Opening	NS Reply	Difference
ES44AC	483	977	539
GP38	101	291	190
SW1500	80	0	(80)
SD 40	0	173	173
Total	664	1,441	777

iii. Railcars

DuPont utilized shipment data produced by NS to determine car ownership. DuPont Opening III-C-13. DuPont's car ownership percentages are consistent with those developed by NS and NS does not challenge DuPont's mix of system cars and shipper-provided equipment.

DuPont's car requirements, however, are vastly understated. DuPont calculated the DRR's car requirements based upon operating statistics generated by its RTC Model simulation. *See id.* at III-C-14. As NS demonstrated above, those operating statistics are essentially meaningless because the model upon which that simulation is based suffers from numerous fatal flaws and omissions—not the least of which is DuPont's failure to incorporate into its model all

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[340] The inclusion of additional spare units for yard power is appropriate because those units are assigned to specific locations and thus do not travel throughout the system as do the DRR's road locomotive units.

of the necessary local train, yard train, or customer switching activity—let alone the all of the trains necessary to serve its customers. Accordingly, DuPont's railcar estimates are not credible.

As NS explains in greater detail in Part III-D below, NS's railcar fleet estimates are based upon the number of car-miles and car-hours derived from NS's detailed Operating Plan, which properly accounts for all of the activities required to handle merchandise traffic moving in DRR trains. NS's car fleet estimates are the best evidence of record, and should be adopted by the Board.

h. Crew Districts and Crew Requirements

DuPont's Operating Plan provides for "28 crew district locations in the DRR's North Region and 20 crew locations in the DRR's South Region." DuPont Opening III-C-6; *see also* DuPont Opening Ex. III-C-3. As DuPont explains, it selected its crew district locations based upon crew assignments used by NS in the real world. NS accepts DuPont's assumed crew district locations. The disparate number of crew districts in the North Region and South Region reflects the needs of general freight traffic.[341] Figure III-C-31 identifies the Crew Districts along the DRR:

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[341] Unlike unit train operations, in which loaded and empty trains are balanced, the movement of general freight and intermodal traffic is not perfectly balanced east-west or north-south. The need to balance crews and home terminals was taken into consideration in locating the DRR's home terminals and determining whether to have crews operate in turnaround service (leaving from and returning to the home terminal each day) or straight away service (departing the home terminal and spending a night at an away terminal, with a return movement on a subsequent day). Ideally in straight away service the crew can operate another train back to its home terminal after an overnight stay. When it can't, it is necessary to "deadhead" the crew—have it ride with another crew on a train back to its home terminal.

Figure III-C-31
DRR Crew Districts

North Region	
Allentown, PA	Elkhart, IN
Altoona, PA	Enola, PA
Bellevue, OH	Ft. Wayne, IN
Binghamton, NY	Harrisburg, PA
Chicago, IL	Kansas City, MO
Cincinnati, OH	Louisville, KY
Cleveland, OH	Norris, PA
Columbus, OH	Peru, IN
Conway, PA	Princeton, IN
Danville, KY	River Rouge, MI
Danville, IL	Rockville, PA
Decatur, IL	Rutherford, PA
East St. Louis, IL	Sandusky, OH
Edgemoor, DE	Toledo, OH

South Region	
Altavista, VA	Greenville, SC
Asheville, NC	Knoxville, TN
Atlanta, GA	Linwood, NC
Augusta, GA	Macon, GA
Birmingham, AL	Memphis, TN
Bulls Gap, TN	Meridian, MS
Chattanooga, TN	Mobile, AL
Cleveland, TN	New Orleans, LA
Dickinson, WV	Roanoke, VA
Elmore, WV	Spartanburg, SC

i. Road Crews

NS calculates the number of crew starts based upon outputs from its MultiRail simulation. NS's analysis produces separate crew starts for road and local trains, as well as for unit trains. NS's Operating Plan provides for 3,261 road crew personnel, stationed at the above-referenced crew districts.[342] DuPont's road crew requirements are based upon DuPont's fatally flawed Operating Plan and RTC simulation, and should be rejected. NS's road crew requirements take into consideration the needs of all of the trains that the DRR would have to operate and should be accepted by the Board as the best evidence.

ii. Yard Crews

As NS demonstrates above, DuPont's yard service plan fails to account for the primary activity at all but the smallest DRR yards—car classification and blocking. Moreover, DuPont

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[342] *See* NS Reply WP "DRR Operating Statistics Reply.xlsx."

proffered no explanation whatsoever as to how it determined whether to assign one, two, three, or four yard assignments at a particular yard. As a result, DuPont's estimates of the DRR's yard locomotives and yard crew requirements are unsupported by any record evidence, and should be rejected. *See supra* III-C- 44 to III-C-52.

In contrast, NS's Operating Plan properly accounts for all of the activities—including intermediate classification and switching—necessary to meet the needs of the DRR's general freight customers. NS's Operating Plan includes an appropriate number of yards that are optimally sized and configured to handle the DRR's carload traffic. Based upon those yard configurations, and the daily volume of trains, cars, and blocks moving through each facility, witness Johnson determined the number of yard assignments and yard crews that would be required to handle the workload at each DRR yard.[343]

NS's yard assignments are based on a detailed analysis of the DRR's anticipated workload at each location, and take into account not only the number of cars that would move through each DRR yard daily, but also the time of day at which trains (and blocks) would be scheduled to arrive and depart. As the following discussion shows, NS's location-specific analysis of the DRR's yard workload results in a substantial increase in the number of yard assignments required, due primarily to the failure of DuPont's "yard matrix" to take into account the primary function performed by those crews—car classification and blocking.

Witness Johnson determined the number of yard assignments required at each location based upon outputs from NS's MultiRail analysis. Specifically, the "Yard Clock" feature of MultiRail identifies the time at which trains and cars arrive at and depart from the DRR's yards. Witness Johnson reviewed the trains and cars that would originate or terminate at a particular

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[343] *See* NS Reply WP "DRR Reply Yard and Helper Assignments.xlsx."

yard during each 8-hour shift (e.g., 8:00 a.m. to 4:00 p.m.), in order to determine the inventory of cars that would require handling during that shift. Based upon the volume of cars handled in the yard, the number of inbound and outbound trains, and any industry switching to be performed by yard crews during a particular shift, witness Johnson assigned an appropriate number of yard assignments for each shift.[344]

Witness Johnson also took into consideration the size of the yard in determining how many yard assignments were required. At large hump yards where more than 390 cars would be handled per shift, witness Johnson assigned two crews to the hump area per shift. While one locomotive and crew pushes cars over the hump for classification, the other locomotive and crew pulls the next group of cars to be classified from the receiving yard area. This maximizes the efficiency of switching operations by ensuring that the hump does not remain idle for significant periods of time. Providing only one crew dooms a hump yard to failure. With only one crew, the hump would sit idle while the lone locomotive and crew shuttled between the receiving yard and the classification bowl. This would lead to inefficiencies and significant backlog of unclassified railcars at the yards, resulting in delays. At hump yards handling fewer than 390 cars per shift, witness Johnson assigned one hump crew per shift. Where appropriate, NS's Operating Plan also provides "pull back" crews to handle outbound cars that have been classified, based upon the number of cars classified and outbound train activity during each shift. The number of yard crew assignments at the DRR's flat switching yards was likewise based upon an analysis of cars per shift handled in the yard, the number of inbound and outbound trains, and any industry switching to be performed by yard crews. NS Reply WP "DRR Reply

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[344] Customers located adjacent (or in close proximity) to a yard facility may be served by a yard engine and crew, rather than a separate local train assignment.

Yard and Helper Assignments.xlsx" indicates the number of yard crew assignments required by the DRR at each yard. In total, NS's Operating Plan includes 1,071 yard crew personnel, including switch crews and utility crews—compared to the 496 yard crew members posited by DuPont.[345]

Finally, witness Johnson assigned one or more "utility positions" to expedite the work flow at certain yards. Yard switchmen work with different crews to expedite various tasks, such as coupling tracks, handling switches, protecting shove movements, lacing air hoses, and applying and releasing hand brakes. Utility persons may also assist in assembling blocks from various tracks into trains and setting out cars designated for the yard when a road train arrives. These positions are necessary to maintain the fluidity of yard operations and to alleviate congestion during the busiest periods. Witness Johnson assigned utility positions at all of the DRR's hump yards, and at seven other yards with substantial train and car switching activity: Allentown, PA, Atlanta, GA, Decatur, IL, Ft. Wayne, IN, Knoxville, TN, Roanoke, VA, and Sheffield, AL.

iii. Helper Crews

The locations at which DRR trains would require helper service are described at III-C-215-216 above. Witness Johnson determined the number of crews required to support that helper service by considering both the number of trains needing help over each district and the time required to assist each train during the peak period simulated by NS's RTC Model. NS's Operating Plan includes 90 T&E employees to support the DRR's helper service.[346] NS's RTC

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[345] *See* NS Reply WP "DRR Operating Statistics Reply.xlsx"; "DRR Reply Yard and Helper Assignments.xlsx;" DuPont WP "DRR Yard Assignments_Open.xlsx," Tab "Crews."

[346] *See id.*

simulation confirms that helper service was, in fact, needed to prevent trains from stalling at those locations.

2. Other

a. Car Repair Facilities

Because the DRR proposes to acquire its rolling stock pursuant to "full service" leases under which DRR cars would be repaired and maintained by the lessor (DuPont Opening III-D-6-7), DuPont assumed that the DRR would not need any car repair facilities or personnel, and none are provided for in the DRR Operating Plan. As NS demonstrated above (at III-C-87 to III-C-91), this assumption makes it physically impossible for the DRR to perform running repairs on foreign line cars that become disabled while on the DRR network, as required by the AAR's Interchange Rules and the terms of the NS intercarrier agreements that the DRR purports to adopt as its own. The increased "out of service" time resulting from DuPont's assumption would also impair the DRR's operations by preventing it from placing cars quickly back into service and increasing the number of cars required to serve its selected traffic.

NS addressed this issue by building two system shops on the DRR—one at Chattanooga, TN, and one at Elkhart, IN. In addition, NS's Operating Plan provides RIP tracks in 15 locations: Birmingham, AL (3 RIP Tracks); Elkhart, IN (3); Bellevue, OH (3); Conway, PA (3); Macon, GA (2); Linwood, NC (2), Enola, PA (2); Chattanooga, TN (2); Sheffield, AL (1); Decatur, IL (1); Cleveland, OH (1); Fostoria, OH (1); Allentown, PA (1); Knoxville, TN (1); Roanoke, VA (1). NS includes 1 expedite track at each of these 15 locations, as well as 11 other locations along the DRR: Atlanta, GA; Chicago (Ashland Ave), IL; Chicago (Calumet), IL; Ft. Wayne, IN; New Orleans, LA; Kansas City, MO; Meridian, MS; Buffalo, NY; Columbus, OH;

Memphis, TN; and Crewe, VA.[347] NS's Operating Plan is provides the necessary car repair facilities to account for running repairs that the DRR will inevitably have to perform along its system.

b. Train Control and Communication

DuPont assumes that "the DRR network employs a Positive Train Control ("PTC") system for all train control and communications." DuPont Opening III-C-21. As NS explains in Section III-F, DuPont ignores the reality that PTC has yet to be implemented by any railroad, and indeed the technology is not ready for implementation. DuPont cannot assume the use of a technology that is not available for use today, and certainly was not available in 2009 when the DRR would begin operations. DuPont's claim that it could reduce "investment expenditures" by "installing a PTC system from the outset" is irrelevant, for it is plainly not feasible for the DRR to install a PTC system years before any functional system existed. *Id.* Instead, the DRR would be required to construct a Centralized Traffic Control ("CTC") system for the beginning of operations in 2009 and then overlay a PTC system by December 31, 2015. This two-step process is consistent with both the real world—in which NS and all other Class I railroads are required to convert their CTC systems to PTC—and with the Board's holding in *AEPCO 2011* that the *AEPCO* SARR would be required to install PTC as an overlay to CTC in 2015. *See AEPCO 2011*, STB Docket No. 42113, at 33. NS's Operating Plan is designed with the assumption that PTC will not be installed until 2015. NS fully explains the costs and effects of this process in Section III-F.

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[347] *See* NS Reply WP "DRR Yard List Reply.xls;" "DRR Facilities List Reply.xls."

3. NS's RTC Model Simulation

DuPont's RTC simulation is based on an Operating Plan that is fatally flawed and entitled to no evidentiary weight. DuPont's Model does not even attempt to measure the capacity requirements for nearly 20% of the "peak period" trains that the DRR would have to operate to provide complete train service to customers—including DuPont itself! For that reason alone, any conclusions drawn from DuPont's RTC simulation regarding the adequacy of the DRR's physical plant, locomotive and car fleets, and personnel are worthless. Moreover, DuPont's RTC simulation fails to model the movement of DRR road and local trains completely and accurately; incorporates operating practices and assumptions that violate federal law, well-established industry safety practices, and the laws of physics; and does not account in any meaningful way for events—including random outages, foreign train crossings and restrictions on freight operations along Amtrak's Northeast Corridor—that would inevitably delay DRR trains on a daily basis. In short, DuPont's RTC simulation is utterly inconsistent with "the realities of real world railroading" (*WFA I*, STB Docket No. 42088, at 15), and its outputs are not supported by credible evidence. Accordingly, the Board should disregard them.

By contrast, NS witnesses Wheeler and Williams conducted an RTC simulation of the DRR's peak year operations based upon an Operating Plan that includes (1) all of the road and local train services that the DRR would have to provide; (2) a detailed car classification and blocking plan that tracks the transfer of general freight cars between trains as they move along the DRR network; (3) a local train service plan based on realistic estimates of the time required to serve customer facilities; and (4) physical plant (including main line and secondary track, yards, and intermodal, automotive and transload facilities) that are optimally sized to accommodate the DRR's operations. Unlike DuPont's "automated" operating evidence, NS's Operating Plan and RTC simulation are supported by thorough, location-specific analysis of the

DRR's operating requirements. NS's operating and RTC evidence are well-documented, and are fully consistent with applicable laws, real world operating practices and the requirements of the DRR's customers. Based upon that evidence, NS presents accurate estimates of the time, facilities, locomotives, cars, crews, and support personnel that a least cost, most efficient railroad would need to serve DuPont's selected traffic group.

Following is a description of the key operating inputs and assumptions that witnesses Wheeler and Williams utilized in conducting NS's RTC Model simulation:[348]

a. Train Size and Weight

In its RTC Model, DuPont based the maximum length of DRR trains on the longest train (by train symbol) shown in the historical train data furnished by NS in discovery. *See* DuPont Opening III-C-9, n.7. NS accepts DuPont's methodology as a reasonable approach to determining maximum train sizes. NS applied the same standard in developing the DRR's trains for purposes of NS's MultiRail analysis and RTC simulation.

NS's RTC simulation is based on train profiles (including train length, number of loaded and empty cars, total feet, total tons and trailing tons) for the DRR's non-unit road and local trains that were developed by NS witnesses Cheng, Johnson, and Smith as part of the MultiRail analysis of the DRR's general freight and intermodal train services. NS's witnesses Wheeler and Williams used the unit trains that DuPont included in its RTC simulation, which they adjusted for differences between the parties' peak year volumes.[349] While DuPont generally modeled coal trains with correct train lengths, numbers of loaded and empty cars, total feet, total tons and

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[348] The methodologies and processes employed by witnesses Wheeler and Williams in conducting NS's RTC simulation are documented in detail in the electronic workpapers set forth in NS Reply WP Folder "RTC."

[349] *See* NS Reply WP "RTC Unit Train Adjustments for NS Reply.xlsx."

trailing tons, its RTC simulation inexplicably did not include a number of unit trains that moved during the peak period and that DuPont had included in its calculation of DRR operating statistics.[350] NS's RTC Model corrects that error by including all of the required unit train movements. A complete list of the DRR trains input into NS's RTC Model is set forth in NS Reply WP "NS REPLY DRR TRAIN IDS.xls."[351]

b. Maximum Train Speeds

DuPont's Operating Plan and RTC Model simulation assume that all DRR non-coal trains would operate at a maximum speed of 60 MPH on main line segments, "conditions (including gradient and curvature) permitting." DuPont Opening III-C-5. DuPont posits that trains on branch lines would be subject to a speed limit of 40 MPH, "except where NS speed limits are higher." *Id.* NS's accepts a maximum train operating speed of 60 MPH for non-coal road trains on main line segments, other than "Key Trains" carrying TIH shipments. In order to comply with federal regulations (and industry wide practice for handling TIH shipments safely), NS's RTC Model restricts "Key Trains" to a maximum speed of 50 MPH. NS also accepts DuPont's assumption that DRR local trains would generally operate at 40 MPH on branch lines. In NS's RTC simulation, local trains are operated at a maximum speed of 60 MPH on main line segments and 40 MPH on branch lines. NS accepts DuPont's maximum train speeds for loaded coal and

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[350] *See* NS Reply WP "RTC Unit Train Additions for NS Reply.xlsx."

[351] In order to synchronize NS's RTC simulation with the Operating Plan developed in MultiRail, NS's RTC Model is based upon traffic levels and train activity during an "average" week during the peak year, rather than the "peak week." Accordingly, the track capacity requirements and other operating statistics generated by NS's RTC simulation are conservatively low.

bulk unit trains (50 MPH) and empty coal trains.[352] *See* NS Reply WP "Maximum Train Speed for NS Reply RTC.xlsx."

c. Road Locomotive Consists

NS accepts DuPont's specification of ES44AC model locomotives for DRR road trains and helper service. *See* DuPont Opening III-C-10, 12. NS's RTC Model adopts the locomotive consists for DRR general freight and intermodal trains developed in the MultiRail analysis presented as part of NS's Operating Plan. Locomotive consists for the DRR's coal and other bulk commodity trains were provided to witnesses Wheeler and Williams by witnesses Ron Johnson and Dewey Smith.

For the reasons discussed above (at III-C-77 to III-C-82), DuPont's blanket assumption that all DRR road trains would operate with their locomotives in a 1/1 DP configuration is both wasteful and inefficient. NS witness Johnson rejected that assumption, and limited the use of DP power configurations on DRR trains to those types of trains and operating circumstances where NS employs DP today. In NS's Operating Plan and RTC Model, DP locomotive configurations are used in connection with unit coal trains (including coal trains interchanged with Western railroads), long intermodal trains, and a limited number of general freight trains interchanged with western railroads.[353] The DRR trains that operate with locomotives in DP configuration in NS's RTC Model are identified in NS Reply WP "NS REPLY DRR TRAINS IN DP.xlsx."

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[352] DuPont Opening Ex. III-C-5 at 5.

[353] NS did, in the past, configure the locomotives on certain interline merchandise trains for DP operations, at the request of UP or BNSF. However, in light of the limited benefit to NS of utilizing DP power configurations on such trains, and the additional time and expense incurred to deploy locomotives in DP configuration, NS no longer does so.

d. Helper Locomotives

NS's Operating Plan and RTC Model include helper service at all of the locations specified in DuPont's Operating Plan. In addition, NS provides helper service at a number of additional locations (identified in Figure III-C-29 above) at which NS trains are assisted today (but which DuPont, without explanation, omitted from its list of helper districts). DuPont's Operating Plan is based upon trains that NS actually operated during the Base Year over the territory replicated by the DRR. The DRR trains are the same maximum length as NS's real world trains, and operate over the same terrain. Accordingly, the laws of physics require that DRR trains be assisted at all of the locations at which NS trains require such assistance today. A complete list of the locations at which NS's Operating Plan and RTC Model incorporate helper service is set forth in NS Reply WP "pushers.xlsx." NS's RTC simulation confirmed that helper power was, in fact, required at each of those additional locations.

e. Dwell Times At Origins And Destinations

Among many glaring deficiencies in DuPont's Operating Plan and RTC simulation is the failure to make adequate provision for the time required to serve more than 6,000 customers on the DRR network. DuPont's local train service plan is based upon "generic" dwell times at both general freight customer facilities and coal origins/destinations. The dwell times assumed by DuPont consistently understate the time actually required to provide local service. NS's Operating Plan and RTC Model correct this major deficiency in DuPont's evidence by applying location-specific dwell times developed by NS witnesses Johnson, Smith, and Benton Fisher, based upon NS's real world experience.

i. General Freight Traffic

DuPont's Opening Evidence does not articulate an explicit assumption regarding the time required to provide local service at "carload" customer facilities. However, DuPont's RTC

Model allocates 30 minutes of dwell time to complete any "work events" that involve picking up or setting cars off a train at a customer facility or intermediate yard. *See supra* III-C-130 to 132. DuPont's 30-minute dwell time assumption for pick ups and setoffs of general freight cars grossly understates the time required to serve "carload" customers or to switch cars (or blocks of cars) into and out of trains at intermediate yards. In particular, as NS has demonstrated, local trains do not simply "drop off" or "pick up" cars at the operating stations they serve. Rather, they perform a variety of tasks, including "spotting" cars on a particular track or in a particular order (as specified by the customer), sorting loaded and/or empty inbound and outbound cars, and setting off or picking up cars on interchange tracks. Where multiple customers are served at the same operating station, the local train may be required to repeat those tasks at each customer's facility. The particular "work events" required varies from station to station, and from day to day. For those reasons, the generic 30-minute dwell time applied by DuPont's RTC Model does not accurately reflect the time and resources necessary to provide "carload" rail service to the DRR's diverse customer group.

Moreover, DuPont's allocation of a single dwell time increment of 45 minutes to all DRR local trains operating in "turn service" is nonsensical. DuPont posits that the allotted 45 minutes is sufficient to account for both any switching that such trains are required to perform, and the time required for the train to reverse direction. In connection with the latter action, DuPont asserts that reversal of direction would be "facilitated" by the fact that DRR trains operate with their locomotives in DP configuration. DuPont Opening Ex. III-C-5 at 8. However, NS's review of the "turn service" local trains in DuPont's RTC simulation indicates that 65% of those trains operate with only one locomotive, consistent with DuPont's assumption that local trains would

operate with one unit "wherever possible."[354] Such trains could not possibly complete all of their assigned work at customer facilities, and reverse direction (which would require detaching the locomotive, running it around the train, and reattaching it on the opposite end of the train), within the 45 minutes allotted by DuPont. Indeed, DuPont's own RTC Model assumes that reversing the direction of a train requires 45 minutes.[355] In short, DuPont's own evidence proves that its dwell time assumption for local trains operating in "turn service" is inadequate.

NS's RTC Model addresses this fundamental deficiency in DuPont's RTC simulation by applying location-specific dwell times for DRR general freight origins and destinations. Those dwell times were developed by witnesses Johnson and Smith based upon their analysis of NS's real world local train operations at stations replicated by the DRR. The location-specific dwell times applied by witnesses Wheeler and Williams in conducting NS's RTC simulation, are set forth in NS Reply Exhibit III-C-15, identifies the locations at which NS applied a dwell time for local service in excess of 90 minutes, as well as the rationale for assigning that dwell time (such as the need to serve multiple customers at a single station, or to perform multiple tasks to meet customer-specific requirements). Based upon the realistic, location-specific dwell time estimates developed by witnesses Johnson and Smith, NS's RTC simulation presents a more accurate estimate of the time required to provide local freight service, and of the equipment and crews that the DRR would need to conduct its local freight operations.

ii. Unit Train Coal Traffic

The dwell times that DuPont assumes the DRR would experience at local coal origins and destinations are likewise significantly understated. NS's analysis of DuPont's RTC Model

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[354] *See* NS Reply WP "WP NS Reply RTC Local Train Configuration in DuPont RTC.xlsx."

[355] *See* DuPont Opening Ex. III-C-5 at 8-9.

reveals that DuPont assigned a destination dwell of 10 hours at Duke Energy's Belmont, NC, plant, 4-8 hours at a handful of other coal destinations and only 30 minutes at most other coal destinations.[356] In reality, NS coal trains experience much longer dwell times in serving those coal receivers. Information regarding the times that trains dwell at NS-served coal destinations was provided to DuPont in discovery in the locomotive event records. Figure III-C-32 sets forth a comparison of the dwell time allocated by DuPont's RTC Model at the DRR's major coal destinations, and NS's real world dwell times at those locations, as calculated from event records produced to DuPont in discovery.

Figure III-C-32
Comparison of Dwell Times at Major Coal Destinations

	DuPont Assumed Dwell	**NS Actual Dwell**	**Difference**
GA-Scherer	4.0	7.0	(3.0)
MD-Baltimore	6.2	26.0	(19.8)
MI-Monroe	0.5	12.4	(11.9)
PA-York Haven	0.5	5.5	(5.0)
OH-Sandusky	6.2	16.8	(10.6)
GA-Wansley	4.0	3.7	0.3
GA-Yates	4.0	7.7	(3.7)
NC-Belmont	10.0	21.3	(11.3)
IN-Burns Harbor	0.5	14.8	(14.3)
MI-Trenton	0.5	22.4	(21.9)
MI-River Rouge	0.5	14.1	(13.6)
TN-Emory Gap	6.0	11.2	(5.2)
KY-Brown	0.5	3.7	(3.2)
OH-Avon Lake	0.5	13.9	(13.4)

As Figure III-C-32 shows, DuPont's dwell time assumptions vastly understate the time required for DRR coal trains to provide service to its coal shippers. For example, while DuPont

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[356] *See* DuPont Opening WP "Dwells at ODs Coal.xlsx."

assigns a dwell time of only 30 minutes at Trenton, MI, the data provided by NS in discovery showed that NS coal trains actually dwell, on average, 22.4 hours at that location. Likewise, NS coal trains experience an average dwell of approximately 14 hours at Avon Lake, OH, River Rouge, MI, and Burns Harbor, IN, whereas DuPont's RTC Model allocates only 30 minutes of dwell time to serve those locations.

DuPont's RTC simulation also understates the dwell time that DRR trains would experience at coal origins. Figure III-C-33 sets forth a comparison of the dwell times allocated by DuPont's RTC Model at the DRR's major coal origins, and NS's real world dwell times at those locations.

Figure III-C-33
Comparison of Dwell Times at Major Coal Origins

	DuPont Assumed Dwell	**NS Actual Dwell**	**Difference**
IN-Francisco	4.0	8.6	(4.6)
IN-Princeton	0.5	10.7	(10.2)
IN-Oakland City (ISRR)	0.5	11.6	(11.1)
WV-Cannelton	0.5	14.1	(13.6)
IL-Mt Carmel	4.0	26.2	(22.2)
WV-Page	0.5	13.6	(13.1)
TN-Oneida	0.5	36.7	(36.2)
MI-Ecorse	0.5	16.6	(16.1)
WV-Port Amherst	0.5	3.5	(3.0)
KY-Somerset	0.5	1.6	(1.1)

As Figure III-C-33 shows, DuPont's RTC Model allows only 30 minutes dwell time at all but two of the DRR's major coal origins.[357] In reality, NS experiences average dwell times

[357] The 30 minute origin dwell time allotted by DuPont suggests that it treated many of these coal origins as "interchange" locations, rather than DRR-served origin points. However, only Oakland City, IN, is a point at which the DRR interchanges traffic with a short-line carrier.

between 10 and 36 hours at most of those locations. Even for the two locations at which DuPont assigned 4 hours (rather than 30 minutes) of origin dwell time, DuPont's assumption significantly understates NS's real world experience. In reality, NS coal trains experience, on average, 26.2 hours of origin dwell time at Mt. Carmel, IN, and 8.6 hours at Francisco, IN.

The Board's prior SAC decisions establish that the "best evidence" of the dwell time that a SARR would incur in providing service to coal shippers is the incumbent carrier's real world experience. *See, e.g., AEPCO 2011*, STB Docket No. 42113, at 29 ("defendants' operating plan better reflects dwell times by generally relying on real-world data at the origins and destinations that would be served by the SARR"); *WFA I*, STB Docket No. 42088, at 17 ("We use BNSF's dwell time as the best evidence of record because it is based on real world experience and WFA has failed to adequately explain how the LRR would shorten that dwell time."); *TMPA I*, 6 S.T.B. at 656 ("TMPA has failed to show that trains could be expected to be unloaded within the free time provided, in light of BNSF's experience.").

NS's RTC Model assigns origin and destination dwell time to DRR coal trains based upon NS's real world experience at those origins and destinations (as reflected in the data provided to DuPont in discovery).[358]

iii. Intermodal Traffic

NS allocated 24 hours of dwell time to DRR trains at intermodal origin and destination terminals.

f. Dwell Times at Yards

DuPont's Operating Plan and RTC simulation incorporate the following dwell time assumptions for trains at DRR yards:

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[358] NS Reply WP "DRR Coal Origin Destination Dwell.xlsx."

- 5 hours for coal trains requiring a 1,500-mile inspection;
- 3 hours for non-coal trains requiring a 1,000-mile inspection;
- 30 minutes for switching cars into or out of trains.[359]

The duration of the dwell time assumed by DuPont for trains requiring inspection is reasonable. NS accepts those dwell time assumptions, and NS witness Wheeler incorporates them into NS's RTC Model. However, as discussed above, DuPont's Operating Plan and RTC Model do not assign appropriate dwell time for other yard activities. As discussed above, DuPont failed to account for the fact that blocks of general freight cars would need to be removed from inbound road trains, classified and re-blocked for further movement by other DRR trains. DuPont's assignment of 30 minutes of dwell time to all road trains for "work events" at intermediate locations is not sufficient to enable the DRR to "swap" blocks of cars into and out of trains at DRR yards. Moreover, DuPont's RTC simulation does not even account for many of the intermediate stops that DRR road trains and "straightaway" local trains would be required to make as they traversed the DRR network.

By contrast, NS's Operating Plan and RTC simulation are based upon a "scheduled railroad" developed through the MultiRail analysis conducted by witnesses Cheng, Johnson, and Smith. Specifically, MultiRail developed train schedules for each DRR road train and local train, based upon NS's existing train schedules and the needs of the traffic selected by DuPont. Trains arrive and depart DRR yards on a schedule that takes into account the amount of time required for cars (or blocks of cars) to be added to (or removed from) inbound trains for those cars (or blocks), to be classified and re-blocked for movement in another train, and for that

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[359] DuPont Opening Ex. III-C-5 at 5-7.

outbound train to be prepared for departure.[360] Thus, the DRR carload operations modeled in NS's RTC simulation emulate the "scheduled" railroad concept followed by most Class I carriers in conducting real world general freight operations. The time that DRR trains dwell at intermediate yards in NS's MultiRail analysis reflects the operation of a "scheduled" railroad under ideal conditions. NS's RTC simulation modifies the arrival, departure, and dwell times experienced by DRR trains, to account for random outages and other events that inevitably delay trains in the "real world" of railroading.

g. Time Required to Interchange Trains With Other Railroads.

DuPont's Operating Plan and RTC simulation assign 30 minutes of dwell time to complete the receipt of a train in interchange from a foreign railroad. *See* DuPont Opening Ex. III-C-5 at 7. NS accepts this dwell time as reasonable, and uses a 30-minute dwell time for interchanges in its RTC simulation.

However, DuPont's Operating Plan and RTC simulation do not account fully for all of the locations at which the DRR would interchange traffic with NS and other carriers, nor do they account for the time that would be required for NS to receive trains in interchange from the DRR at the beginning point of the "internal cross-over" segments posited by DuPont. NS corrects these deficiencies by assigning 30 minutes for the NS crew to receive "leapfrog" trains in interchange from the DRR. In addition, NS's Operating Plan and RTC simulation account for the more than 150 locations at which the DRR would interchange traffic with other carriers.

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[360] As discussed above (at III-C-165, n. 256), NS's MultiRail analysis conservatively assigns 10 hours of "yard dwell" time to general freight cars being transferred between trains at DRR "hump" yards, and 8 hours to cars transferred at "flat switching" yards. Cars arriving or departing on DRR local trains are assigned a yard dwell of 20 hours.

h. Crew Change Locations/Times

DuPont's Operating Plan and RTC simulation assign 15 minutes of dwell time to complete crew changes. *See* DuPont Opening Ex. III-C-5 at 8. NS accepts this dwell time as reasonable, and uses a 15-minute dwell time for crew changes in its RTC simulation.

i. Time Required to Attach/Detach Helper Locomotives

DuPont's Operating Plan and RTC simulation assign 20 minutes of dwell time for helper locomotives to be attached to DRR road trains, and 15 minutes to detach helper units after they have finished assisting a train. *See* DuPont Opening Ex. III-C-5 at 4. NS accepts those dwell time assumptions as reasonable, and incorporates them into its RTC simulation.

j. Track Inspections/Maintenance Windows

DuPont's RTC Model significantly understates the impact of line maintenance activities on the DRR's train operations. Rather than accounting for track maintenance by establishing "maintenance windows" during which affected track segments (or individual tracks along a double-track line) would be closed to train activity, DuPont witness McDonald "selected" 34 line maintenance events for inclusion in his highly truncated list of "random outages" drawn from the real world data provided by NS for inclusion in DuPont's RTC Model.[361] The 34 maintenance-related delay events "selected" by DuPont reflect an assumption that the DRR would experience only 3.4 maintenance-related train delays per day—or one train delay for every 2,147 miles operated by the DRR—during the RTC simulation period. As NS's demonstrated above (at III-C-137), that assumption is utterly inconsistent with real world railroading.

NS's RTC Model addresses this deficiency by assigning appropriate maintenance "windows" to the DRR network during the RTC simulation period. *See AEPCO 2011*, STB

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[361] *See* DuPont Opening WP "Delay_2009(on-SARR).xlsx."

Docket No. 42113, at 28 ("First, defendants' operating plan models the impact of program maintenance on the operation of the SARR."). The specific "maintenance windows" incorporated into NS's Model, which were provided to witnesses Wheeler and Williams by FTI witness Baranowski, are set forth in NS Reply WP "NS Reply RTC MOW and Failures.xlsx."

k. Time for Random Failures/Line Outages

As NS demonstrated above, DuPont's list of "selected" outages excluded entire categories of delay events (such as locomotive failures, other mechanical failures, and delays attributable to FRA inspections and drug testing) that NS and other carriers experience on a daily basis. It also appears that DuPont exempted certain geographic locations on the DRR from the challenge of dealing with any random outages. DuPont then compounded the problem with coding errors that caused its RTC Model not to give effect to many of its "selected" random outages. The end result of DuPont's flawed methodology for estimating the effects of random failures, and faulty execution of that methodology, was an RTC simulation that gives little (if any) effect to the impact of unanticipated events on the DRR's operations. *See supra* III-C-130-140.

NS's Operating Plan and RTC Model correct this serious deficiency in DuPont's analysis by incorporating 468 of the 1,231 random outage events that occurred on the NS lines replicated by the DRR during the time period that corresponds to the DRR's peak period.[362] Based upon the assumption that the DRR would have in place a PTC-type train control system in the peak year, NS excluded any signal-related failures from the list of random outages input to NS's RTC

[362] A list of those random outages, which were provided to DuPont in discovery, is set forth in "NS Reply DRR – Delays.xlsx."

Model.[363] NS then randomly chose 50% of the remaining delay events for inclusion in its RTC simulation. The result is a realistic—indeed, conservative—estimate of the effects of unanticipated delay events on the DRR's train operations.

[363] For purposes of this case, NS adopted DuPont's assumption that simulation of the operation of a railroad with a PTC system in place can be accomplished by running the RTC Model with the signals turned off. However, NS does not believe that doing so is the most accurate way to simulate the operation of a PTC-equipped railroad.

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III. STAND-ALONE COST

D. OPERATING EXPENSES

In Part III-D of its Opening Evidence, DuPont presents its estimate of the annual operating expenses for the DRR, based on the traffic group and operating plan posited in Parts III-A and III-C, respectively. As shown in DuPont's Table III-D-1, DuPont estimates that the DRR's Base Year operating expenses would total $1.83 billion,[1] based on 2Q 2009 cost levels. As NS demonstrates below, DuPont's estimate understates by more than $1.2 billion annually the costs that would be required to provide the service and functions necessary to handle the traffic that DuPont selected for the DRR.

To put DuPont's operating cost estimate in perspective, DuPont's selected traffic group includes approximately 92% of the traffic that NS handles today in the territory replicated by the DRR. DuPont's SARR would handle those shipments across the vast majority of the miles over which NS transports them in the real world. As a result, DuPont's DRR replicates roughly 80% of the net ton-miles of the NS system.[2] Yet, DuPont's operating cost estimate represents less than 40% of the costs that NS incurs in transporting the same traffic in the real world. In other words, DuPont posits that the DRR could handle 4 out of every 5 net ton-miles that NS moves while incurring less than two-fifths of the costs.[3] In fact, as shown in Table III-D-1 below, DuPont contends that the DRR's net cost per ton-mile would be less than one-half of the expense

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[1] DuPont Opening at III-D-2.

[2] *Compare* DuPont's 125 billion net ton-miles for DRR (DuPont DCF workpaper "Exhibit III-H-1 Errata.xls," worksheet "Operating SAC") *with* NS's 159 billion net ton-miles (NS 2009 R-1 Annual Report, Schedule 755).

[3] *Compare* DuPont's annualized 2009 operating expenses of $2.04 billion for DRR (DuPont DCF workpaper "Exhibit III-H-1 Errata.xls," worksheet "Operating SAC") *with* NS's 2009 operating expenses, excluding depreciation, of $5.30 billion (NS 2009 R-1 Annual Report, Schedule 410).

per net ton-mile incurred today by NS and the other two Class I railroads operating in the eastern United States (CSXT and CN).

Table III-D-1
DRR 2009 Operating Expenses Are One-Half Of Eastern Class I Railroads

	Operating Expense, excl. Depreciation ($ Billions)	Net Ton-Miles (Billions)	**Expense per Ton-Mile (mills)**	DuPont DRR Compared to Other Class I RRs
DuPont DRR	$2.04	124.5	**16**	---
NS	$5.30	158.5	**33**	-51%
CSXT	$5.50	209.2	**26**	-38%
CN-US	$1.25	42.7	**29**	-44%

The notion that a railroad could serve NS's broad mix of traffic over a network of nearly 7,300 miles (including 23 mainline segments and 36 branch lines) and another 818 miles of trackage rights for only 16 mills per ton-mile is utterly unrealistic. While the STB has adopted operating expenses in the range of 16 mills per ton-mile in certain other SAC cases, the SARRs in those cases involved traffic groups that were largely—if not entirely—based on coal unit trains and other "trainload" traffic moving in "bridge" service. Notwithstanding DuPont's assertion that the DRR is "conceived" as a "trainload" railroad (DuPont Opening I-66), the reality is that the DRR's traffic group consists largely of general freight traffic that moves in "carload" shipments between hundreds of different DRR-served origins (or on-SARR junctions) and destinations (or off-SARR junctions). As NS demonstrated in Part III-C above, the operations required to support the DRR's general freight traffic (including car classification and switching, and providing local service to more than 6,000 customer facilities) are far more complex and time-consuming than "trainload" operations. It merits noting that DuPont's traffic and network assumptions result in the DRR's claiming 51% of NS's revenues for coal

shipments, and 83% of NS's revenues for non-coal shipments.[4] The fact that coal unit-train traffic accounts for a much smaller percentage of DRR's traffic base (as compared to NS's real world traffic) further underscores the implausibility of DuPont's operating expense evidence.

Moreover, DuPont's operating expense estimates are based directly on its ill-conceived operating plan and RTC simulation.[5] As NS demonstrated in Part III-C above, both DuPont's operating plan and its RTC simulation are fatally flawed and must be rejected. Accordingly, DuPont has failed to present any credible evidence to support its proposed DRR operating expenses, and those estimates must be rejected as well.

In this Part III-D, NS identifies the numerous reasons DuPont understates the expenses that would actually be incurred in operating the DRR. The most fundamental reason is that DuPont's operating plan and RTC simulation failed to account for all of the train services, yard operations and facilities necessary to serve the traffic that DuPont chose for the DRR. *See* NS Reply III-C. In addition to understating the operations, DuPont also assumed unit costs for equipment, personnel, and facilities that do not reflect the full costs that a railroad would incur in providing the required services to the DRR's customers. In the areas of Operating Managers, Maintenance of Way, and General & Administrative, DuPont's Opening Evidence reflects highly skeletal staffing that would not be adequate to manage safe operations, maintain the DRR's right of way and facilities, or properly account for the myriad functions required to be performed by a railroad with $6 billion in annual revenues. By undersizing many aspects of its operation and omitting others entirely, DuPont's operating plan and operating expense evidence fail to account

[4] *See* NS Reply WP "DRR Selected NS Traffic.xlsx."

[5] *See*, DuPont Opening at III-C-1 ("[t]he operating plan and the RTC Model .... provide the basis for many of the DRR's annual operating expenses shown in Part III-D"); III-D-1 ("[t]he RTC Model output was directly used to calculate the DRR's locomotive hours and car hours for the peak week . . . [t]he resulting statistics were utilized to determine overall locomotive requirements and car ownership requirements.").

for activities, equipment, facilities, and personnel (and the corresponding costs) required to operate the DRR.

Table III-D-2 below summarizes the parties' DRR annual operating expenses, at 2Q 2009 levels.

Table III-D-2
DRR 2009 Operating Expenses
($ in Millions)

	DuPont	NS	Difference
Train & Engine Personnel	$314.0	$582.8	$268.8
Locomotive Lease Expense	58.3	145.3	87.0
Locomotive Maintenance Expense	124.0	151.1	27.1
Locomotive Operating Expense	394.1	458.2	64.1
Railcar Lease Expense	307.5	420.1	112.7
Material & Supply Operating	3.8	11.1	7.3
Ad Valorem Tax	56.7	84.2	27.5
Operating Managers	53.7	128.5	74.9
General & Administration	57.6	172.1	114.5
Loss and Damage	14.1	12.8	(1.2)
Trackage Rights	42.3	74.0	31.7
Intermodal Lift and Ramp Cost	90.8	110.4	19.6
Motor Vehicle Cost	6.9	6.9	0.0
Insurance	35.1	69.6	34.5
Maintenance of Way	156.6	377.1	220.5
Residual NS Costs	0.0	3.2	3.2
Startup and Training	112.4	207.9	95.5
Ongoing annual hiring and training	$2.0	$17.2	$15.2
Total Annual Costs	**$1,828.0**	**$3,015.6**	**$1,187.6**

1. Locomotives

DuPont posits that the DRR would use three classes of locomotives: high-horsepower General Electric ES44AC units ("ES44's") for road and helper service; GP38 units for local service and work trains, and EMD SW1500 units for yard switching.[6] As explained in Part III-C

[6] DuPont Opening at III-D-3.

above, DuPont made numerous errors in its operating plan and RTC Model evidence that led it to vastly understate the number of locomotives required to handle the DRR's selected traffic. Those errors, as well as others that lead DuPont to understate the DRR's locomotive acquisition, maintenance, and fueling costs are discussed in detail below.

a. Locomotive Acquisition

i. DuPont Understates the Number of Locomotives

DuPont asserts that the DRR would require only 664 locomotives to handle its Base Year traffic volume.[7] By contrast, NS had 3,666 freight locomotives in service at the end of 2009.[8] DuPont offers no explanation (much less any persuasive rationale) for how the DRR could handle 80% of NS's ton-miles with only 18% of NS's locomotive fleet. DuPont's locomotive requirement estimate is especially nonsensical in light of the fact that DuPont did not re-design NS's train operations, but instead "adopted" NS's historical trains as DRR trains in its operating plan and RTC Model. *See* NS Reply III-C-9 to III-C-10. In other words, DuPont's operating plan contemplates that the DRR would operate trains of the same size and trailing tonnage as NS, over the same terrain.[9] DuPont did assume that the DRR would employ higher-horsepower AC units than NS typically runs, which produced a corresponding reduction in the number of locomotives per train of 12%.[10] And DuPont used the actual proportion of time that NS's units

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[7] DuPont Opening III-C-9. In Section III-D, DuPont erroneously refers to this count as what it needs "to transport its peak year trains" (DuPont Opening III-D-3). Review of DuPont's "DRR Operating Statistics_Errata.xls" workpaper confirms that 664 is a Base Year figure, labeled "2009 Locomotive Requirements."

[8] *See* NS 2009 R-1 Annual Report, Schedule 710.

[9] *See* DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Train List."

[10] DuPont's Base-Year road and local trains average 2.10 locomotives, 12% lower than NS's average of 2.38 units. *See* DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Base Year Statistics" and NS 2009 R-1 Annual Report, Schedule 755.

are out-of-service.[11] Given that DuPont assumed the DRR would run NS's trains with only slightly smaller-sized locomotive consists, and that those locomotives would be out of service at the same rate as NS, how could the DRR possibly handle 92% of NS's real world traffic with less than one-fifth the number of locomotives NS deploys?

This result reveals that DuPont vastly overstated the utilization that DRR units would be able to achieve. That overstatement is driven predominately by a significant understatement of the locomotive time that DuPont derived from its faulty RTC simulation and incorporated in its operating expense analysis. As an illustration, DuPont's "DRR Operating Statistics_Errata.xls" workpaper indicates that DuPont concluded that the DRR's road train (including helper service) requirements would be covered by 483 ES44 units. This same workpaper indicates that these ES44's would generate 98.8 million annual locomotive unit-miles ("LUMs"). That would represent an average utilization across all 483 units of 205,000 LUMs annually! In order to achieve such a high level of utilization, every DRR road locomotive would have to travel more than 550 miles daily, and be moving at an average of 25 miles per hour every minute it was not in the shop.[12] The level of utilization implied by DuPont's locomotive cost estimate is more than four times the level of utilization achieved by either NS or CSXT in their real world operations,[13] casting further doubt on the credibility of DuPont's estimate.

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[11] DuPont Opening III-C-11.

[12] 98.8 million miles / 483 units = 205,000 miles per year. 205,000 miles / 365 days = 560 miles per day. 560 miles / { }% out-of-service factor = approximately 25 miles per hour.

[13] NS's and CSXT's locomotives average 47,000 miles and 54,000 miles, respectively, based on dividing total running locomotive unit-miles reported in Schedule 755 by the number of diesel-freight locomotives reported in Schedule 710. *See* NS Reply WP "R1 Loco Miles.xlsx."

DuPont's massive understatement of the locomotive time required to serve the DRR's traffic group is attributable to a number of errors and omissions in DuPont's operating plan and RTC simulation:

1. DuPont's Operating Plan failed to include literally tens of thousands of road and local trains that are necessary for the DRR to provide uninterrupted train service for the issue traffic and other shipments in the DRR's selected traffic group.

2. DuPont's RTC Model failed to account for random outages, maintenance windows, speed restrictions for "Key Trains" and operating restrictions on Amtrak's Northeast corridor that would affect the transit times that DRR trains would incur moving across the DRR network. As a result, the transit times posited by DuPont are meaningless. *See* NS Reply III-C-117 through III-C-153.

3. DuPont failed to account properly for dwell time associated with performing pickups and setoffs of carload shipments at DRR customer locations. DuPont also understated the dwell time at origins and destinations of the DRR's coal traffic. *See* NS Reply III-C-121 to III-C-128, III-C-231 to III-C-236.

4. DuPont failed to account for yard dwell time for locomotives on trains that originate or terminate on the DRR, or for the time required to add blocks of cars to (or remove blocks of cars from) DRR trains at intermediate yards. *See* NS Reply III-C-121 to III-C-128.

5. DuPont failed to account for the imbalances in train flows and locomotive flows that occur on the DRR. *See infra* III-D-12 to III-D-14.

6. DuPont failed to calculate properly the peaking factor required to ensure that the DRR would have sufficient locomotives to handle variations in volume levels that occur throughout the year. *See* NS Reply III-C-213 to III-C-214; *infra* III-D-14 to III-D-16.

7. DuPont's fatally deficient yard service plan—which failed even to consider the car classification and blocking required to handle the DRR's carload business—provided for only 80 antiquated SW1500 engines to handle all switching at the DRR's 123 yards. *See* NS Reply III-C-216 to III-C-219.

DuPont failed to include all the trains required to handle the DRR traffic: As NS demonstrates at III-C-10 through III-C-23 above, DuPont's "automated" methodology for developing the DRR's train service plan failed to capture literally tens of thousands of road and local trains that would be required for the DRR to provide complete train service from origin (or

on-SARR junction) to destination (or off-SARR junction) for 725,661 carloads of the DRR's selected general freight traffic—including 76% of all issue traffic! *See* NS Reply III-C-14, III-D-20. DuPont also failed to provide complete train service in connection with thousands of cars that it rerouted from their real world route of movement over NS. *See* NS Reply III-C-22 to III-C-24. Correcting those fatal deficiencies in DuPont's operating plan adds thousands of additional trans to the DRR's operations, with a corresponding increase in the number of locomotives that the DRR would need to power its trains.

For example, DuPont developed the DRR's GP38 locomotive requirements based on a total of 44,893 local trains.[14] NS's Reply Evidence shows that DuPont's flawed train selection process missed 32,977 other local trains, or 42% of the 77,870 local trains that would be required to handle DRR revenue shipments on DRR segments.[15] Even under DuPont's approach to calculating the DRR's locomotive needs, accounting for those necessary trains increases the DRR's GP38 locomotive requirement by 75 units.[16]

DuPont's RTC Model does not generate accurate DRR train transit times: As discussed in detail in Part III-C above,[17] DuPont's RTC simulation suffers from numerous omissions and errors that render its results meaningless as a credible measurement of transit times that DRR trains would experience on DRR's lines. The factors contributing to DuPont's underestimation of transit time include incorrect grades in the DRR configuration, the failure of DuPont's RTC Model to account properly for random outages and maintenance windows, its failure to

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[14] *See* DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Local Locos."

[15] *See* NS Reply III-C-12, Figure III-C-1.

[16] The addition of 75 GP38 units does not correct DuPont's flawed assumption of only one unit per train in its fleet-sizing calculations, discussed below.

[17] *See* NS Reply III-C-117 through III-C-152.

incorporate a 50 MPH speed limit for "Key Trains" as required by federal law, its failure to take account of the operating "curfew" that restricts the movement of freight trains on Amtrak's Northeast corridor (over which the DRR would operate) and its failure to consider the effects of foreign train movements on DRR's operations. *See* NS Reply III-C-129 to III-C-143. When DuPont's RTC analysis is corrected to address these shortcomings, the amount of DRR locomotive time increases.

DuPont failed to account properly for dwell at customer locations: NS also demonstrated (at III-C-121 to III-C-128 and III-C-231 to III-C-236 above) that DuPont's Operating Plan and RTC simulation do not account properly for the time required to perform "work events" including picking up and setting off cars at customer facilities, or adding and removing blocks of cars from road trains at DRR yards. The STB has consistently held that a SARR cannot expect to reduce the customer dwell time that the incumbent experiences in the real world.[18] Incorporating realistic dwell times for train "work events" into the RTC simulation process results in greater DRR locomotive time.

DuPont failed to account for yard dwell time for locomotives on trains that originate or terminate on the DRR: As discussed throughout NS's Reply Evidence, DuPont has posited a stand-alone railroad that differs significantly from the types of networks and traffic groups that have been evaluated by the STB in prior SAC cases. Not only is the DRR unprecedented in geographical scope, its mix of single-car and multiple-carload shipments requires handling by multiple trains between yards and terminals that are local to the DRR network. In most prior cases, the Complainant has posited a SARR that transports unit train shipments that cycle

[18] *See, e.g., WFA I*, STB Docket No. 42088, at 17 ("We use BNSF's dwell time as the best evidence of record because it is based on real world experience and WFA has failed to adequately explain how the LRR would shorten that dwell time.").

continuously between mines and either destinations or interchanges, and/or SARR's that provide overhead "hook and haul" service with trains moving intact between interchanges with the residual incumbent. In such cases, the vast majority of the train movements occur in complete "trainload" sizes. That is not the case for the DRR. The DRR requires extensive yard operations and facilities to classify its merchandise traffic, must operate local trains that serve more than 6,000 customers at more than 700 station locations, and serve directly more than 40 intermodal and automobile ramps.[19] Thus, tens of thousands of trains originate from or terminate at yards located on the SARR network. Locomotives will be required at all of those terminals to originate outbound shipments, and locomotives will arrive in yards at the end of their train runs. DuPont made absolutely no effort to incorporate this critical reality into its operating plan. By including no yard dwell time between train movements,[20] DuPont effectively assumes both that every train would have locomotives that were immediately available for departure, and that on arrival of a train at its destination yard, the locomotives would instantaneously be switched to and depart on another outbound train.

In order to address this shortcoming in DuPont's locomotive calculations, NS examined the origins and destinations of merchandise, intermodal, and multilevel trains on the DRR. Table III-D-3 below shows that 82% of those DRR road trains are built on DRR and originate from local yards or terminals, and 81% terminate locally at DRR yards or terminals. Indeed, 69% of all DRR merchandise, intermodal, and multilevel trains both originate and terminate on the DRR. Because these trains do not interchange or run-through with other carriers, the DRR would be responsible for ensuring that units are available at the origination point, and would also

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[19] *See* NS Reply WP "DRR Local Customers.xls."

[20] DuPont's RTC model includes 0 minutes at origin and destination for virtually all road trains moving between DRR terminals. *See* DuPont WP "DRR 9 Errata.TRAIN."

be responsible for re-assigning the units to other trains at the destination point—and for any dwell time before their subsequent departure.[21]

Table III-D-3
Proportions of DRR Trains Originating or Terminating at DRR Yards or Terminals[22]

	Originate on DRR	Terminate on DRR	**Originate and Terminate on DRR**
Merchandise	85%	85%	**77%**
Intermodal	77%	73%	**52%**
Multilevel	72%	72%	**44%**
Total	**82%**	**81%**	**69%**

Recognizing that locomotives do not simply "appear" at the origins where they are needed, and that repositioning road locomotives for their next movement takes time, NS analyzed the DRR train arrivals and departures to determine, for each location, the number of locomotives that would be available on inbound trains and the number that would be required to power outbound trains.[23] Even at large terminals, where the frequency of train arrivals and departures results in a constant flow of locomotives that reduces dwell time between train movements, there would be some time involved in switching engines between trains. DuPont did not account for that time. NS operating witness Johnson estimated the minimum time between the arrival of locomotives on an inbound train and the time at which those units could reasonably be expected to be available for departure on an outbound train to be 2.0 hours. Based on this minimum time, and the actual inbound and outbound flows at each DRR terminal, NS

[21] DuPont effectively concedes that it has omitted this component of locomotive time, as it purports to identify only the "intermediate setting out or picking up of blocks of cars" (DuPont Opening at III-C-10, emphasis added)—which refers only to the stops along the route of an individual train's movement, and not the locomotive time between train assignments.

[22] *See* NS Reply WP "Locomotive Fleet Sizing for NonUnit NonLocal Trains.xlsx."

[23] *See* NS Reply WP "Locomotive Fleet Sizing for NonUnit NonLocal Trains.xlsx."

determined that the locomotive run-time for units on DRR's merchandise, intermodal, and multilevel trains must be increased to account for yard dwell between train assignments.[24]

DuPont fails to account for imbalances in train flows and locomotive flows: In addition to its failure to account for locomotive dwell time that occurs at yards between train assignments, DuPont did not address the imbalance in train (and locomotive) flows that would inevitably occur across the DRR's 8,100-mile network. DuPont selected a diverse traffic base that moves over a variety of routings between dozens of terminals, and identified the trains that NS used to move the traffic.[25] In real world railroading, non-unit train traffic is frequently characterized by directional flows that are not perfectly balanced. Indeed, analysis of the DRR's train list reveals significant directional imbalances—imbalances that DuPont incorrectly assumed would represent no costs to the DRR.[26]

For example, DuPont adopted for the DRR thousands of NS's trains that originated or terminated at Birmingham, AL. Specifically, DuPont's DRR operating-expense calculations include 5,103 DRR road trains[27] that originated at Birmingham, AL, in the Base Year, but only 4,629 DRR road trains that terminated there.[28] This directional imbalance—which amounts to more than one train per day— is exacerbated when DuPont's locomotive assumptions are considered, as the disparity between inbound and outbound locomotive flows increases to 12%. Based on DuPont's operating plan, on average 29 locomotives are needed to power outbound

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[24] *Id.*

[25] *See* DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Train List."

[26] *Id.*

[27] These totals include merchandise, intermodal, and multilevel trains, but do not include either unit trains (which are assumed to have balanced flows in each direction) or local trains (which are powered by a different class of locomotive).

[28] DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Base Year Statistics."

trains departing Birmingham each day, but only 25 locomotives arrive there at the end of their train run. Accordingly, the DRR would obviously be required to reposition locomotives to Birmingham from other terminals that had an excess of inbound locomotives. The time and expense associated with such repositioning movements must be included in the DRR's operating costs. By not accounting at all for the repositioning of locomotives in response to directional imbalances on the DRR network, DuPont submitted an infeasible operating plan that would bring the railroad to halt—terminals like Birmingham would never get the additional engines that they need for departing trains, while locomotives piled up at other terminals that did not need them.

In addition to needing to address imbalances among flows between its local DRR terminals, the DRR also shares in the imbalances of locomotive flows on trains that are interchanged in run-through service. Despite claiming that its DRR road locomotive requirements "take into account the need to equalize the locomotive power used in run-through service for the NS and other interchange trains,"[29] DuPont's operating expense calculations make no adjustment to account for the fact that the interchange trains are also not perfectly balanced. For example, there is an imbalance of 18% for locomotive flows over the DRR's Meridian, MS interchange. At Meridian, the greater flow of eastbound trains bring an average of one extra locomotive each day onto the SARR than the DRR's westbound trains return to the KCS and UP. This imbalance of nearly 400 locomotives over the course of the year must be accounted for, in order to ensure that eastbound trains can continue to get the necessary power.

On Reply, NS designed an operating plan that serves the traffic selected completely and efficiently. Not surprisingly, that plan has imbalances in train flows and in locomotive flows, just as railroads incur in the real world. NS examined the results of its train plan and locomotive

[29] DuPont Opening at III-C-9 to III-C-10.

flows by direction for merchandise, intermodal, and multilevel trains, and increased DRR locomotive run-times for these train types to account for the need to reposition units to where they are needed in order to sustain the operations.[30]

DuPont understated the "peaking factor" required to address traffic peaks in the Base Year: DuPont calculated a peaking factor of 5.4% based on its comparison of the number of trains in the peak week to an average week.[31] To perform this calculation, DuPont relied upon its projection of train movements in the Peak Year, including its addition of a considerable number of growth trains that will be needed to handle the significant volume increases that DuPont projected. However, DuPont's approach significantly "smooths out" the seasonality in train flows that exists in the Base Year. DuPont started with a distribution that reflected the peaks and valleys that actually occurred in the Base Year, and then reduced the magnitude of those fluctuations. Put differently, calculating the peaking factor based on DuPont's DRR Base Year trains (rather than Peak Year) indicates that a much greater increase in the number of locomotives would be needed to handle variations in volume levels that occur throughout the Base Year than the 5.4% that DuPont posits.

Table III-D-4 below compares the average number of trains per week and the number during the peak week for DRR's Base Year trains, with the corresponding peak year figures that DuPont used in calculating its peaking factor.[32] As shown in the table, the difference between the "peak week" and the average week in DuPont's Base Year is 9.9%, nearly twice the difference that DuPont calculated based on its assumed Peak Year trains. As a result, the

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[30] *See* NS Reply WP "Locomotive Fleet Sizing for NonUnit NonLocal Trains.xlsx."

[31] DuPont Opening at III-D-4.

[32] *See* DuPont WPs "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Train List" and "Coal Train List.xlsx," worksheet "Train Count by Day and Peaking."

peaking factor on which DuPont relied falls short of meeting the locomotive requirement for the traffic levels in 12 weeks in the Base Year—nearly an entire quarter of the year! DuPont should not be permitted to assume away actual seasonality in traffic flows through its projections into the future, and it cannot be allowed to develop its locomotive requirements for the Base Year in a manner that fails to address "the seasonality of the traffic and a carrier's obligation to have sufficient locomotives to serve its customers during peak periods," as the Board stated in articulating the need for the peaking factor in the *TMPA I* decision.[33] This represents yet another assumption by DuPont that renders its DRR operating plan infeasible. The STB should reject DuPont's 5.4% peaking factor, and calculate the DRR's Base Year locomotive requirements in a manner that properly incorporates the seasonality and ensures that fluctuations in demand will be met.

Table III-D-4
DuPont's Peaking Factor Understates the Peak Needs in the Base Year[34]

	DuPont Peak Year Trains	DuPont Base Year Trains	DuPont Base Year plus Missing Trains
Weekly Average	5,033	3,559	4,243
Peak Week	5,303	3,912	4,595
Difference	+270	+353	+352
Peaking Factor	**5.4%**	**9.9%**	**8.3%**
# of Weeks More than 5.4% above Average	**0**	**12**	**11**

The above errors and omissions identify the many ways in which DuPont considerably understated the amount of locomotive time, and thereby the number of locomotives, for which the DRR is responsible. There are five other aspects of DuPont's locomotive estimates that also

[33] *TMPA I*, 6 S.T.B. at 661.

[34] *See* NS Reply WP "DRR Peaking Factor NS Reply.xlsx."

serve to understate the motive power required to handle the DRR's traffic: (1) Intermodal trains with 3 units, (2) Local trains, (3) Yard switching assignments, (4) Helper service, and (5) Spare margin.

Intermodal Trains: The DRR's selected traffic (and associated trains) include more than two dozen "premium" intermodal and intermodal train assignments that typically operate with three or more locomotives in order to ensure that they meet their service requirements and transit time commitments. These are time-sensitive trains for which it is critical to maintain train schedules and make cut-off times to meet customer commitments. The additional locomotive allows the train to operate at maximum allowable track speeds on a consistent basis, maintain speed without requiring helper units, and accelerate to maximum track speed quickly after stopping or slowing. The NS locomotive event records produced to DuPont in discovery showed that more than 5,000 trains that were used to handle the revenue shipments selected for DRR operated with three or more locomotives.[35] {{

}} DuPont failed to explain how it could operate the same trains as NS with the same level of service required by the subject shippers, with nearly 25% fewer horsepower than was used to power them in the real world. For these specific "premium" intermodal and intermodal trains that operate with three or more locomotives, NS adjusts the DRR's locomotive

[35] NS Reply WP "Documents Produced in Discovery III-D," Tab "Locomotive Event."

requirements to ensure that the total HP for these trains is consistent with how they operate in the real world, in order for the DRR to provide at least the same level of service that NS does.[36]

Local Trains: DuPont estimated the number of locomotives required for DRR local trains in workpaper "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Local Locos." In that workpaper, DuPont calculated the DRR's locomotive counts based on the number of local trains by yard, based on the assumption that all local trains would operate with only one locomotive. This assumption is not only suspect on its face, but is also clearly inconsistent with other calculations that DuPont performed in the same workpaper, where it calculated DRR locomotive unit-miles with an assumption that local trains would average 1.4 units per train.[37] It is also inconsistent with DuPont's RTC simulation, in which 35% of the DRR's local trains operate with two locomotives in a DP configuration.[38] DuPont's fleet-sizing calculations must recognize that some DRR local trains will be powered by two or more units.[39] This understatement is separate from, and in addition to, DuPont's failure to account for any locomotives to power the nearly 33,000 local trains that DuPont "missed" in developing its operating plan.[40]

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[36] *See* NS Reply WP "Intermodal Locomotive Requirements.xlsx." NS operating witness Johnson determined that this approach represents the absolute minimum number of locomotives, as there are many situations where a consist of fewer ES44 units will not be able to replace adequately 3+ lower HP units, and the DRR will require as many, higher horsepower units. Nevertheless, NS incorporates this horsepower-based adjustment for these trains, in order to provide a consistent basis for its correction to DuPont's assumed fuel consumption rate, discussed below.

[37] DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Base Year Statistics."

[38] *See* NS Reply WP "DRR Local Trains in DuPont RTC Simulation.xlsx."

[39] Modifying DuPont's approach only to incorporate 1.4 units per train, rather than 1, would add 40 GP38 units to the DRR fleet.

[40] *See* NS Reply III-C-14.

Yard switching assignments: Failing to provide sufficient yard power represents another major shortcoming in DuPont's locomotive requirements for the DRR. As described in Part III-C (at III-C-36 through III-C-52), DuPont did not present a credible yard operating plan, ignoring completely the activities that would be required to classify and switch the three million single-car and multi-carload shipments of general freight traffic that DuPont selected for the DRR. DuPont compounded the problem by specifying a locomotive type (the SW 1500) that cannot handle switching, even at flat yards, without being doubled. As a result, DuPont failed to provide anywhere near the number of switch engines required to perform the necessary switching work at DRR yards. By contrast, NS witness Johnson developed an operating plan that considered the volumes that the DRR would classify at individual yards, and determined the switch assignments—and corresponding locomotives—that would be required.

Helpers: As identified in Part III-C, DuPont failed to provide for all of the helper service that would be required to power DRR trains. *See* NS Reply III-C-214 through III-C-216. Despite replicating the NS trains, DuPont did not replicate the helper service locations that NS identified in materials that were produced to DuPont in discovery. *Id.* Also, DuPont ignored the fact that its decision to re-route certain merchandise and unit trains from the Heartland Corridor to the West Virginia Secondary line between Chillicothe, OH, and PD Junction, WV, would result in new locations where helper service would be needed. On Reply, NS doubles the number of helper units that DuPont posited, increasing the count from 20 units to 40 units.[41]

Spare margin: DuPont's locomotive estimates include spare margins of { }% for ES44's and { }% for GP38's, based on information that NS provided to DuPont in discovery

[41] *See* NS Reply WP "DRR Reply Yard and Helper Assignments.xlsx."

regarding the amount of time that units are out-of-service.[42] NS accepts DuPont's percentages for the purpose of accounting for the DRR's out-of-service time, but corrects the erroneous manner in which DuPont applied them. The figures that DuPont calculated represent proportions of total time; the actual spare-margin additives to be applied to DuPont's time estimates must be adjusted upward slightly. As an illustrative example, assume that DuPont had determined that out-of-service time represented 10% of the total. If the out-of-service factor of 10% is applied to the amount of locomotive time in service (as DuPont applies the spare margin)—and not the total time—the result suggests that out-of-service time is only 9% of the total, and not 10% (as 10% times 90% equals 9%). In order to avoid understating the out-of-service time, DuPont's spare margins should be adjusted by the proportion of time that locomotives are in service, or 100% minus the spare margin. To account for total locomotive time, NS makes this correction and applies spare margins of { }% for DRR's ES44 units and { }% for DRR's GP38's.[43]

Table III-D-5 below summarizes the parties' base-year locomotive requirements for the DRR.

Table III-D-5
DRR Would Require Significantly More Locomotives than DuPont Estimated for the Base Year

	Road & Helper Engines	Local Engines	Yard Engines	**Total**
DuPont	483	101	80	**664**
NS	977	291	173	**1,441**
Difference	**494**	**190**	**93**	**777**

[42] DuPont Opening at III-D-4.

[43] { }

ii. DuPont Understates the Locomotive Lease Cost

ES44AC: In calculating the cost of acquiring high-horsepower ES44AC locomotives for the DRR, DuPont claimed to develop a figure based on materials from the *AEPCO* case, a western coal case involving defendants BNSF and Union Pacific.[44] Specifically, DuPont relied upon information from the STB's decision and public versions of the parties' filings in that case to posit an annual lease expense of $97,419 per unit. DuPont did not explain why this number would be relevant either for the DRR or for evaluating the reasonableness of NS's rates, let alone present any rationale or supporting evidence for its use of that expense figure. Instead, DuPont merely presents an estimate of UP's cost of acquiring locomotives, and seeks to validate that figure by referencing a lease-cost input from the *IPA* case, another western coal case in which UP was the defendant. Even if DuPont's calculations are correct, its evidence establishes only that the locomotive lease costs have been close in two western coal rates cases in which UP (not NS) was the carrier party. DuPont has not demonstrated why those costs are an appropriate basis for estimating the DRR's cost to acquire locomotives.

DuPont's proffer of UP's lease costs should be rejected, for at least two reasons. First, NS should not be bound by the litigation decisions made by other parties in other cases. The lease costs used in *AEPCO* were not adopted by the STB based on an evaluation of contested evidence and arguments—the BNSF/UP reply filing indicates that the railroad defendants simply chose to adopt the lease-cost figure that AEPCO submitted on opening.[45] Neither DuPont nor NS has had access to the UP lease to evaluate its other terms, nor can the parties in this case evaluate the calculations that applied those terms and converted UP's lease payments to figures

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[44] DuPont Opening at III-D-3.

[45] *See* Joint Reply Evidence and Argument of Defendants, *AEPCO 2011*, at III-D-3, Public version (May 7, 2010) ("Defendants accept the lower figure . . .").

compatible with the STB's DCF analysis. Simply put, the number "adopted" by DuPont cannot be tested, let alone validated, based on the information available to DuPont and NS. NS should not be bound by other carrier defendants' strategic decisions to challenge or not to challenge assumptions made in other cases, nor should it be foreclosed from providing a full critique of the appropriateness of an assumption that will be used as the basis for evaluating NS's rates.

Second, while the basis for the lease costs to which the parties agreed in the *AEPCO* case is opaque, it is clear that an adjustment would be necessary before the UP figures could be used in this case. DuPont has made no showing as to how the DRR—which DuPont assumed would step into NS's shoes and replicate NS's network and traffic base—would be able to side-step NS's locomotive acquisition costs in favor of another carrier's more favorable experience. While DuPont observed that NS did not provide any "current locomotive capital leases" in discovery, it did not argue that NS's experience is inefficient or not applicable.[46] In fact, review of the NS and UP R-1 Annual Reports indicates that each railroad has acquired ES44 locomotives[47] over the last four years, and that NS has consistently incurred a higher cost than UP. Table III-D-6 below summarizes the costs and number of new ES44 locomotives acquired by NS and UP in each of the years 2008-2011.

Table III-D-6
NS's Costs of Acquiring ES44 Locomotives is Higher than UP's

	Cost per Unit ($MM)			# of Units Acquired	
	UP	NS	Difference	UP	NS
2008	$2.11	$2.44	16%	75	24
2009	$2.28	---	---	125	0
2010	---	$2.44	---	0	42
2011	$2.23	$2.45	10%	60	25

[46] DuPont Opening at III-D-3.

[47] The UP R-1 Annual Report identifies "C45AC" and "C45ACCTE" units, which reflects UP's classification of ES44's.

UP's cost per locomotive was lower than NS's throughout the period, and in the two years that NS and UP both acquired new units, NS's cost per unit was 16% and 10%, respectively, higher than UP's cost. Based on the comparison set forth in Table III-D-6, NS adjusts the UP lease cost upward by 13% as a better estimate of the costs that the DRR would be expected to incur.[48]

GP38: DuPont relied upon two price quotes from a 2008 *Railway Age* article as the basis for DRR's lease cost for GP38 locomotives. The article indicates nothing about the terms or provisions of the leases other than a daily rate, or the number that would be available at that price.[49] Unlike the situation with ES44's, NS did provide to DuPont in discovery many leases for GP38 units. As DuPont identified that the DRR would need more than 100 GP38's—and NS has shown that the actual number required to handle the DRR's traffic would be nearly three times that many—NS's actual leases better reflect the type of transaction the DRR would enter into than a classified ad. Accordingly, the costs that DRR would incur for GP38 units should be determined from the actual leases. NS calculates an average daily rate of ${{ }} from four GP38 leases produced in discovery, and uses this figure to determine the DRR's lease cost for locomotives on local trains.[50]

SW1500: DuPont used the same 2008 *Railway Age* article as the basis for its estimated lease costs for the SW1500 locomotives assigned to fulfill DRR's yard switching requirements. As explained in Part III-C, DuPont's selection of SW1500 units for yard service is nonsensical, and should be rejected. First, the functionality of the SW1500 is severely limited. A Class I railroad the size of DRR –that would depend on efficient terminal activities to classify and

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[48] *See* NS Reply WP "Locomotive Lease.xlsx."

[49] DuPont WP "III-D-1 Loco Cost.pdf."

[50] *See* NS Reply WP "Locomotive Lease.xlsx."

switch more than 20,000 cars daily—would not rely on a fleet of antiquated SW1500's to perform its yard work. NS operating witness Johnson described that the SW1500's are old units, and often need to be doubled-up with another SW1500 or other engine to work, given their limited tractive power.[51] Second, the SW1500 is of limited availability as well. These units are constantly being retired, and DuPont has not shown that the DRR would be able to obtain a sufficient number of SW1500 units for the DRR's yard fleet at any price, much less the price quoted in the *Railway Age* article upon which it relies.[52]

NS witness Johnson concluded that the DRR's yard power needs would be better met by SD40-2 engines. NS calculates an average daily rate of ${{ }} from ten SD40-2 leases that NS produced to DuPont in discovery, and uses that figure to determine the DRR's lease cost for locomotives for yard switching.[53]

b. Locomotive Maintenance

DuPont did not develop a detailed plan for the locomotive maintenance functions that the DRR would need to perform to sustain the railroad's operations. Rather than build up the activities that would be required and determine the associated costs, DuPont used NS's average maintenance expense per locomotive unit-mile, which DuPont calculated from NS's 2009 R-1 Annual Report.[54] Review of the underlying calculations indicates that DuPont included NS's operating expenses from Schedule 410. NS generally accepts DuPont's approach for estimating the DRR's locomotive maintenance costs, but corrects one omission. DuPont included only

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[51] *See* NS Reply III-C-218. This situation is particularly prevalent when the yard assignments require working on grades.

[52] *See* NS Reply III-C-216 to III-C-218.

[53] *See* NS Reply WP "Locomotive Lease.xlsx." NS observes that as the SD40-2 lease cost is less than two times DuPont's assumed cost for SW1500s, NS's selection of SD40-2 yard engines is less costly for the DRR than using two SW1500s for the same work.

[54] DuPont Opening III-D-5.

certain maintenance expenses – including $80 million in salary and wages – and failed to include fringe benefits.[55] As DuPont posits that this cost would serve as the entirety of DRR's maintenance expense – and fringe benefits would not be added in a separate step[56] – the cost per unit-mile must account for fringe benefits. NS allocates a pro-rata share of the fringe benefits reported to a separate account in Schedule 410 to develop a proper basis for estimating the full locomotive maintenance expense that would be incurred by the DRR.[57]

In addition, as DuPont's costs account only for operating expenses, it bears noting that the DRR would require significant capital investment to provide for the DRR's maintenance needs. DuPont concluded that the DRR's locomotive maintenance needs could be met by four shops across its 7,300-mile network. NS determined that the DRR would need a total of 10 shops, 7 Division shops and 3 System shops, with the latter responsible for more extensive repairs and overhauls.

c. Locomotive Servicing (Fuel, Sand, and Lubrication)

i. Fuel Cost

DuPont estimated the DRR's fuel costs based on NS's cost of $1.55 per gallon from the second quarter of 2009, the period in which the DRR commenced operations. NS's fuel costs were particularly low in that quarter: they had fallen nearly 50% from just the prior year.[58] NS's current fuel costs are more than twice as high, as they have been more than $3 per gallon in each

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[55] DuPont WP "Loco Servicing and Maintenance Cost.xls" indicates that DRR costs are based solely on costs reported to Line 202, "Repair and Maintenance."

[56] For other cost components like train and engine crews, a fringe benefit ratio is applied to the total compensation to develop the total personnel expense. *See* DuPont WP "DRR Operating Expense_Errata.xls" By contrast, DuPont's total personnel expense for locomotive maintenance consists solely of the cost per locomotive-unit mile derived from NS's R-1 Annual Report.

[57] *See* NS Reply WP "Loco Servicing and Maintenance Cost Reply.xlsx."

[58] DuPont WP "III-D-1 Loco Cost.pdf" identifies fuel costs for full year 2008 of $3.05 per gallon.

of the last six quarters.[59] Once the fuel costs have been estimated for the first period of a SARR's operations, any subsequent increases (or decreases) are captured only to the extent they are accounted for in the hybrid RCAF index by which all SARR operating expenses are inflated.[60] Notwithstanding the low starting point established by DuPont's selection, NS accepts the 2Q09 fuel cost.[61]

ii. Fuel Consumption

DuPont posits that the DRR's locomotives would consume fuel at the same rate per unit mile that NS's fleet does in the real world.[62] Specifically, DuPont used the NS 2009 R-1 Annual Report to calculate a rate of 2.28 gallons per unit-mile for road locomotives and 2.67 for switch locomotives. DuPont's use of NS's historical rate understates considerably the total amount of fuel that the locomotives operating on DRR would consume, for two reasons.

First, the ES44's units that DuPont selected to power the DRR's road trains consume more fuel per unit-mile than the "average" NS locomotive. Materials produced in discovery indicate that in 2009 NS had 24 ES44's, less than 1% of its road fleet.[63] Most of NS's highest horsepower engines were 4,000 HP units of the D9-40CW, ES40DC, D8-40CW, and SD70M-2 classes, or 3,800-HP SD 60's. By using higher-horsepower ES44's, DuPont would power DRR trains with fewer locomotives on average than NS. This is confirmed by the DRR's average

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[59] https://www2.nscorp.com/sd/sdoc?doc=3Q_financial_review_20121023160400.pdf

[60] *See* DuPont WP "Exhibit III-H-1 Errata.xls," worksheet "Operating SAC."

[61] The parties' use of the hybrid RCAF escalation to project DRR operating expenses provides further validation of the critical need to correct DuPont's projections of the fuel surcharge revenues that DRR would collect, and make them consistent with the costs that the DRR is assumed to incur, as explained in Part III-A above.

[62] DuPont Opening at III-D-6.

[63] NS Reply WP "ES44AC Locomotive Fuel Consumption.xlsx" summarizes the NS locomotive roster information produced to DuPont in discovery at DVD-007.

consist size of 2.10, 12% lower than NS's 2009 system-average of 2.38.[64] It is incorrect to assume that the DRR's fleet of higher-horsepower ES44 locomotives would consume fuel at the same per unit-mile rate as different locomotive types working in larger consists.

A higher horsepower locomotive consumes more fuel per mile than a lower horsepower engine. Consider a hypothetical train that is powered by three 3,000 HP units. In certain circumstances, it would be possible for that train to be powered by two 4,400 HP units, as the 8,800 total horsepower nearly replaces the 9,000 provided by the three-unit consist. It could be expected that each locomotive consist would consume similar amounts of fuel in total. Each of the two 4,400-HP units, however, would consume more fuel per unit than the three lower-HP units would. Using the same rate per unit without recognizing the horsepower difference leads to the incorrect conclusion that the total amount of fuel consumed by the second train would be one-third lower than the first.[65] DuPont's approach ignores the fact that the smaller locomotive consists on DRR trains would have to perform the same work as the larger consists on NS's real world trains—and therefore consume as much fuel in aggregate. Thus, each individual DRR unit would consume more fuel per unit-mile than NS's.

Moreover, the DRR's smaller locomotive consists would actually have to perform more work than NS's consists, because DuPont posits that DRR trains would operate at faster speeds than NS trains do today. NS's operating practices specify lower maximum speeds than DuPont assumed for the DRR lines in many locations. NS designs its train schedules and train make-up based upon safety and operating rules that promote the safe and efficient movement of trains.

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[64] *See* DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Base Year Statistics" and NS 2009 R-1 Annual Report, Schedule 755.

[65] DuPont's calculations are strictly based on locomotive unit-miles, and do not consider the number of locomotives that are in the consist.

Further, NS's train speeds and train handling practices emphasize fuel conservation.[66] As a result, NS elects to operate unit bulk and other heavy freight trains with lower maximum speeds. Further, NS employs lower speed limits through curves, in accordance with its internal track-maintenance requirements.

As DuPont chose not to employ all of NS's practices on the DRR, and would allow the SARR's trains to operate at higher maximum speeds, the DRR's locomotives would consume more fuel per unit-mile than NS's do. Thus, DuPont's use of the NS historical fuel consumption rate understates the amount of fuel that locomotives on DRR's trains would consume. To correct that understatement, NS adjusted the historical consumption rate that DuPont used for road engines by the relative horsepower differences between the NS and DRR road fleets. This represents a 10% increase to the NS average consumption rate per unit-mile, as the 4,400 horsepower DRR's ES44's exceed NS's average horsepower for road units—3,985—by 10%.[67]

iii. Locomotive Servicing

DuPont used figures in NS's 2009 R-1 Annual Report to estimate the DRR's locomotive servicing costs. As it did for the DRR's locomotive maintenance responsibility, NS accepts DuPont's unit cost as a reasonable proxy for the operating expenses that DRR would incur,[68] but identifies two areas where DuPont's capital investments fail to cover the DRR's locomotive

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[66] *See* NS Reply WP "fuel conservation.pdf."

[67] *See* NS Reply WP "ES44AC Locomotive Fuel Consumption.xlsx." Unlike the ES44, the GP38 model that DuPont selected to power the DRR's local trains is well represented in NS's fleet, accounting for the second most locomotives, after the D9-40CW. Thus, NS is willing to accept use of the historical NS average rate as more representative of these engines' consumption, despite the DRR's higher speeds.

[68] The difference between the parties' locomotive servicing expenses results primarily from differences in the number of locomotive unit-miles.

fueling and servicing needs. First, DuPont did not provide sufficient facilities in yards for working, inspecting, fueling, and servicing locomotives. NS determined that the DRR would require ten locomotive repair shops, rather than the four provided by DuPont. In addition, NS witness Johnson identified the need for locomotive tracks at 12 locations where fixed fueling facilities would be required, another 22 where fueling would be performed by DTL, and 4 other locations for servicing and staging locomotives.[69] Finally, DuPont failed to account for the cost of providing Locomotive Servicing Trucks to perform maintenance services on locomotives at locations where construction of fixed locomotive servicing facilities is not cost effective, and to serve locomotives at outlying locations that do not require servicing on a daily basis. NS's Reply Evidence provides 15 such trucks to perform those functions.[70]

2. Railcars

a. Acquisition

DuPont calculated the DRR's freight car acquisition expense based on a combination of car rental data from NS's R-1 Annual Report and publicly available lease cost information.[71] While NS generally accepts DuPont's methodological approach to estimating car costs, there are three errors in DuPont's calculations that NS corrects.

1. DuPont failed to calculate the proper transit times for DRR equipment;

2. DuPont failed to account for time that DRR equipment spends dwelling in yards between train assignments; and

3. DuPont erroneously calculated the cost of intermodal flat-car and container/trailer equipment.

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[69] *See* NS Reply WP "DRR Yard List Reply.xls."

[70] *Id.*

[71] DuPont Opening III-D-6 to III-D-9.

DuPont's car costs are based on transit time estimates that are understated. As described in detail in Part III-C, DuPont's RTC simulation failed to simulate properly the transit times that DRR trains would experience moving across the SARR lines.[72] NS's RTC simulation, which corrects the numerous errors and omissions in DuPont's RTC evidence, produces more realistic estimates of DRR train transit times.

DuPont's car costs also fail to include yard dwell time between train assignments. As described in Parts III-C and III-D-1 above, the time factors that DuPont uses for sizing the DRR's equipment fleets fail to account for the significant amount of time that cars spend in yards. DuPont explicitly acknowledges that omission when it explains that "The car hour requirements for these [non-coal traffic moving in NS equipment] cars are based on RTC transit times, plus free time at shipper origin and destination."[73] This statement is yet another reflection of DuPont's utter failure to account for the realities of operating a merchandise network, where carload traffic is handled by a series of trains operating between yards, and is classified and switched one or more times between train movements. DuPont's RTC transit times are associated with individual train runs between terminals, and do not account for the time that cars spend in yards after the arrival of an inbound train, and before their subsequent departure on an outbound train.

Yard dwell times are regularly measured by the Class 1 railroads, published weekly, and available through the Association of American Railroads' website.[74] In the 53 weeks prior to this Reply filing, from November 2011 through November 2012, the average yard dwell (labeled "Terminal Dwell") for the entire NS system ranged each week from 20.6 to 31.2 hours, for a

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[72] *See* NS Reply III-C-117 through III-C-152.

[73] DuPont Opening III-D-7.

[74] *See* http://www.railroadpm.org/home/RPM/Performance%20Reports/NS.aspx.

simple average of 22 hours. Dwell times are published for 14 individual NS terminals—all of which are on the network that DuPont replicated for the DRR. The times are relatively consistent across terminals, and consistently exceed 20 hours, as only one terminal averaged less than 20 hours over the last year.

NS's DRR analyses assume that the SARR would incur even less yard dwell. NS conservatively assigned 10 hours of yard dwell time between trains at DRR's hump yards, 8 hours at DRR's flat switching yards, and 20 hours between arrival and departure on local trains.[75] To account for the time that rail cars spend in yards between train movements, NS adds these yard times to the RTC run-times for each general freight car.[76]

DuPont significantly understated the cost of providing intermodal equipment. In 2009, NS paid more than $100 million in car hire costs for intermodal flat cars and containers.[77] DuPont posits that the DRR would replicate 79% of the NS intermodal unit-miles, but incur intermodal equipment costs of only $21 million, 20% of NS's total.[78] The primary source of DuPont's understatement is an improper conversion of the car owner. Despite claiming that "DuPont's experts have included a private car charge per car-mile by car type which is applied to all private car-miles on the DRR,"[79] DuPont assumed away the private car charges that NS pays for the majority of its intermodal shipments. Instead, DuPont posits that the DRR would lease

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[75] *See* NS Reply III-C-165, n. 256.

[76] *See* NS Reply WP "DRR Car Costs_Reply.xlsx."

[77] *See* NS 2009 R-1 Annual Report, Schedule 414, Lines 11 (intermodal flat cars) and 23 (containers), columns (e), (f), and (g).

[78] DuPont WP "DRR Car Costs_errata.xls."

[79] DuPont Opening III-D-9.

and provide the intermodal flat cars—and do so with about one-tenth the number of cars that NS actually used in serving its intermodal business.[80]

More than two-thirds of NS's real-world intermodal flat-car miles are in private equipment, a fact confirmed by DuPont's own workpaper.[81] Review of the traffic records indicates that roughly three-quarters of the DRR's intermodal shipments moved in private equipment, consisting of more than 22,000 different flat cars. DuPont assumed that it could replace this private equipment by leasing only 2,476 flat cars.[82] Rather than include the costs that NS actually incurs to use private equipment—19 cents per mile—DuPont posits that the DRR could serve the same intermodal traffic for a car cost of only three cents per mile.[83]

Table III-D-3 (on page III-D-12 above) indicates that nearly one-half (48%) of the DRR's intermodal trains neither originate nor terminate on the DRR. The DRR cannot dictate the ownership of the flat cars upon which those intermodal shipments are loaded. It will interchange significant intermodal volumes with NS and with other Class I railroads, and will be required to pay for the use of the equipment it receives in interchange. Figure III-D-1 below compares NS's actual cost per mile for payments to private-car owners and foreign-car owners for use of intermodal flat cars, with the cost per mile posited by DuPont.

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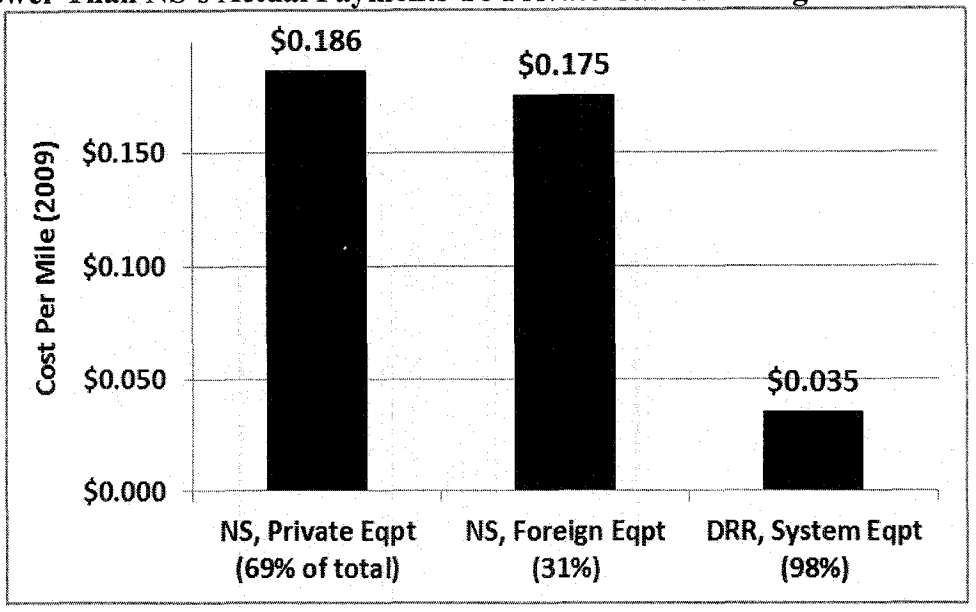
[80] DuPont's WP indicates that the DRR would provide the intermodal equipment for 98.5% of the car-miles, and pay private car owners for only 1.5%.

[81] DuPont WP "DRR Car Costs_errata.xls" identifies the mileage totals from Schedule 755 to the NS 2009 R-1 Annual Report of 327 million in private flat cars and 149 million in railroad-provided equipment.

[82] DuPont WP "DRR Car Costs_errata.xls."

[83] DuPont WP "DRR Car Costs_errata.xls" indicates $18.6 million in lease costs to cover 536 million flat car miles.

Figure III-D-1
DRR's Assumed Cost Per Mile For Intermodal Flat Cars Is Significantly Lower Than NS's Actual Payments To Private Car Or Foreign Car Owners



There are two other sources of DuPont's understatement of DRR costs for intermodal equipment. First, DuPont's costs are based on their incorrect and incomplete estimates of the time for which DRR would be responsible. Under DuPont's assumptions, intermodal flat cars would achieve an extraordinary level of utilization—216,000 miles annually.[84] As explained in Section III-D-1, DuPont's Opening Evidence fails to reflect accurately the DRR's transit times, due to numerous flaws in its RTC Model and simulation. Second, DuPont included a portion of the flat-car lease cost, but failed to apply the correct costs for equipment that is highly utilized. DuPont based the DRR's intermodal flat car costs on an NS lease {

}[85] Applying all of the terms of the lease upon which DuPont chose to rely to DuPont's

[84] DuPont WP "DRR Car Costs_errata.xls."

[85] DuPont WP "III-D-2 Car Cost.pdf," at page 10.

assumed utilization would have resulted in an additional $1 million charge, which DuPont did not account for in its operating expense estimate.

To correct these errors, NS (1) applies the private car charge—not DuPont's substituted lease cost—for 69% of the DRR's intermodal flat-car miles, to reflect NS's real world experience; (2) uses the results of NS's RTC simulation to determine the time for which the DRR would be responsible; and (3) increases DuPont's costs for railroad-provided flat cars to account for the additional charge for excess miles, as set forth in the lease on which DuPont's costs are based.

b. Maintenance

DuPont failed to have the DRR perform any maintenance functions, nor did it provide facilities for car repair activities. *See* III-C-87 through III-C-91. NS's Reply Evidence corrects this glaring omission by providing the facilities and equipment that would be necessary to support the inspection and repair activities that DRR would need to perform. Even under DuPont's assumption that all of the DRR's system equipment would be acquired under full-service leases (and the lessor would be responsible for maintenance of equipment) the DRR would still handle millions of shipments in foreign and private equipment owned by other railroads and entities. The DRR simply cannot assume away any and all responsibility to perform running repairs to foreign equipment. Rather, the DRR would be required to support the repair function in a number of ways, by providing at least two system shops, facilities for conducting minor repair operations in DRR yards to get equipment back in service without sending off-line to a lessor, performing line of road inspections and repairs and addressing failures that happen on line, and coordinating with the various lessors and owners for equipment that is bad-ordered while on the DRR. All of these functions are necessary to maintain the same level of service that NS provides, to comply with the DRR's obligations under the AAR

Interchange Rules and the terms of intercarrier agreements it purports to adopt, and to ensure that equipment can be utilized as efficiently as possible. At a minimum, the DRR would require two car shops (at Chattanooga, TN and Elkhart, IN), "rip" tracks at 15 locations, and 26 wheel-change trucks to facilitate the line of road function.[86]

c. Private Car Allowances

As discussed in Section 2.a. immediately above, DuPont did not apply NS's actual private car charge "to all private car-miles on the DRR" as it claimed, but instead improperly substituted a lease rate for intermodal flat cars that did not account for the extraordinarily high number of miles that DuPont assumed the DRR's cars would incur. Otherwise, NS accepts DuPont's approach to calculating the cost that the DRR would incur for the use of private cars.

3. Operating Personnel

a. Train/Switch Crew Personnel

DuPont posits that the DRR would need a total of 3,166 train and engine ("T&E") crew members to handle all of the DRR's road, helper, and switch crews.[87] This number understates considerably the crews that the DRR would actually require, in all three categories.

There are five main sources of DuPont's understated crew requirements for the DRR.

1. DuPont failed to account for tens of thousands of trains necessary to handle the issue traffic and the other shipments selected for the DRR traffic group;

2. DuPont failed to account for directional imbalances in train flows that occur on the DRR;

3. DuPont failed to incorporate an appropriate level of re-crews that occur on the DRR;

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[86] See NS Reply WPs "DRR Yard List Reply.xls" and "DRR Loco and Car Repair Equipment.xlsx."

[87] DuPont Opening III-D-10.

4. DuPont failed to provide for helper service at all the locations where it would be required;

5. DuPont failed to present a yard operating plan, or to determine the car classification and switching requirements for individual yards and terminals.

DuPont's failure to present a credible operating plan that accounts for all the trains that transport the DRR's traffic resulted in the omission of necessary road crews. In Part III-C (at III-C-9-21), NS demonstrated that DuPont's "automated" train selection process resulted in the exclusion of at least 35,699 trains that handled DRR revenue shipments on DRR lines.[88] Those trains alone would require at least 264 T&E crewmembers, representing more than $25 million in expenses annually, under DuPont's assumptions.[89]

In addition to crews for the missing trains, DuPont failed to address the imbalances in road crews, as train flows differ by direction. In the locomotive discussion in Part III-D-1 above, NS demonstrated that DuPont's selected road train flows are not balanced by direction, and that adjustments would be necessary to reposition locomotives. A similar situation exists with respect to DRR crews on road trains, as the shortfall of trains inbound to Birmingham, AL (re-visiting the example described in III-D-1 above) would require the DRR to provide an average of one additional crew each day to work outbound trains at Birmingham. As a result, DRR road crews would have to be deadheaded from terminals with an excess of inbound train crews to meet demand at yards and terminals that require more outbound crews than are available on arriving trains.

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[88] DuPont also excluded an additional 16,746 trains that handled the selected traffic along the periphery of the DRR system, and failed to provide for complete train service for much of the traffic that it proposes to reroute. *See* III-C-12 to III-C-13, III-C-22 to III-C-24. Because those trains carried DuPont's selected traffic and operated on the DRR's lines, an additional 100 or more T&E crew members would be required to operate them. NS's reply T&E crew estimate does not include those additional crews, and is therefore conservative.

[89] 35,699 trains x 2 crews / 270 days per year = 264 crew members. *See* DuPont WP "DRR Operating Expense_Errata.xls."

DuPont, however, assumes that the DRR would not incur any time or costs associated with deadheading road crews. This is a particularly egregious assumption given that the DRR crews could work anywhere on a more than 8,000-mile network. DuPont's calculations simply divide the total number of annual crew starts across the entire network by an assumed utilization of 270 days per year.[90] This approach effectively assumes that road crews are completely fungible, and can be available at any time anywhere they are needed, at no cost. For example, if an excess of train movements in one direction over the other indicates that additional crews will accumulate on the eastern end of the network, and the western end will have a shortfall, DuPont's arithmetic simply assumes that the needs on the western end will somehow be met, and that all imbalances will be smoothed out. As discussed below, DuPont's assumption that DRR road crews will work 270 days per year already posits a level of utilization met by very few NS crew members in the real world. It is wholly incorrect for DuPont to assume that the formula for determining the DRR's crew requirements should not take into account deadheading. By contrast, NS evaluated the DRR road train flows and crew districts, and determined that directional imbalances would require an additional 383 road crew members in the Base Year to cover the deadheading trips that are required to position sufficient numbers of crews where they are needed.[91]

DuPont's used a re-crew rate of 0.4% that is absurdly low for the varied operations that will occur across a busy, 8,100-mile network. The DRR would transport six million revenue units in the Base Year, including two million carloads of general freight traffic, most of which the DRR would originate or terminate locally on its system. The DRR would operate a mix of

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[90] DuPont Opening at III-D-10 and DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Base Year Statistics."

[91] *See* NS Reply WP "MultiRail 2010 Deadhead Crew.xlsx."

trains at different speeds—such as "premium" intermodal trains, multilevel trains, "Key Trains" carrying TIH and other shipments that require special handling, coal unit-trains, and local trains that stop multiple times to serve customers. The DRR would have planned maintenance windows, random track outages, and other delays and interference that are beyond its control. This railroad—like all railroads—would be expected to have crews outlaw, on occasion. However, DuPont posits that for nearly 1,000 crew starts each day, only four (4) would require re-crewing.[92] This virtually perfect record simply could not be achieved throughout the year. There are day-to-day vagaries of railroad operations, including challenges in coordinating with foreign railroads, train crews, or maintenance schedules.[93] There is weather. There is the "positive hand-off" law for TIH shipments, requiring crews to remain with trains at interchanges. In addition to these potential sources of delay, DuPont's crew calculations reveal that it proposed a number of very long crew districts for the DRR. Indeed, under DuPont's assumptions, 13% of its DRR crew starts are on districts of more than 200 miles.[94] Given these circumstances, it is clear that out of 1,000 crew starts each day, more than four DRR crews are likely to outlaw. DuPont's 0.4% re-crew rate is simply not realistic. Based on NS's recent experience and the longer DRR crew districts, NS conservatively applies a 2% re-crew rate to DRR's road trains, and no re-crews to DRR's local trains.[95]

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[92] DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Base Year Statistics."

[93] DuPont's invention of "leapfrog" trains and its failure to build most of NS's branch lines creates significantly more interchanges, requiring even more coordination to pick-up trains and deliver in a timely fashion. *See* NS Reply III-C-185 to III-C-187.

[94] DuPont WP "Base Year Train List_Statistics_Open_Errata.xlsx," worksheet "Crews Base Year."

[95] *See* NS Reply WP "MultiRail 2010 Train Statistics.xlsx."

Regarding helper crews, DuPont failed to identify all the locations where helper service would be required. As identified above in Section III-D-1, DuPont failed to provide helper service at certain locations where it would be needed to power DRR trains. DuPont ignored both the information that NS produced in discovery regarding where NS operated helper service, as well as the impact of its proposed re-route of DRR trains from NS's Heartland Corridor to the West Virginia Secondary line, which would require helper service in new locations. As a result, DuPont understated the number of helper crews that DRR would need. When these errors and omissions are corrected, NS increases the number of helper crew members from DuPont's 62 to 90.[96]

Finally, regarding yard crews, because DuPont failed even to consider car classification and switching needs at individual yards and terminals, the resulting switch assignments for DRR bear no resemblance to the work that would be required. DuPont proposed that the DRR would handle nearly three million carloads of general freight traffic—predominately single-carload and multi-carload shipments—operating a 7,300-mile constructed network with more than 120 yards. DuPont presented no evidence, however, that it even considered the specific car volumes that would be classified, switched or "swapped" between trains in blocks at individual yards in determining the DRR's yard switch crew assignments. DuPont's workpapers identify that it assigned the DRR four switch assignments working three shifts at five locations, three switch assignments working three shifts at five locations, and two assignments working three shifts at four yards.[97] DuPont also concluded that there would be 26 locations where the DRR's yard needs could be met by only one switch crew—working only one shift per day at most of those locations—and there would be no yard crews at many other locations. As explained above (at

[96] *See* NS Reply WP "DRR Reply Yard and Helper Assignments.xlsx."

[97] *See* DuPont Opening WP "DRR Yard Assignments_Open.xlsx," Tab "Crews."

III-C-44-52), DuPont's assumptions are unsupported, and fail to provide a workforce sufficient to meet the DRR's yard requirements. Any railroad that handles significant volumes of carload merchandise traffic—including local originations and terminations—will be wholly dependent on the efficiency of its yard operations, and the DRR is no exception. NS operating witness Johnson developed the DRR's yard personnel requirements by evaluating the DRR train service plan by terminal, and determining the staffing levels necessary to meet the needs of this critical element of the DRR's operations.

Witness Johnson determined that the DRR would need switch crews at 54 yards, including 21 locations at which DuPont failed to provide any such assignments. In addition, witness Johnson determined that DRR's hump and large flat classification yards would require utility crews to expedite work in the yards and keep the cars moving to their next block and train assignment. Such work includes coupling tracks, handling switches, protecting shove movements, lacing air hoses, and applying and releasing hand brakes. Table III-D-7 below summarizes the yard crew assignments by shift for the hump and large flat yards.[98]

[98] Details of NS's yard crew assignments for DRR's Medium Flat and Small Flat yards are included in NS Reply WP "DRR Reply Yard and Helper Assignments.xlsx."

Table III-D-7
NS Yard Crew Assignments For DRR Hump And Large Flat Yards

	DuPont Yard Crews	NS Yard Crews	NS Utility Crews	Difference
DRR Hump Yards				
Bellevue	12	15	6	9
Birmingham	9	12	3	6
Chattanooga	12	12	3	3
Conway	12	12	3	3
Elkhart	12	18	6	12
Linwood	3	9	3	9
Macon	6	9	3	6
Enola	0	9	3	12
Total	**66**	**96**	**30**	**60**
DRR Large Flat Yards				
Allentown	1	12	6	17
Decatur	1	14	6	19
Knoxville	6	12	6	12
Roanoke	9	12	6	9
Sheffield	1	12	6	17
Total	**18**	**62**	**30**	**74**

Based on this analysis, NS calculates that the DRR would need a total of 1,071 yard crew members, including utility crewpersons.[99]

Table III-D-8 below summarizes the parties' base-year crew requirements for the DRR.

Table III-D-8
DRR Would Require Significantly More Crewpersons Than DuPont Estimated for the Base Year

	Road & Local Crews	Yard Crews	Helper Crews	**Total**
DuPont	2,608	496	62	**3,166**
NS	3,261	1,071	90	**4,422**
Difference	**653**	**575**	**28**	**1,256**

[99] *See* NS Reply WP "DRR Reply Yard and Helper Assignments.xlsx."

i. Compensation

Train and Engine Salary: DuPont calculated the compensation costs for DRR operating personnel based on NS's Wage Forms A&B, and asserts that the DRR's compensation "is established at the same levels as those paid by NS for comparable positions."[100] While NS accepts the use of NS's average historical compensation for non-train operating personnel, it rejects the use of the average for DRR crews. Simply put, DuPont's operating assumptions result in DRR crews that are not "comparable positions" to NS's in the real world. Specifically, DuPont assumes that all DRR crews would work 270 days per year—an extremely high level of utilization for railroad crews. NS produced crew payroll records to DuPont in discovery that indicate that in 2009, NS crews worked an average of { } days.[101] DuPont's "comparability" claim rings particularly hollow, as it would require DRR's crews to work { }% more, yet be compensated at only the "average" level for NS crews. Such an assumption is not realistic, as the DRR would be unable to recruit the workforce necessary to perform their crew functions.

Not surprisingly, the STB has previously rejected arguments along the lines of DuPont's, and recognized that crew members must be compensated more for working more shifts.[102] NS follows the approach that has been adopted in past SAC cases, by performing an analysis of NS payroll records to identify the proportion of crew members that worked 270 shifts and the average compensation that they received. That analysis indicates that only {

}, or 0.1%—of NS crewpersons achieved 270 shifts in 2009, and their average

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[100] DuPont Opening at III-D-11.

[101] NS Reply WP "T&E Crew Salary.xlsx" summarizes NS T&E payroll records that were produced to DuPont at DVD-005.

[102] *See, e.g.*, *WFA I*, STB Docket No. 42088 at 47 ("employees working more hours would command more compensation").

compensation was ${ }.[103] NS follows STB precedent and incorporates the compensation level for extraordinarily highly-utilized NS crews as more representative of the wage expense that the DRR would incur in attracting and retaining crew members expected to work 270 shifts.

ii. Fringe Benefits

DuPont proposes in its Opening Evidence to use a fringe benefit ratio of 37.5% of wages for DRR employees. *See* DuPont Opening at III-D-11. DuPont claims to base that number on the "average ratio of fringe benefits to total wages paid in 2009 to all railroad operating employees in the states in which the DRR operates." *Id.* While DuPont's stated methodology sounds reasonable, it is not what DuPont actually did. Rather, DuPont simply pulled a single estimate from an AAR report and applied it uncritically to its evidence, apparently without bothering to check the accuracy of that number.[104] But a cursory examination of the fringe benefit ratio used by DuPont demonstrates that its number is impossibly low—quite literally, it is impossible to reconcile the reported fringe benefit ratios of Class I railroads with the "average" DuPont uses because the math does not add up. NS corrects DuPont's approach by calculating DRR fringe benefits based on a multi-year average fringe benefit ratio for the two Class I railroads (NS and CSXT) that operate in the same geographic territory as the DRR. This provides a more accurate reflection of the fringe benefit costs that the DRR would actually incur.

The 37.5% fringe benefit ratio proposed by DuPont is immediately suspect because it is significantly lower than reported fringe benefit ratios for most Class I railroads. As shown in Table III-D-9, in 2009 only one Class I railroad had a fringe benefit ratio of less than 38%. Indeed, only two had a fringe benefit ratio of less than 42%. Both Class I railroads operating in

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[103] *See* NS Reply WP "T&E Crew Salary.xlsx."

[104] DuPont WP "III-D-3 Salaries.pdf" at 22 contains the AAR "estimate" that DuPont used for its DRR fringe benefit ratio.

the same geographic area as the DRR (*i.e.*, NS and CSXT) had fringe benefit ratios of over 43% in 2009. Including all Class I railroad fringe benefit ratios from 2009 to 2011 further reveals how rare it is for a Class I railroad to have a fringe benefit ratio as low as 37.5%.

Table III-D-9
Class I Fringe Benefit Ratios, 2009-2011[105]

Year	NS	CSXT	CN GTW	CP SOO	BNSF	UP	KCS
2009	43.7%	49.8%	45.7%	45.3%	38.8%	42.7%	35.4%
2010	45.3%	53.8%	47.7%	41.1%	36.2%	43.3%	36.4%
2011	48.0%	54.3%	45.5%	44.5%	39.6%	48.5%	38.6%

Indeed, the 37.5% AAR "estimate" that DuPont cites for its fringe benefit ratio is inconsistent with more detailed data published by AAR itself. In 2009, AAR calculated average compensation including benefits for all railroads as $97,310 and average wages of $70,750, suggesting a benefit ratio of 37.5%, the number DuPont uses.[106] However, the very same AAR document shows average total compensation for Class I railroads of $103,214 and average wages of $72,153, suggesting a fringe benefit ratio of 43%.[107] The presence of non-Class I railroad employees in the first calculation, but not the second, cannot mathematically explain the reduction in the fringe benefit ratio from 43% to 37.5%. Table III-D-10 sets forth the employees, wages, and total compensation AAR listed for all railroads and for Class I railroads only. The table demonstrates that the AAR numbers cannot add up unless non-Class I employees had a negative fringe benefit ratio (*i.e.*, total compensation that amounted to less than their wages). That is plainly impossible.

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[105] *See* NS Reply WP "Class I Railroad Fringe Benefits.xls."

[106] *See* NS Reply WP "AAR Class I Railroad Statistics" at 4.

[107] *Id.* at 1.

Table III-D-10
2009 RR Compensation from AAR Documents

	Total	Class I	Non-Class I
Employees	169,891	151,906	17,985
Wages	$70,750	$72,153	$58,900
Total Compensation	$97,310	$103,214	$47,443
Fringe	37.5%	43.0%	**-19.5%**
Source	"AAR Class I Railroad Statistics," page 4	"AAR Class I Railroad Statistics," page 1	Calculated (Difference)

It is not clear why the AAR document DuPont relied upon misstated the average fringe benefit ratio. What is clear, however, is that DuPont applied a demonstrably incorrect number. One possible explanation for the disconnect in these numbers is the fact that Class I data is based on filed reports—namely Wage Forms A and B and R-1 Annual Reports that only Class I railroads file—while data for other railroads are estimates based on the Railroad Retirement Board's One Percent Sample. The actual Class I data is plainly more reliable than an estimate based on a limited sample for other carriers. Moreover, the cost of wages and fringe benefits actually incurred by Class I carriers is clearly more relevant to the DRR, which would be a Class I railroad.

DuPont's decision to rely on the flawed AAR estimate creates two other methodological problems. First, DuPont purports to present a geography-specific fringe benefit ratio from information "for railroads operating in the states where the DRR is located." DuPont Opening Ex. III-D-2 at 18. That would be consistent with Board precedent. *See WFA I* at 66 (accepting fringe benefit ratio for all employees in state in which SARR would operate). But, in fact, DuPont fails to use a state or territory-specific approach to fringe benefits (the approach the Board approved in *WFA I*). Instead DuPont's proposed fringe benefit ratio is an (incorrect) nationwide number. DuPont's decision to use a single nationwide average is problematic here,

because the Class I railroads operating in the DRR's territory have fringe benefit ratios significantly higher than the Western Class I carriers. *See supra* at Table III-D-9. Using a national average instead of a state-specific average distorts the results. Second, DuPont's use of a single-year's fringe benefit ratio to determine the DRR's fringe benefit costs for the entire SAC analysis period is analytically suspect, particularly since the year DuPont chose was the anomalous recession year of 2009. Averaging fringe benefit ratios over multiple years smoothes out such irregularities and produces a more reliable estimate of the DRR's fringe benefit costs.

NS corrects these flaws in DuPont's fringe benefit evidence by calculating a Class I fringe benefit ratio based on relevant geography-specific data and multiple years of data. Specifically, NS applies a three-year average of data from the R-1 Annual Reports for the two Class I railroads that operate in the same territory as the DRR, NS and CSXT. Board precedent supports every aspect of NS's proposal: (1) using the fringe benefit ratio for Class I railroads;[108] (2) calculating a geography-specific ratio for the states where the SARR operates;[109] and (3) using a multi-year average.[110]

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[108] *See Otter Tail*, STB Docket No. 42071, at C-13 ("Otter Tail calculated fringe benefit ratios…from the ratios of supplements to base wages for all Class I carriers"); *AEP Texas*, STB Docket No. 41191, at 60-61 (decided September 7, 2007) (same).

[109] *See WFA I*, STB Docket No. 42088, at 66.

[110] The Board has expressed a preference for multi-year averages over a single year's numbers in other types of cost calculations as well. *See, e.g., West Texas*, 1 S.T.B. at 713 ("Using data for a single year increases the risk that the single period is aberrational.") (calculating cost of equity); *WFA I*, STB Docket No. 42088, at 55 ("[U]se of a multi-year average is superior to using just a single year of data") (calculating Loss and Damage); *AEP Texas*, STB Docket No. 41191, at 107 ("[U]sing data for a single year increases the risk that the single year is an aberration.") (calculating cost of equity).

Table III-D-11 sets forth the actual fringe benefit ratios for NS and CSXT for each year 2009 through 2011 and the simple average of those ratios.[111] The result of NS's calculations is a fringe benefit ratio for the DRR of 49.2%.

Table III-D-11
Class I Fringe Benefit Ratios
for Railroads Operating in DRR Territory, 2009-2011

	NS	CSXT	Average
2009	43.7%	49.8%	**46.8%**
2010	45.3%	53.8%	**49.6%**
2011	48.0%	54.3%	**51.2%**
2009-2011	**45.7%**	**52.7%**	**49.2%**

iii. Taxi and Hotel Expense

In addition to the costs of compensation and fringe benefits, DuPont includes taxi and hotel expenses for T&E crews.[112] NS accepts DuPont's methodology and unit costs for those items, increases them to include the additional train crew members that DuPont failed to account for, and produces a total expense of $23 million for DRR.[113] In addition, NS corrects DuPont's omission of another crew cost component that would be incurred by DRR: meal expenses. Meal expenses have previously been adopted by the STB as a necessary component of T&E crew expense.[114] NS determined that in 2009 its hotel expense for crews was ${ } million, and its meal expense for crews was ${ } million. NS applies that ratio of meal expense to hotel

[111] *See* NS Reply WP "Class I Railroad Fringe Benefits."

[112] DuPont Opening III-D-12.

[113] *See* NS Reply WP "DRR_Overnight Hotel and Taxi Costs_Reply.xlsx."

[114] *FMC*, 4 S.T.B. at 842-43 (accepting fringe benefits, including meal expenses as "reasonable").

expense—(19%)—to the calculated DRR hotel expense to estimate meal expenses for DRR crews of $3.4 million.[115]

b. Non-Train Operating Personnel

NS presents its critique of DuPont's proposed Non-Train Operating Personnel and its own development of the DRR's staffing requirements for these positions in Exhibit III-D-1. Table III-D-12 below summarizes the parties' differences.

Table III-D-12
DRR Would Require Significantly More
Non-Train Operating Personnel

Position	DuPont	NS Reply	Difference
Operations Support	29	155	126
Transportation	281	590	309
Mechanical	277	549	272
Engineering	4	2 1/	(-2)
Non-Train Operating Personnel	**591**	**1,296**	**705**

1/ NS accounts for two positions in its Environmental Department in the DRR's G&A staff.

c. General & Administrative

DuPont's evidence of DRR General & Administrative ("G&A") expenses—like its evidence of other DRR operating expenses—grossly understates the G&A costs that the DRR actually would incur to serve DuPont's selected traffic group.[116] DuPont claims that the DRR would spend less than one percent of its revenue on G&A—despite the fact that the average Class I railroad spends over 8% of revenues on G&A and no Class I railroad spends less than

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[115] *See* NS Reply WP "Meals Additive.xlsx."

[116] NS's evidence of G&A expense requirements for the DRR was developed by NS witness Richard W. Brown. Mr. Brown, a Director with FTI Consulting, has 28 years experience working in the North American railroad industry for BNSF and its predecessor carriers. While at BNSF, Mr. Brown gained significant experience managing functional reorganizations and implementing technological solutions to streamline administrative functions. For the last twelve years, he has managed rail carrier strategic planning and merger and acquisition studies. Mr. Brown's qualifications are further detailed in Section IV.

4.5% of revenues on G&A. *See* NS Reply Ex. III-D-2 at 2; *see also infra* III-D-3-c-(vi). DuPont thus assumes that the DRR would be *eight times* as efficient as the average Class I railroad—that is, that the DRR could function effectively with one-eighth the G&A spending that a real-world railroad would need to perform the same functions. And DuPont makes this assumption without providing any coherent explanation of how the DRR would achieve such massive efficiency gains—let alone factual support for such a theory. DuPont's evidence is devoid of references to neutral third-party benchmarks, detailed explanations of job functions, or any concrete evidence showing that the DRR could realize vast G&A efficiency improvements over NS (and all other real-world railroads). Indeed, DuPont's G&A staffing evidence contains no references whatsoever to staffing levels or G&A expense benchmarks at NS or any other real-world railroad. Instead, DuPont relies entirely on false comparisons to previous SAC cases (which in and of themselves are irrelevant given that DuPont proposes a SARR with an unprecedented volume of carload traffic as its base and a SARR that dwarfs all prior SARRs in size and revenue) and empty platitudes about the supposed efficiency of the SARR. None of these arguments change the fact that DuPont has provided far less G&A staffing and spending than would be necessary for the DRR to serve the selected traffic group.

The Board has made clear that G&A evidence must be developed and supported just like any other form of operating expense evidence. In particular, the Board has emphasized the need for parties to explain why the G&A staffing proposed would be sufficient to carry out all necessary G&A functions and urged parties to benchmark G&A staffing against staffing levels of comparable real-world railroads. *See, e.g., AEPCO 2011*, STB Docket No. 42113, at 58 (criticizing parties for not providing benchmark analyses or any other sufficient explanation for staffing levels chosen); *FMC*, 4 S.T.B. at 835-36 (rejecting complainant's G&A evidence

because it "made no attempt to show that [its proposed G&A] staff could feasibly perform the required work, by either explaining the amount and type of G&A work that the [SARR] staff would need to perform or relating the size of the staff to operations of existing firms"). In short, parties have to do more than simply assert that a particular staffing level is feasible; they must prove the feasibility of proposed G&A staffing and spending levels with the best evidence available.

SAC theory requires that the SARR have G&A staffing that would be sufficient for a real-world railroad to perform all required G&A functions. Railroads need customer service operators, accounting clerks, police officers, and IT analysts just as much as they need train and engine personnel. This, too, is "real-world railroading," and assumptions about G&A spending must be consistent with real-world experience. *WFA I*, STB Docket No. 42088, at 15 ("assumptions used in the SAC analysis . . . must be realistic, *i.e.*, consistent with the underlying realities of real-world railroading"). Just as a SAC complainant cannot assume that its maintenance-of-way track crews could adequately maintain five times the territory of a real-world track crew, a complainant cannot assume that its tax accountants, its lawyers, or its customer service operators could handle five times the workload of a real-world employee. Neither assumption is consistent with real-world railroading—that is to say, with reality.

As a result, DuPont was required in opening evidence to either explain why its G&A expenses were consistent with real-world experience or, if the proposed expenses were lower, to explain why those spending levels are nonetheless realistic for a least-cost, most-efficient SARR. It did neither. Instead, DuPont's primary justification for its G&A evidence is a claim that it is "consistent with" G&A evidence from past cases. *E.g.*, DuPont Opening III-D-13. That is both incorrect (because DuPont has proposed G&A staffing and spending far lower than prior Board

decisions would suggest to be appropriate) and insufficient (because the Board has emphasized that parties cannot simply rely on staffing levels accepted in a past case as adequate justification for their G&A evidence and because the DRR is unlike any prior SARR in that it is far larger and has carload traffic as its base network). *See AEPCO 2011*, STB Docket No. 42133, at 58-59. Nowhere in DuPont's opening evidence does it refer to any benchmarking analysis or other factual support for its staffing assumptions—perhaps because it would be impossible to find a credible neutral benchmark to support its ludicrously low G&A expense assumptions. DuPont therefore has provided virtually no justification for its claim that the DRR would spend only $57.6 million in G&A expenses[117] for its proposed $6.6 billion in annual revenues—a 0.87% G&A expense/revenue ratio that is eight times better than the average Class I railroad's.

By contrast, NS's evidence is firmly grounded on real-world experience and industry standards, which demonstrate that a least-cost estimate of G&A expenses for the DRR would be $172,288,440.00[118] annually for 820 G&A employees, or approximately 3.8%[119] of the DRR's gross revenue. These figures assume that the DRR is optimally efficient and capable of achieving high levels of economic efficiency in every area. But these figures also assume that the DRR will comply with the minimum legal, regulatory, commercial, and administrative requirements that would apply to it. Just like NS or any other railroad, the DRR must comply with applicable federal and state laws and regulations in the various jurisdictions in which it operates, and it must perform standard G&A functions like billing, collecting, and responding to customer requests. Ensuring that the DRR has the resources necessary to satisfy these

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[117] DuPont Opening Table III-D-1.

[118] *See* NS Reply WP "DRR Operating Expense.xlsx." Consistent with prior SAC cases, this workpaper uses numbers based on 2nd Quarter 2009, annualized.

[119] *See* NS Reply Ex. III-D-2. For purposes of the exhibit, the 2nd Quarter 2009 spending level used is indexed to the rest of 2009.

requirements is an essential element of demonstrating its feasibility. DuPont's evidence fails this test because its inadequate G&A staff is not capable of performing the functions that the DRR would have to perform in the real-world. NS's evidence corrects those deficiencies by assigning the minimum G&A expenses that would be necessary for the DRR to operate given its network's significant size, scale, and complexity.

Section i responds to DuPont's primary justification for its low G&A expenses: its misleading and insufficient claim that DuPont's staffing is "consistent with" G&A staffing for past SARRs. Section i also rebuts DuPont's other arguments asserting that the DRR could operate much more efficiently than a real-world railroad, including its claims that the DRR could realize vast efficiencies from relying on information technology, from handling mostly crossover traffic, and from being nonunionized and privately held. Section ii discusses the staffing requirements for the DRR. Section iii describes compensation for G&A staff. Section iv describes materials, supplies, and equipment costs. Section v discusses other DRR G&A costs. Section vi compares DuPont's and NS's G&A cost evidence to real-world G&A expenses of other, comparable Class I railroads. This benchmarking analysis demonstrates convincingly that NS's estimate is reasonable and supported and that DuPont's is grossly understated.[120]

[120] In the interest of clarity, NS has slightly departed from the organizational structure for G&A evidence set forth in *SAC Procedures,* 5 S.T.B. at 449, by adding two additional subsections to its G&A evidence. Specifically, NS has added a general rebuttal to DuPont's theories for reduced G&A staffing and spending as subsection i and a detailed benchmarking analysis as subsection vi.

i. DuPont's Justifications For Its Extraordinarily Low G&A Staffing and Spending Levels Are Meritless.

(a) DuPont's Evidence is Not "Consistent With" G&A Levels Approved in Previous SAC Cases.

DuPont's claims that its G&A spending is "consistent with" G&A evidence from past cases are both misguided and demonstrably untrue. DuPont Opening III-D-13. In the first place, the Board has made clear that a SAC complainant cannot meet its burden to justify its G&A evidence by simply citing to evidence in past cases. *See AEPCO 2011*, STB Docket No. 42113, at 558-59. Rather, a SAC complainant is required to show that its G&A staff "could feasibly perform the required work, by either explaining the amount and type of G&A work that the [SARR] staff would need to perform or relating the size of the staff to operations of existing firms." *FMC*, 4 S.T.B. at 835-36. Citations to past staffing levels, standing alone, are thus utterly insufficient.

More importantly, however, DuPont's assertion that its proposed G&A staffing is "consistent with" G&A staffing from prior cases ignores the fact that the DRR is not at all consistent with SARRs from past cases. The DRR is vastly larger and more complicated than any SARR presented in a previous case, with much higher revenues and carloads, significantly more route miles, and many more operating employees. While many previous SAC complainants have posited coal-only SARRs with limited customers and simplified operations that conceivably could function with much less G&A staff than a real-world railroad, DuPont has not chosen to construct such a specialized SARR. Instead, DuPont selected a traffic group for the DRR with a commodity mix very much like that of NS. In total, the DRR's traffic group touches 92% of all NS traffic in carloads. The DRR would carry millions of carloads of intermodal, general freight, and automotive traffic. In fact, the DRR appears to be the first SARR ever presented to the Board for which the majority of traffic (62.1%) is non-coal traffic.

Put differently, the DRR may be the first SARR with a traffic group that resembles the traffic mix of a real-world Class I railroad.

Moreover, the sheer size and scope of the DRR are unprecedented. The DRR, as proposed by DuPont, is a substantial Class I railroad operating in twenty states with over 7,200 constructed route miles and another 820 miles in trackage rights and joint facilities. On a route-mile basis the DRR is thus nearly four times larger than the largest SARRs the Board has considered to date. *See AEPCO 2011*, STB Docket No. 42113, at 31 (2,235 route miles); *FMC*, 4 S.T.B. at 786 (3,037.89 route miles). And, on the same basis, the DRR is vastly larger than the SARRs to which DuPont compares its G&A staffing: seven times larger than the *AEP Texas* SARR, twenty times larger than the *Xcel* SARR, and thirty-six times larger than the *WFA* SARR.[121]

On a revenue basis, the DRR similarly dwarfs prior SARRs. The DRR would earn revenue of $5.6 billion per year. The DRR would be the fifth largest railroad in the United States—larger than KCS and larger than the U.S. operations of CN and CP.[122] The DRR's estimated revenues would place it within the largest 500 American companies as measured by the Fortune 500.[123] The DRR has more than double the revenues of the *AEPCO* SARR and well over ten times the revenues of the SARRs in *Duke/NS*, *Duke/CSXT*, *CP&L*, *Xcel*, *AEP Texas*, *Otter Tail*, and *WFA*.[124]

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[121] *See AEP Texas*, STB Docket No. 41191 (Sub-No. 1), at 27 (1,192 route miles); *Xcel*, 7 S.T.B. at 632 (396 route miles); *WFA I*, STB Docket No. 42088 at 25 (218 route miles).

[122] *See* AAR, *Railroad Facts* at 72, 73, 75 (2011 edition) (demonstrating that mileage and revenues for Grand Trunk Western, Soo Line, and KCS are all less than those proposed for the DRR).

[123] *See* NS Reply WP "Fortune 500.pdf."

[124] Based on DuPont's proposal, the DRR would have triple the revenue of the *AEPCO* SARR.

DuPont's choice to construct an unprecedentedly large SARR and to select a traffic group with large amounts of carload and intermodal traffic has significant effects on DRR G&A spending. For example, while a coal-only SARR can posit that it would serve a limited number of captive customers and can downsize marketing and customer service functions accordingly, a railroad serving thousands of intermodal and general freight customers cannot take those shortcuts. Likewise, while a specialized coal SARR could assume a small accounting staff to handle incoming revenues from its few customers, a railroad with over six thousand customers and revenues averaging $15 million daily could not function with a similarly small staff. And the sheer size of the SARR requires substantially larger G&A resources, whether they be HR and IT needs to serve the larger DRR workforce; marketing and customer service personnel to serve the DRR's large and diverse group of customers; or legal, police, and claims personnel to respond to the greater number of incidents that will occur across a wider geographic area on a larger rail network.

DuPont's claimed "consistency" with past cases ignores all these complexities, and instead relies on misleading head-to-head comparisons with much smaller SARRs. But DuPont's citations of past staffing levels as justification for its DRR staffing completely ignore the fact that the DRR is far larger and more complex than the SARRs in these past cases. A proper comparison of the DRR with previous SARRs that adjusts for the relative size of the SARR shows that DuPont's proposed G&A staffing is anything but "consistent" with prior Board precedent. For example, the Board's recent decision in *AEPCO* addressed one of the largest SARRs ever proposed (prior to this case), with over 2235 route miles and annual revenues of $2.075 billion. *See AEPCO 2011*, STB Docket No. 42113, at 26, 31. But DuPont has proposed less G&A staffing for the DRR than the Board accepted in *AEPCO* despite the fact

that the DRR will be over three times larger and collect three times the revenue of the *AEPCO* SARR. *Compare* DuPont Opening III-D-14 (proposing 213 G&A employees) *with AEPCO 2011*, STB Docket No. 42113, at 55 (accepting G&A staff of 225).[125] Indeed, as Table III-D-13 illustrates, DuPont is proposing a G&A staff for the DRR that would be one-third the size of any previous SARR on a revenue per employee basis.[126]

[125] And far from endorsing the results in *AEPCO*, the Board only accepted this number after criticizing the sufficiency of the evidence presented by both parties. *AEPCO* 2011, STB Docket No. 42113, at 58.

[126] A SARR's total revenue is a rough approximation of the size of the SARR and the G&A needs of the SARR. Some G&A functions like marketing or revenue accounting have a direct relationship to revenue, and others have a more indirect relationship. *See, e.g.*, *AEPCO 2011*, STB Docket No. 42113, at 56-57 (accepting sales and marketing staff using a scale based on revenue); *Western Fuels I*, STB Docket No. 42088, at 44 (accepting Treasurer's office staff "given the substantial revenues" of the SARR). Overall it cannot be disputed that a SARR with $1 billion in revenues will need more G&A staffing and expenses than a SARR with $300 million in revenues.

Table III-D-13
Comparison of DuPont G&A Staffing to Board-Approved Staffing In Past Cases

Case	G&A Staff[127]	Revenue (in millions)[128]	G&A Staff Per $10M Revenue
Duke/NS	63	$487.1	1.29
CP&L	63	$453.7	1.39
Duke/CSXT	59	$496.8	1.19
Xcel	51	$341.5	1.49
Otter Tail	55	$581.7	0.95
AEP Texas	66	$384.2	1.72
WFA	39	$218.4	1.78
AEPCO	225	$2,075.8	1.08
DuPont Opening	**213**	**$6,642**	**0.32**

Table III-D-13 illustrates that in past SARR cases, the Board has generally accepted G&A staffing in the range of one to two employees per $10 million of SARR revenue. But DuPont claims that the DRR could function with a G&A department of only 0.32 employees per $10 million in revenue—approximately one-third the staffing level of any prior case. This plainly is not "consistency—rather, it is dramatically slashing G&A staff levels from those that the Board has approved for much simpler SARRs. And it is slashing them in a case where the

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[127] DRR data is located at Table III-D-3 on page III-D-14 of DuPont's Opening Evidence. Data on prior SAC cases was derived as follows: *Duke/NS:* (*Duke/NS*, 7 S.T.B. at 156); *CP&L*: (*CP&L*, 7 S.T.B. at 294); *Duke/CSXT*: (*Duke/CSXT*, 7 S.T.B. at 460); *Xcel*: (*Xcel*, 7 S.T.B. at 648); *Otter Tail*: (*Otter Tail*, STB Docket No. 42071, at C-8); *AEP Texas*: (*AEP Texas*, STB Docket No. 41191, (Sub-No. 1), at 53); *Western Fuels*: (*WFA I*, STB Docket No. 42088, at 43); *AEPCO*: (*AEPCO 2011*, STB Docket No. 42113, at 55).

[128] Revenue is taken from the first year of the SARR's operation. DRR data is located at Table II-A-7 on page III-A-18 of DuPont's opening evidence. Data on prior SAC cases was derived as follows: *Duke/NS:* (*Duke/NS*, 7 S.T.B. at 147); *CP&L*: (*CP&L*, 7 S.T.B. at 287); *Duke/CSXT*: (*Duke/CSXT*, 7 S.T.B. at 451); *Xcel*: (*Xcel*, 7 S.T.B. at 640); *Otter Tail*: (*Otter Tail*, STB Docket No. 42071, at E-6); *AEP Texas*: (*AEP Texas*, STB Docket No. 41191, (Sub-No. 1), at 112); *Western Fuels*: (*WFA I*, STB Docket No. 42088, at 31); *AEPCO*: (AEPCO Rebuttal, *AEPCO 2011*, STB Docket No. 42113, III-A-113 (July 1, 2010); *AEPCO 2011*, STB Docket No. 42113, at 26).

complex traffic mix of the DRR would require more G&A expenses than in prior cases—not less.

Comparing total G&A spending produces a similar result. In past SAC cases, the Board has accepted SARR G&A spending ranging between 2.5% and 5% of SARR revenues; the average percentage from the last eight decided cases is just over 3%. But DuPont claims that the DRR would spend less than 1% of its revenues on G&A expenses, as Table III-D-14 illustrates:

Table III-D-14
Comparison of DuPont G&A Spending to Board-Approved G&A Spending In Past Cases

Case	G&A Spending (in millions)[129]	Revenue (in millions)[130]	G&A Spending as Percentage of Revenue
Duke/NS	$13.0	$487.1	2.7%
CP&L	$13.0	$453.7	2.9%
Duke/CSXT	$12.6	$496.8	2.5%
Xcel	$10.4	$341.5	3.0%
Otter Tail	$13.3	$581.7	2.3%
AEP Texas	$12.5	$384.2	3.3%
WFA	$11.0	$218.4	5.0%
AEPCO	$58.3	$2,075.8	2.8%
DuPont Opening	**$57.6**	**$6,642**	**0.87%**

Again, the size, diversity of traffic, and complexity of the DRR suggests the level of G&A spending should be higher than—and not one third of—prior cases.

[129] DRR data is located at page III-D-2 of DuPont's Opening Evidence. Data on prior SAC cases was derived as follows: *Duke/NS:* (*Duke/NS*, 7 S.T.B. at 156); *CP&L*: (*CP&L*, 7 S.T.B. at 288); *Duke/CSXT*: (*Duke/CSXT*, 7 S.T.B. at 452); *Xcel*: (*Xcel*, 7 S.T.B. at 641); *Otter Tail*: (*Otter Tail*, STB Docket No. 42071, at C-1); *AEP Texas*: (*AEP Texas*, STB Docket No. 41191, (Sub-No. 1), at 40); *Western Fuels*: (*WFA II*, STB Docket No. 42088, at 35); *AEPCO*: (*AEPCO 2011*, STB Docket No. 42113, at 40).

[130] *See supra* sources cited in footnote 128.

In short, DuPont's G&A evidence is not comparable to evidence in past cases at all; on the contrary, DuPont is proposing much leaner—and plainly unrealistically lower—staffing for a much larger SARR.

DuPont's assertion that the DRR's G&A department would be one-third the size suggested by past Board decisions is particularly unreasonable because the DRR's traffic mix would require significantly more G&A spending than a typical coal-only SARR. The Board has approved relatively low G&A staffing in past SAC cases in part because of the simplified nature of those operations. *See, e.g.*, *Otter Tail*, STB Docket No. 42071, at C-9 (citing SARR's "limited complexity" and "relatively simple operations"); *TMPA I*, 6 S.T.B. at 679 (SARR "would have a single commodity and a stable customer base"). But in this case, the DRR is an unusually complex SARR that handles significant volumes of intermodal, general freight, and automotive traffic for thousands of customers. As Table III-D-15 illustrates, the DRR has far more non-coal traffic than any prior SARR.

Table III-D-15
Comparison of DRR Traffic Mix to Traffic Mix In Past Cases by Tonnage[131]

	DuPont	*AEPCO*	*AEP Texas*	*WFA*	*Otter Tail*	*Xcel*	*CP&L*	*Duke/ CSXT*	*Duke/ NS*	*TMPA*
Coal	**37.9%**	53.3%	95.6%	100%	90.3%	100%	95%	98%	95%	100%
Non-Coal [132]	**62.1%**	46.7%	4.4%	0%	9.7%	0%	5%	2%	5%	0%
Total	**100%**	100%	100%	100%	100%	100%	100%	100%	100%	100%

Indeed, the DRR's traffic mix more closely resembles the traffic mix of real-world railroads than the traffic groups of prior SARRs. For example, in 2010 NS's mix of traffic was 23% coal and 77% non-coal on a carload basis—comparable to the DRR breakdown.

[131] NS data is drawn from its 2011 R-1 at 97 and 2011 Annual Report at K5. DRR data is drawn from Table III-A-1 of DuPont Opening III-A-4. Data on prior SAC cases was derived as follows: *AEPCO*: (AEPCO Rebuttal, *AEPCO 2011*, STB Docket No. 42113, III-A-85 (July 1, 2010)); *AEPCO 2011*, STB Docket No. 42113, at 67); *WFA:* (*WFA I*, STB Docket No. 42088, at 9); *AEP Texas* (AEP Texas Opening, *AEP Texas,* STB Docket No. 41191, (Sub-No. 1), III-A-8; BNSF Reply, *AEP Texas*, STB Docket No. 41191, (Sub-No. 1), III-A-71 to III-A-72); *Otter Tail*: (Otter Tail Rebuttal, *Otter Tail*, STB Docket No. 42071, III-A-58 (April 29, 2004); *Otter Tail*, STB Docket No. 42071, at B-3); *Xcel*: (*Xcel*, 7 S.T.B. at 600); *Duke/CSXT*: (*Duke/CSXT*, 7 S.T.B. at 424, 444); *Duke/NS*: (*Duke/NS*, 7 S.T.B. at 15, 43); *CP&L*: (*CP&L*, 7 S.T.B. at 248); *TMPA*: (*TMPA I*, 6 S.T.B. at 588).

[132] Including intermodal.

Table III-D-16
NS 2010 Carloads and Revenue By Traffic Type[133]

Traffic Type	Carloads (thousands)	Carloads Percentage	Revenue (millions)	Revenue Percentage
Intermodal (IM)	2,936	43.70%	$1,440	15.96%
Coal (80)	1,541	22.94%	$2,572	28.50%
Agricultural Products (10)	618	9.20%	$1,334	14.78%
Chemicals (40)	400	5.95%	$1,289	14.28%
Paper (30)	315	4.69%	$701	7.77%
Metals (20)	359	5.34%	$692	7.67%
Automotive (60)	288	4.29%	$631	6.99%
Construction Materials (25)	262	3.90%	$364	4.03%
General Freight	1,954	29.09%	$4,380	48.54%
Total	**6,718**	100.00%	**$9,024**	100.00%

Even if a comparison to past SARR G&A levels were sufficient evidence to justify G&A proposals here—and it is not—DuPont's staffing model not only fails that test, it makes clear that DuPont has grossly understated the DRR's G&A staffing needs and expenses.

(b) DuPont's Other Claimed Reasons For the DRR's Low G&A Spending and Staffing Are Not Credible.

DuPont's opening evidence provides virtually no explanation for why the DRR could effectively operate with G&A spending at one-eighth the level of other Class I railroads and one third the spending of prior—and simpler—SARRS. DuPont's evidence is entirely devoid of the

[133] NS used 2010 because it is the last complete year for which records were produced to DuPont in discovery.

benchmarking analyses and real-world metrics that the Board has urged parties to present to support G&A evidence. And nowhere in its G&A staffing evidence does DuPont attempt to relate its proposed DRR staff to staffing levels at any real-world railroad. Instead, DuPont offers generalized platitudes about the DRR's ability to reduce "overhead" by being smaller than NS, while simultaneously "achiev[ing] greater staffing economies of scale than a smaller railroad." DuPont Opening Ex. III-D-2 at 2. While DuPont's claims about the effect of the size of the DRR on its relative efficiency are utterly inconsistent, what is consistent is that DuPont provides absolutely no hard evidence to support either claim. DuPont never explains what "overhead" would be reduced or how it could be reduced, nor does it explain what "economies of scale" it expects the DRR to realize. This falls far short of the Board's admonition that "parties must provide appropriate documentation to support their estimates." *Rate Regulation Reforms*, STB Ex Parte No. 715, at 6 (served July 25, 2012).

Instead of the documentation that the Board has instructed parties to provide, DuPont offers a few scattered arguments claiming that certain characteristics of the DRR would allow it to have lower G&A spending than NS or other real-world railroads. Specifically, DuPont suggests that the DRR could have lower staffing because (1) the DRR would rely on information technology; (2) the DRR would use outsourcing; (3) the DRR primarily would carry crossover traffic; (4) the DRR would not be unionized; and (5) the DRR would be privately held. None of these claims have any substantial effect on the G&A staffing and spending that the DRR would need to operate in the real world.

(i) The DRR's IT Systems are Unexceptional and Do Not Offer Substantial Savings.

DuPont implies that the DRR will realize significant savings by relying on its information technology systems to allow "optimum staffing." DuPont Opening Ex. III-D-2 at 23. But

DuPont provides no evidence that the DRR's IT systems would allow it to employ less G&A staff than real-world Class I railroads—all of which use technology equal or superior to that of the DRR. Every Class I railroad has made substantial investments in IT systems and applications that reduce manpower needs, and most railroads have customized technology that is significantly more sophisticated than the off-the-shelf products that DuPont proposes for the DRR. But having sophisticated IT systems does not eliminate the need to employ human beings to operate, maintain, correct, and use these applications and to address the many complex issues that a computer program cannot solve. Even if one generously assumes that the DRR would have IT applications with functionality equivalent to the functionality of IT applications used by real-world railroads, that cannot be grounds for DuPont to argue for less DRR staffing than real-world railroads that have equivalent technology.

Indeed, NS is acknowledged as having industry-leading technology in a variety of areas. NS has been recognized by neutral assessors as a leading technological innovator,[134] and NS has made a corporate commitment to improving its technology to enhance both customer service and operating efficiency.[135] Many of NS's applications were created in-house or optimized

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[134] *See, e.g.*, NS Reply WP "Forbes.com Magazine Article.pdf" (summarizing NS technology and noting that "Norfolk's system is so far ahead of other railroads' that it sells its software to rivals."); NS Reply WP "Progressive Railroading Article.pdf" (discussing NS's use of technology to reduce operating costs, improve operational performance, and boost business); NS Reply WP "NS CEO Named Railway Age 'Railroader of the Year'.pdf" (noting that "Norfolk Southern has excelled in technological innovation").

[135] *See* NS Reply WP "NS Investor Book on Technology.pdf" *available at* http://www.nscorp.com/nscportal/nscorp/Investors/Financial_Reports/Investor%20Book/technology.html; NS Reply WP "NS Newsbreak – New Technologies Make Railroad Safer, More Efficient.pdf."

specifically for NS—making these applications significantly more efficient and useful than off-the-shelf software.[136]

NS's technological advantage allows it to operate more efficiently and effectively. But technology is not an independently sufficient cure-all—it is a tool to be utilized by skilled employees. For example, NS has implemented an advanced enterprise resource planning ("ERP") software package that is used by NS accounting and human resources staff, but that does not eliminate the need for staff to both operate the software program and deal with the many complex issues that a computer cannot. There is no justification for DRR to assume that it could operate with less staff simply because the DRR would have access to software that replicates some of the functionality of some of NS's existing systems.

Of particular relevance here is the fact that NS uses IT applications that are better than or equivalent to each of the IT applications that DuPont posits for the DRR. DuPont identifies eight software packages that the DRR would use. NS has superior or comparable technology for each of them, as explained below.

Transportation System. The centerpiece of DuPont's proposed DRR technology package is the RMI Transportation Management Services ("TMS") package, which DuPont proposes to use for a variety of transportation-related purposes including inventory control, waybilling, and switch instructions. *See* DuPont Opening Ex. III-D-2 at 24. But NS likewise has IT applications to assist with these functions, including the Thoroughbred Yard Enterprise System ("TYES")

[136] NS Reply WP "NS IT Applications List.xlsx" is a list of 447 current and legacy systems NS software applications that illustrates the extent to which NS is a technologically state-of-the-art railroad and already is maximizing any efficiencies that could be realized through technology. Each application has a specific function integrated in NS's overall operations to maximize the railroad's efficiency.

and Integrated Transportation Management System ("ITMS").[137] DuPont cannot credibly claim that it would realize efficiencies by purchasing technology that replicates part of the functionality of technology that NS already has.

Crew Management System. DuPont also proposes that the DRR would use PS Technology's SCAT Client Service system and Oracle for crew management in order to "efficiently manage the DRR train crews and equipment." *Id.* NS has similar technology—indeed NS uses PS Technology's Crew Management System to call, pay, and manage road and yard assignments and employees efficiently.[138]

Dispatching System. DuPont says the DRR will use a "computerized dispatching system" to monitor "the movement of trains and other equipment at all times" and "distribute[] traffic efficiently across the railroad." *Id.* NS also uses a computerized dispatching system and is in the process of upgrading to the Unified Train Control System, a networked computer-aided dispatching system that allows it to manage its rail network efficiently. DuPont also says that the DRR would "purchase and implement a PTC system for train control and communications." *Id.* But DuPont is merely proposing to use a system that does not yet exist and that NS and all Class I railroads are in the process of implementing as required by law.[139] *See* III-F-236.

Revenue Accounting. As with its Transportation System, DuPont proposes to rely on RMI for its revenue accounting functions, specifically RMI's Revenue Management Services.

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[137] TYES is a proprietary system developed in-house at NS. It is being enhanced regularly to provide increased operational efficiencies. ITMS is made up of several transportation sub-systems, integrating them so that changes in one system populate in all of the systems including train movements, waybills, equipment status, and operating plans. Automated integration reduces the need for railroad employees to manually input changes.

[138] *See* NS Reply WP "PS Technology Crew Management Systems.pdf" (lists existing customers including NS).

[139] 49 U.S.C. § 20157.

See DuPont Opening Ex. III-D-2 at 25. NS uses its own powerful, in-house IT solutions including Powertrain and eFreight Bill to achieve the same functionality as those touted by DuPont in its use of RMI. What DuPont does not acknowledge is that most of the work done by Revenue Accounting staff at NS and other real-world railroads is dedicated to addressing the exceptions to the automatic processes that the IT solutions handle best. The DRR similarly would need staff to do this work (as detailed below). *See infra* III-D-111 to III-D-115.

Car Accounting. Once again, DuPont relies on RMI for "a car hire system for receipts and payables." DuPont Opening Ex. III-D-2 at 25. But NS also has a whole suite of IT applications for Car Accounting and, as with all IT functions, it also has the staff to operate these IT applications.[140]

General Accounting. The DRR plans to use Oracle's PeopleSoft applications as its general accounting system. *See* DuPont Opening Ex. III-D-2 at 26. DuPont apparently believes that using Oracle's ERP software would allow it to slash staffing because the DRR could avoid having work "performed manually by in-house staff employees." *Id.* at 8. The fallacy of this argument is proven by the fact that NS also uses an ERP software package provided by SAP. The SAP and Oracle ERP packages are so similar that NS actually considered purchasing Oracle PeopleSoft when it upgraded its ERP software in 2010. NS has specially enhanced its ERP software to improve its functionality in a railroad environment, making over 1,800 enhancements in order to better apply SAP's applications.[141] Oracle, like SAP, is not a "plug and play" system but requires customization in order to operate properly and usefully. DuPont proposes to use a noncustomized off-the-shelf version, which plainly cannot be more efficient or cost-saving than the optimized NS software. Moreover, no ERP software can be a full replacement for an

[140] *See* NS Reply WP "NS IT Applications List.xlsx."

[141] *See* NS Reply WP "NS SAP Customization.xls."

accounting staff necessary to determine property or income taxes in multiple states, designate projects for capitalization or expense, and answer other difficult tax questions that require a degree of complexity and judgment computer applications do not provide.

Human Resource Management. The DRR also plans to use Oracle for its Human Resources function. *See* DuPont Opening Ex. III-D-2 at 26. Again, NS uses the comparable ERP SAP to achieve the same efficiencies and functionality that the DRR hopes to achieve. But as with other IT applications, NS's use of SAP for Human Resources still requires personnel as well as customization. The DRR will require the same. DuPont's evidence does not explain how the DRR's HR software could enable it to perform at a higher efficiency than NS, which uses similar software.

In short, every software package that DuPont proposes to use for the DRR has a counterpart at NS, and the NS counterparts are typically more powerful, labor-saving, and efficient than the DRR programs. Indeed, NS has multiple labor-saving and efficiency-improving programs that DuPont did not provide for the DRR. For example, the Algorithmic Blocking and Classification ("ABC") System, a subsystem of ITMS, efficiently blocks cars to route traffic through the rail network. The Digital Mapping Index ("DMI") provides a digital reference of the NS rail network. The Locomotive Assignment and Routing System ("LARS") is used to forecast locomotive demand.[142] NS's marketing department uses programs to manage and publish rates, a process that is very labor intensive for railroads (like the DRR) that do not have any software to assist with it. NS has also used technology to improve functionality for customers. For example, accessNS allows customers to track their traffic and do basic functions such as file freight claims. Thoroughbred Pacesetter is a tool within accessNS that gives

[142] See NS Reply WP "NS Advanced IT Systems.pdf."

customers the ability in real time to order cars to be placed at their facility or to release cars to be pulled for shipment. These are just a few examples of NS using top-of-the-line IT systems in the exact same way, or in some cases better than, DuPont anticipates.[143]

In short, there is no basis to conclude that the DRR's IT systems would allow it to operate more efficiently than NS.

(ii) The DRR's Reliance on Outsourcing.

Another theme of DuPont's G&A evidence is that the DRR can somehow gain large savings in costs and manpower by "outsourcing" its functions.[144] But the DRR outsources only a handful of its functions, so reliance on outsourcing is no justification for the DRR's absurdly low staffing levels. Moreover, nearly all of the outsourcing efficiencies that DuPont proposes are based on utterly unrealistic and unsupported underestimates of what outsourcing would cost. While a SAC complainant is free to propose that the SARR would outsource certain functions, it is incumbent on the SAC complainant to prove both that the proposed outsourcing is feasible and that its estimates of outsourcing costs are reasonable. *See Xcel*, 7 S.T.B. at 650.

Here, DuPont has provided virtually no documentation for its proposed outsourcing costs. Instead, it uses "outsourcing" as an excuse to entirely ignore or grossly understate the costs of many important G&A functions. For example, DuPont claims in its narrative that the DRR would outsource a portion of its marketing function and therefore "needs only a small internal staff of 18 Marketing Managers" to supervise a "marketing contractor." DuPont Opening Ex.

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[143] *See* NS Reply WP "NS IT Applications List.xlsx."

[144] *See, e.g.*, DuPont Opening III-D-19 ("several functions customarily provided in-house by large Class I railroads can be efficiently out-sourced by the DRR"); DuPont Opening Ex. III-D-2 at 15 ("As most of the DRR's application software is available off-the-shelf, very little development and maintenance is required."); DuPont Opening Ex. III-D-11 at 24 ("[SCAT Client service] minimizes the need for a large staff of crew callers or other crew management personnel.").

III-D-2 at 6. While DuPont acknowledges that the Board rejected a similar outsourcing proposal for a larger mixed-freight SARR in *AEPCO*, it claims that its "evidence shows that it would be entirely feasible for a rail carrier the size of the DRR to outsource some, but not all of the marketing function." DuPont Opening I-68. This assertion is mystifying, for DuPont's evidence contains no evidence at all that outsourcing would be feasible for a large Class I SARR like the DRR, which has three times the revenues of the SARR in *AEPCO*. DuPont also provides no evidence of what "outsourcing contractor" it proposes the SARR would use and no evidence at all of the proposed outsourcing costs for marketing. Simply put, DuPont proposed a skeleton DRR marketing staff because of alleged outsourcing, but provided no evidence that outsourcing was feasible and failed to include any costs for such outsourcing in its evidence.

While DuPont's marketing "outsourcing" is perhaps the most egregious example of its use of outsourcing to reduce SARR costs, its evidence is characterized by a nearly complete dearth of support for its outsourcing proposals. Indeed, the entirety of DuPont's outsourcing "evidence" consists of a single, unsupported workpaper spreadsheet, "DRR GA Outsourcing.xls," which is reproduced in whole below:

DRR G&A Outsourcing	
Item	Amount
(1)	(2)
Federal, State, and Local tax return preparation	$200,000
Property tax preparation	$100,000
Payroll processing ($50 per person)	$248,550
Audit and internal review	$250,000
Claims handling (Equiv. 6 claims investigators)	$250,000
Outside Counsel	
-Retainer for 20 state law firms	$1,000,000
-Retainer for law firm to handle Federal matters 1/	$75,000
Total	$2,123,550
1/ (FRA/Environmental, etc; no SEC work and minimal	

STB work, e.g. no max rate proceedings)	

DuPont has produced no evidence that these costs relate to what outsourcing would cost in the real world. With the exception of the payroll processing cost, the numbers appear to be just plucked out of the air—or, perhaps more likely, to have been copied from evidence submitted in another SAC case. For example, DuPont's claim that the 8,000-mile DRR could spend a mere $250,000 to outsource the claims function is identical to the claims outsourcing costs that past SAC litigants proposed for significantly smaller SARRs.[145] And DuPont's assumption that the DRR could function with a mere $50,000 in outside counsel expenses per state is similarly a cut-and-paste job from another complainant's submission that is untethered to any realistic benchmark of legal costs for a Class I railroad.[146]

NS's Reply Evidence accepts DuPont's proposals to use outsourcing where outsourcing is feasible and realistic. But NS does not accept DuPont's unreasonably low estimates of outsourcing costs, and NS has corrected those estimates to levels that approximate the expenses that the DRR would incur for outsourcing in the real world. *See infra* III-D-178 to III-D-181. Moreover, having failed to support its unsubstantiated evidence for outsourcing costs in its Opening Evidence, DuPont is foreclosed from offering any such evidence on Rebuttal.[147]

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[145] *See* CSXT Reply, *Seminole*, STB Docket No. 42110, III-D-80 (Jan. 19, 2010) (noting that complainant proposed $250,000 budget for outsourcing claims handling); AEPCO Opening, *AEPCO 2011*, STB Docket No. 42113, III-D-58 (same).

[146] *Cf.* UP Reply, *IPA*, STB Docket No. 42127, III.D-42 (Nov. 10, 2011) (stating that IPA also proposed an outside counsel retainer of $50,000 per state but "provides no evidence as to how it developed its cost estimate").

[147] *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057 at 2 (served Apr. 4, 2003).

(iii) The DRR's Reliance on Cross-Over Traffic Does Not Justify Inadequate G&A Spending.

Asserting a theory explicitly rejected by the Board in *AEPCO*, DuPont claims that the DRR can enjoy below-average G&A spending because it can expect other railroads to perform marketing and customer service functions for its overhead traffic. *See* DuPont Opening Ex. III-D-2 at 6 (arguing that because "[t]he great majority of DRR's traffic . . . is interchange received or forwarded from or to other carriers [sic] interchange operations," "the DRR has minimal direct customer contacts" and "needs only a small internal staff"). According to DuPont, therefore, it need not develop the full costs for marketing and customer service on the traffic it selected, because the residual NS would perform these functions for the DRR. DuPont's theory that the DRR could rely on the residual NS to provide essential services to DRR customers violates the fundamental SAC principle that a SARR must account for all of the costs associated with serving its selected traffic. *See, e.g.*, *Duke/CSXT*, 7 S.T.B. at 464 ("[I]t is inconsistent with the purpose of the SAC test to assume that the existence of the defendant railroad would limit the costs the [SARR] would incur.").

In *AEPCO*, the Board specifically and unequivocally rejected the exact same theory that DuPont asserts now. There, the complainant argued that its "large amount of overhead traffic" allowed it to reduce SARR marketing staffing because the SARR supposedly would have "far fewer customer interactions" than a real-world railroad. *AEPCO 2011*, STB Docket No. 42113, at 56-57. The Board strongly disagreed:

> We reject the proposition that the [SARR] will have fewer customer service needs due to its large amount of overhead traffic. Overhead traffic still requires customer service support. Also, the [SARR] will still be required to charge rates on these movements – a complex task done by the marketing staff. The fact that the [SARR] would carry a large amount of cross-over traffic does not mean that the complainant should be permitted

> to shield the SARR from expenses such as billing, rate setting, and customer service.

Id. Here, DuPont has raised the same argument that the Board dismissed in *AEPCO*, but has provided no reason for the Board to revisit its decision. The Board should therefore reject this argument out of hand. *See SAC Procedures*, 5 S.T.B. at 446 ("[T]he parties to SAC cases are cautioned not to attempt to relitigate issues that have been resolved in prior cases. Unless new evidence or different arguments are presented, we will adhere to precedent established in prior cases.").

(iv) DRR's Use of Non-Union Personnel Has a Minimal Impact on G&A Spending.

DuPont justifies its low operating expenses in part on the theory that the DRR would have "non-union personnel." DuPont Opening I-66. But the fact that the DRR's workforce would not be unionized has little impact on its G&A expenses, for whether or not a railroad is unionized does not affect the amount of work that has to be performed. The HR department will still need to handle change of benefits forms for employees, the accounting department will still need to account for capital spending and administer the payroll, and the purchasing department will still need to buy tracks and ties. None of the DRR's core G&A responsibilities disappear or change because DuPont posits that the DRR will not be unionized. Likewise, DuPont cannot reasonably assume that nonunionized DRR employees would inherently be more efficient than unionized employees of NS or another railroad.

The primary exception to this rule is that a nonunionized SARR would have no need for a Labor Relations Department. NS does not propose that the DRR would need any labor relations employees. This assumption is quite conservative, for labor relations deals with a number of issues that arise regardless of whether a railroad is unionized. For example, a unionized railroad like NS has formalized grievance and employee discipline procedures that are governed by its

agreements with unions including the Brotherhood of Locomotive Engineers and Trainmen, Brotherhood of Maintenance of Way Employes, and the United Transportation Union. But a non-union railroad would still need processes to handle employee discipline and complaints. In short, DuPont's low G&A staff cannot be justified by the fact that it is not a unionized railroad.

(v) Being a Privately Held Company Has a Minor Impact on G&A Needs.

Finally, DuPont posits that the DRR would be a privately held company that is "not publicly-owned/traded." DuPont Opening Ex. III-D-2 at 5. But being privately held would have a minimal impact on overall G&A staffing or functionality. The single efficiency that the DRR could realize from private ownership is the fact that it would not need to prepare public filings with the Securities and Exchange Commission ("SEC"). But that does not eliminate the need for the DRR to maintain a robust financial reporting function. For example, as a Class I railroad the DRR would be required to prepare dozens of filings each year for the STB, the Railroad Retirement Board, and FRA. *See infra* III-D-123. Many states similarly require reporting; for example, several state tax authorities require annual reports on railroad finances and assets for use in preparing ad valorem tax assessments.[148] Moreover, private companies still need to maintain basic financial controls, particularly private companies like the DRR that would have to answer to the investors and lenders that provided it with the over $42 billion[149] necessary to construct its infrastructure.[150] A private company the size of the DRR will have many investors

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[148] *See, e.g.*, NS Reply WP "Ad Valorem Tax Procedures in DRR States.pdf."

[149] *See infra* III-F.

[150] The need for private companies to maintain financial controls is demonstrated by the establishment of the Private Company Council, part of the Financial Accounting Foundation Board, charged with improving the process of setting accounting standards for private companies. *See* NS Reply WP "Financial Accounting Foundation Board of Trustees Establishment of the Private Company Council.pdf."

and require funding from multiple sources. The DRR will need to prepare regular financial statements and maintain financial controls adequate to satisfy those investors.

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In short, none of the grounds that DuPont cites for the DRR's efficiency have any significant impact on the actual G&A spending and staffing it would require. Collectively these grounds do not even come close to justifying DuPont's proposal that the DRR would have a G&A department eight times more efficient than that of any other Class I railroad.

ii. Staffing Requirements

NS's expert Richard Brown developed G&A staffing evidence for the DRR based on his extensive experience in the railroad industry, a review of relevant benchmarks from other railroads, and analysis of the G&A functions that the DRR would need to perform. Mr. Brown has substantial real-world experience in optimizing G&A expenses through technological solutions and functional reorganizations. *See infra* Section IV. In this case, Mr. Brown developed G&A expenses by identifying the fundamental G&A functions that the DRR would need to perform and the minimum staffing and spending levels necessary to perform those functions. During his analysis Mr. Brown considered information on staffing levels at NS and other railroads, and he also conducted multiple interviews with NS G&A managers to develop an appropriate understanding of the tasks that the DRR would need to perform and appropriate metrics for measuring how many employees would be required at a least-cost, most-efficient railroad.[151]

Mr. Brown developed a G&A plan for the DRR based on three fundamental principles, all of which are well-grounded in the Board's precedents. First, the DRR must perform all

[151] NS Reply WP "G&A Interviews.pdf" lists the interviews with NS personnel that Mr. Brown conducted while developing his opinion.

commercial, administrative, and legal functions that are necessary for a real-world railroad to feasibly serve DuPont's selected traffic group.[152] Some of these functions are driven by legal requirements: *e.g.*, the DRR must have sufficient staff to fulfill legal requirements for developing a TIH routing plan and for STB, FRA, and Railroad Retirement Board reporting. Others are driven by the need to serve DuPont's selected traffic group: *e.g.*, the DRR must provide its selected customers with satisfactory customer service, marketing, and billing services. And others are driven by the practical business realities of operating a major business: *e.g.*, the DRR must have enough accounting staff to pay its taxes and balance its books, enough HR personnel to respond to the various demands of a 8,808 employee workforce, and enough IT analysts to keep its IT systems functioning. All of these are "real-world railroading" needs that cannot be ignored or short-staffed. Because DuPont selected such a large and diverse traffic group, the DRR's G&A function must be significantly more robust than the G&A functions that have been proposed for many past coal-only or predominantly coal SARRs. Second, for each necessary G&A function, Mr. Brown assumed that the DRR would be a least-cost, most-efficient railroad that would operate at maximum efficiency. In keeping with the SAC principle that the SARR is optimally efficient, Mr. Brown conservatively assumed that the DRR could realize substantial G&A efficiencies over NS and other real-world railroads. But even with that conservative assumption, the G&A staffing and spending levels must be drastically increased to even approach realistically achievable levels. And third, unlike DuPont's witness, Mr. Brown provided extensive documentation to support the staffing levels he presents. Mr. Brown's enclosed workpapers include detailed explanations of staff functions, third party benchmarks where available, and well-reasoned metrics for estimating reasonable DRR spending levels.

[152] *See WFA I*, STB Docket No. 42088, at 15 ("assumptions used in the SAC analysis . . . must be realistic, *i.e.*, consistent with the underlying realities of real-world railroading").

In some G&A areas, the best evidence of the staff required to perform a particular function was evidence of NS's own current staffing levels and workloads. Where appropriate, Mr. Brown used NS's staffing levels and the relevant workloads handled by NS to inform his judgment of what levels could be reasonably achieved by a maximally efficient SARR. Mr. Brown's approach is conservative, for in this unique case NS's current staffing levels are likely the best evidence of what an efficient SARR that is also a Class I railroad would need, and yet, Mr. Brown assumed the DRR could realize significant efficiencies over those levels. DuPont's traffic group is not a selective, single-commodity group that could be served by a specialized G&A department. Rather, it is a diverse collection of NS's own traffic—with coal, intermodal, and thousands of general freight customers.[153] The DRR touches 92% of all NS traffic by carloads and DuPont has presented no evidence that the DRR could provide G&A services for this traffic group in a more efficient way than NS does, and it has only identified a few minor G&A areas (like SEC reporting and labor relations) that its SARR would not have to replicate. NS's own G&A spending is therefore the best evidence of what a real-world DRR would have to spend on G&A. Nevertheless, to be conservative Mr. Brown has assumed that the DRR could realize significant efficiencies over NS in these instances in which he considers NS's G&A staffing and spending levels. Table III-D-17 compares the real-world NS, DuPont's DRR

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[153] This case is therefore not at all like prior cases where a railroad has argued that a specialized coal-only SARR was required to replicate the incumbent's existing staffing. *See, e.g.*, *TMPA I*, 6 S.T.B. at 679 (rejecting railroad claim that SARR would need to replicate incumbent's marketing staff because SARR "would have a single commodity and a stable customer base" and could have smaller staff to deal with "limited customer base"). Here, DuPont has selected DRR traffic from the full swath of NS's customer base and therefore cannot claim any efficiencies from being a small, one-commodity SARR.[154] "Span of control" is a management concept meaning "the number of subordinates that a manger or supervisor can directly control." http://www.businessdictionary.com/definition/span-of-control.html.

proposal and NS's DRR reply, demonstrating how unreasonably slim DuPont's staffing is and how conservative NS is being in reply.

Table III-D-17
Real-World NS, DuPont Proposed DRR and NS Reply DRR Comparison

Department	Real-World NS	DRR		DRR % of Real-World NS	
		DuPont Opening	NS Reply	DuPont Opening	NS Reply
Executive	{{ }}	4	16	{{ }}	{{ }}
Marketing	{{ }}	21	140	{{ }}	{{ }}
Finance	{{ }}	66	288	{{ }}	{{ }}
Admin	{{ }}	45	198	{{ }}	{{ }}
IT	{{ }}	46	78	{{ }}	{{ }}
Operations Support	{{ }}	61	225	{{ }}	{{ }}
Mechanical	{{ }}	276	551	{{ }}	{{ }}
Operations Staff	{{ }}	278	558	{{ }}	{{ }}
Conductor Engineer	{{ }}	3166	4500	{{ }}	{{ }}
Engineering Staff	{{ }}	50	271	{{ }}	{{ }}
Engineering Line	{{ }}	958	2153	{{ }}	{{ }}
Total	{{ }}	4971	8978	{{ }}	{{ }}

Mr. Brown's analysis and proposed staffing levels also takes into account management principles and best practices. A least-cost, most-efficient SARR must be designed in accordance with important principles like optimizing span of control and ensuring an efficient division of labor. "Span of control" is a management concept used to describe the number of people that a manager can supervise efficiently.[154] If an individual's span of control is too wide (*i.e.*, she

[154] "Span of control" is a management concept meaning "the number of subordinates that a manger or supervisor can directly control." http://www.businessdictionary.com/definition/span-of-control.html.

oversees too many individuals and areas), then effective management becomes impossible. Mr. Brown's analysis incorporates span of control principles to optimally size the DRR's staff.[155]

Likewise, part of running an efficient organization is ensuring an effective division of labor in which administrative tasks can be performed by administrative staff and not by more senior and higher-paid staff. DuPont ignores this principle as well, by proposing a G&A department with 213 employees and only four administrative assistants—a 1-to-50 ratio. An adequate number of administrative assistants to perform routine tasks like correspondence, scheduling, and booking travel is an essential feature of an optimally efficient organization. Mr. Brown adds eight administrative assistants to the DRR's G&A structure in areas where the volume of administrative work justifies those positions.

(a) Executive Department

DuPont significantly understaffs the executive function of the DRR. According to DuPont, the DRR Executive Department consist of only four employees: the President, an Administrative Assistant, and two Directors of Corporate Relations.[156] *See* DuPont Opening Ex. III-D-2 at 5. DuPont does not elaborate on what its two Directors of Corporate Relations would do, except to say that they would "interface with state and local governments."[157] *Id.* As a result, DuPont proposes that the DRR would be overseen by one individual, the President, who would be responsible for both supervising direct reports from each of the DRR departments and managing all of the "DRR's external relations," with assistance from two employees and an administrative assistant. This proposed structure is not feasible, for two reasons.

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[155] For example, as discussed below, NS provides an Assistant Vice President to assist the CEO in managing the DRR's external relations function.

[156] DuPont Opening III-D-14.

[157] *Id.*

First, it is not possible for one individual to manage such a diverse portfolio of responsibilities on what would be the fifth largest railroad in the United States. The DRR is not a typically small coal-only SARR, for which one might posit that a CEO could both manage the railroad and handle the smaller railroad's limited external relations. The DRR is a Class I railroad with $5.6 billion in annual revenues, 8,808 employees, and operations in 20 states, and it cannot be staffed in the same way as one would staff a regional, one-commodity SARR. DuPont's evidence does not provide any examples of major Class I railroads functioning with such a skeleton staff, and NS is aware of none. In the real world the DRR's President would need to spend most of his or her time engaged in the supervision of the railroad and would not have time to also be "responsible for the DRR's external relations." It is the primary managerial obligation of the President to lead and manage the Vice Presidents and their departments. It is unreasonable to assume the President could also manage a disparate group of executive staff functions unassisted.

Second, DuPont significantly understates the staff necessary for the DRR's external relations. In addition to marketing its services to its customers (which is accounted for in the DRR's Marketing Department), external relations include interactions with investors, with the government, and with the community.

- Investor relations. The DRR would require tens of billions of dollars from lenders and investors, who would not lend that amount of money without regular assurances that their investment was being well spent. DRR requires staff to interact with its investors and lenders and to respond to inquiries and requests for financial reports.[158]

- Government relations. Like any Class I railroad, the DRR will interact regularly with federal government agencies and officials; state governments in the 20 states

[158] *See* NS Reply WP "Chief Executive.net - 5 Advantages That Flow from Consistent Investor Communications.pdf" ("CEOs and executives of *private* companies must develop and maintain strong investor relations.") (emphasis added).

in which it operates; and the many local jurisdictions that the DRR traverses. It will require a robust government relations staff to deal with this function.

- Community relations. In addition, the DRR will need the capacity to interact with the general public and the communities in which in operates. The DRR needs a public relations function both to assist with responses to emergencies like derailments or other accidents and to manage queries or protests from the general public or localities regarding DRR actions (such as grade crossing blockage, noise regulations, or hazardous materials handling).

Even if the President could devote 100% of his or her time to external relations (which is plainly not feasible), DuPont has not provided nearly enough staff to carry out these functions. Indeed, DuPont would have the Board adopt the skimpiest executive function staffing ever proposed for a SARR. In most coal-only SARRs, the executive function has consisted of a three-person department: a President, a corporate relations director, and an administrative assistant. *See, e.g.*, *WFA I*, STB Docket No. 42088, at 43; *AEP Texas*, STB Docket No. 41191, at 51; *Otter Tail*, STB Docket No. 42071, at C-8; *Xcel*, 7 S.T.B. at 649. But these SARRs were all less than a tenth the size of the DRR. DuPont adds only one employee for a SARR with over ten times the revenues of each of these SARRs. And DuPont's four-person executive function staffing is the same as that in *AEPCO*, a SARR that is a third of the DRR's size. DuPont's proposal that the same small staff could manage an exponentially larger railroad is plainly not reasonable.

The two excuses DuPont makes for its skeleton staffing are, respectively, irrelevant and predicated on a fundamental misunderstanding of SAC theory. First, the fact that the DRR "is not publicly-owned/traded" has no effect on its external relations needs. DuPont Opening Ex. III-D-2 at 5. Privately owned railroads have the same needs to interact with government, the community, and their lenders and investors as publicly-owned companies do. If anything, as a privately funded company the SARR would be more beholden to its investors and those from whom it borrows capital than it would be if it had access to the public debt and equity markets (and the much larger investor pool that participates in those markets). Second, DuPont's claim

that the DRR "does not have to compete for business with other railroads or modes of transportation" is dead wrong. *Id.* DuPont cites no support for the preposterous proposition that the DRR can be staffed as though it would never face competition, because there is none. The DRR must be designed to function in the arena of "real-world-railroading," and real-world railroading often entails competition both with other railroads and with alternative modes—particularly for the intermodal and general freight traffic that constitute so much of the DRR's customer base. In short, there is no basis for DuPont's assumption that the DRR would function effectively with a four-person executive function.

NS has proposed executive function staffing for the DRR that is designed to adequately staff necessary external relations functions as efficiently as possible. NS's proposed DRR Executive Department includes four groups responsible for different aspects of the DRR's external relations: Corporate Relations; Public Relations; Federal Government Relations; and State Government Relations. NS's evidence proposes an Assistant Vice President of Corporate Relations with responsibility for overseeing each of these areas. An Assistant Vice President is necessary because the President's many responsibilities for managing the DRR's departments make it infeasible for the President to also oversee each of these groups. The Assistant Vice President will have responsibility for consistent messaging across all the departments of the railroad and the vast geography the DRR crosses. The Assistant Vice President will be supported by an Administrative Assistant, and will oversee the following employees:

Corporate Relations: The Corporate Relations function primarily entails communication with, and management of, the major investors and lenders of the DRR. The financial institutions providing capital to the DRR will have a continuing interest in the short and long-term outlook for the railroad. A Director of Corporate Relations and Manager of Corporate Relations would

be primarily responsible for two-way communication with the DRR's investors and lenders. This function would provide investors with regular reporting on the performance and outlook of the DRR and respond to any informational requests that may arise. In order to answer these requests, the Director and Manager would interface with other DRR personnel, departments and functions as necessary to provide complete and timely responses.

Public Relations: The Public Relations function entails managing all interaction between the DRR and the media. Given the DRR's size and scope, significant effort will be required to address issues such as derailments, grade crossing accidents, disruptive maintenance programs, and other issues that may cause community concern. With ongoing operations in 20 states and hundreds of metropolitan communities, the DRR will have to expend considerable effort and diligence to keep up with public relations issues. To assist with this function, NS proposes a Director of Public Relations and two managers. One of the Managers will have primary responsibility for advertising. The other Manager will provide companywide assistance with messaging strategy, speeches, and print messaging to help ensure a consistent, constructive message to all audiences and in all regions in which the DRR operates or solicits business.

As a basis of comparison, NS has a corporate communications department with {{ }} full-time employees and {{ }} contractors. In 2011, this team: responded to approximately two thousand news media and public inquiries; kept railroad personnel informed with 260 daily compilations of relevant news stories; issued 64 news releases; assisted with 12 major speeches by the CEO; organized seven groundbreaking and other public events; managed outreach through nine social media sites; curated 13 company websites; and helped program nine and a half hours of training, marketing and informational videos.[159] These are the types of functions a

[159] *See* NS Reply WP "Corporate Communications Email.pdf."

modern, multibillion dollar corporation regularly handles. Thus, the three employees Mr. Brown proposes for the DRR is extremely conservative.

Federal Government Relations: The Federal Government Relations function includes the requirement to monitor federal legislation that could impact the DRR, including transportation legislation, appropriations bills, tax proposals and other public policy issues. Representatives of the DRR, like all Class I carriers, will need to keep track of legislation and proposed amendments, attend hearings on relevant issues and bills, and meet with Members of Congress and their staffs to discuss these issues. Sometimes that may involve working or coordinating with an industry or broader coalition on a larger goal. The federal government relations employees of the DRR will also need to interact with a myriad of federal agencies, including TSA, FRA, STB and EPA.

As illustration of the multiple federal government relations issues that a Class I railroad must address, NS's workpapers include NS's second quarter of 2012 United States Congress Lobbying Disclosure Filing, which lists the federal legislation in which NS lobbyists have been involved in a recent representative period.[160] For the quarter shown in the report alone, NS was involved with: an appropriations bill that included funding for Positive Train Control and infrastructure grants as well as a proposal for railroad user fees; a budget resolution provision on railroad user fees; a resolution regarding EPA emissions standards; changes to railroad antitrust law; the transportation policy reauthorization which included several railroad-related policy proposals; transportation safety legislation that included provisions on rail crossings; and tax

[160] NS Reply WP "2012 United States Congress Lobbying Disclosure Filing.pdf" Lobbyists are required to track their work and file reports. *See* Lobbying Disclosure Act of 1995, Pub. L. No. 104-65, *codified at* 2 U.S.C. § 1601 *et seq.*

reforms to promote infrastructure investment.[161] This list represents just one quarter in one year and demonstrates the many technical and complicated legislative issues that a Class I railroad must address.[162]

Every Class I railroad has some type of government relations function focused on Washington, D.C. and the DRR would be no exception. While NS currently classifies {{ }} government relations employees as Federal lobbyists, it conservatively assumes that the DRR could function with only two: a Director and a Manager.

State Government Relations: The State Government Relations function would be similar to the Federal Government Relations function, but amplified by the need to cover twenty states. The State Government Relations staff will be responsible for promoting and protecting the DRR's position at the state, regional, and individual community level. DRR employees are necessary to manage meetings with the many mayors, council members, aldermen, state legislators, governors, transportation officials, and interested citizens in the communities in which the DRR operates, and to respond to requests for information. In some situations State Government Relations will require addressing communities' questions about, concerns with, or opposition to railroad activities and projects. Indeed, the state government relations function is even more resource-intensive than federal government relations. In the first three quarters of

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[161] *Id.*

[162] Publicly available disclosure forms demonstrate similar efforts by other Class I railroads. In the same quarter as the NS report described above, BNSF lobbied on the Federal Agriculture Reform and Risk Management Act of 2012, the Energy Tax Prevention Act of 2011, EPA Stationary Source Regulations Suspension Act, Protect America's Energy and Manufacturing Jobs Act of 2011, Transparency in Regulatory Analysis of Impacts on the Nation Act of 2011, Coal Residuals Reuse and Management Act, EPA Regulatory Relief Act of 2011, Cement Sector Regulatory Relief Act of 2011, the 2013 Budget Resolution, the Transportation Appropriations bill, the Safe Highways and Infrastructure Preservation Act, and numerous other pieces of legislation. *See* NS Reply WP "2012 BNSF United States Congress Lobbying Disclosure Filing.pdf." Other railroads have similarly exhaustive filings. *See, e.g.,* NS Reply WP "2012 UP United States Congress Lobbying Disclosure Filing.pdf."

2012, NS spent approximately {{ }} hours in each quarter lobbying at the state level, compared to under {{ }} hours in each quarter at the federal level.[163] Due to the DRR's size, Mr. Brown has provided for one Director and four Regional Managers to represent the DRR's interests across the 20 states in which the DRR operates. As a comparison, NS currently classifies {{ }} Government Relations employees as state lobbyists for a network that operates in 22 states—just two states more than the DRR.

Mr. Brown also assumes that the DRR would manage the federal and state government relations functions entirely with these seven in-house staff and would not hire any external lobbyists. This is a conservative assumption, as in addition to its full time government relations employees, NS also paid a quarterly average of {{ }} for outside lobbyists and consultants in 2012.[164] Therefore, Mr. Brown's proposed staffing of the government relations function is very conservative for a Class I railroad operating in twenty different states.

In sum, NS proposes that the DRR's corporate relations staff consist of fourteen employees. This represents a substantial reduction from NS's Corporate Relations staff of thirty-four, and the bare minimum required to manage external relations for a 7,344 mile, $5.6 billion railroad that operates in 20 states. These 14 employees, in addition to the President and Administrative Assistant, make up the DRR's Executive Department of 16 employees.

Table III-D-18
Executive Department Staff Comparison

DuPont Opening	NS Reply	Difference
4	16	12

[163] *See* NS Reply WP "NS Lobbying Hours 2012.xlsx."

[164] *See* NS Reply WP "Lobbying Info for Rate Case Email.pdf."

(b) Board of Directors

DuPont proposes that the DRR Board of Directors would consist of five inside and five outside directors. *See* DuPont Opening III-D-14. NS accepts DuPont's proposed Board of Directors size and structure, but does not accept its proposal that each outside director would receive just $40,000 per year in compensation. DuPont has provided no support whatsoever for the $40,000 figure, and outside directors at comparable railroads are compensated at significantly higher levels. The appropriate compensation for outside directors is discussed below at III-D-170.

(c) Marketing and Customer Service

DuPont's proposed DRR Marketing and Customer Service Department is significantly understaffed, primarily because of DuPont's reliance on a misguided cost-shifting theory that the Board has decisively rejected. According to DuPont, the DRR can minimize its marketing and customer service staffing because it would rely on unspecified outsourcing to a "marketing contractor" and because it can rely on "DRR's connecting carriers" to provide most of the marketing and customer service to DRR's customers. *See* DuPont Opening Ex. III-D-2 at 6. Neither justification for DuPont's shortcuts withstands scrutiny, and in the real world the DRR would need far more marketing and customer service personnel than DuPont provides.

DuPont first claims that the DRR "needs only a small internal staff" because it will use a "marketing contractor." *See* DuPont Opening Ex. III-D-2 at 6. DuPont's invocation of "outsourcing" can be rejected out of hand, for DuPont does not provide a single penny in expenses to pay for "marketing outsourcing." Nor does DuPont identify its supposed "marketing

contractor"[165] or provide any explanation of how a $5.6 billion Class I carrier with thousands of customers could outsource its marketing function.

DuPont's citation to cases where the Board allowed marketing outsourcing for small, coal-only SARRs is irrelevant, for the Board's acceptance of outsourcing was explicitly premised on the fact that those SARRs were coal-only railroads with limited and well-defined customer groups.[166] The Board has never accepted marketing outsourcing for non-coal traffic like general freight and intermodal, and DuPont provides no facts at all from which the Board could justify such outsourcing. Having omitted any support for its position in its Opening Evidence, DuPont is precluded from offering it on Rebuttal.[167]

DuPont's assertion that the DRR could expect "connecting carriers" to carry its burden of marketing is equally fallacious. DuPont's essential theory is that, because the DRR will largely handle crossover traffic, it can expect the residual NS and other connecting carriers to handle

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[165] Complainants in previous SAC cases who proposed marketing outsourcing have typically identified High Road Consulting as a potential marketing contractor. SECI Opening, *Seminole*, STB Docket No. 42110, III-D-30 (Aug. 31, 2009); AEPCO Opening, *AEPCO 2011*, STB Docket No. 42113, III-D-32 (Jan. 25, 2010). In several recent cases railroads have challenged the idea that High Road Consulting could actually provide outsourcing services. CSXT Reply, *Seminole*, STB Docket No. 42110, III-D-53 to III-D-55 (Jan. 19, 2010); BNSF Reply, *AEPCO 2011*, STB Docket No. 42113, III.D-36 to III.D.37 (May 7, 2010). DuPont's response to these recent developments was not to identify a different marketing contractor or to justify Highroad as a potential contractor—instead, it was to refuse to identify any marketing contractor. This intentional vagueness is a blatant failure of proof and requires rejection of DuPont's "outsourcing" claim.

[166] For example, in *AEP Texas* the Board accepted a partially outsourced marketing department because the SARR "would have a limited and repetitive traffic group consisting primarily of originated unit-train coal traffic moving to a known set of power plants, a relatively modest volume of overhead non-coal traffic that the residual incumbent would originate and terminate, and a stable customer base with a consistent and regular traffic volume." *AEP Texas,* STB Docket No. 41191 (Sub-No. 1), at 54. Similarly, in *WFA I*, the marketing department in question was one where "[m]ost of the shippers in the [SARR] traffic group would ship coal under transportation contracts." *WFA I*, STB Docket No. 42088, at 45.

[167] *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057, at 2 (served Apr. 4, 2003).

most of the marketing expense for that traffic. This theory is both legally wrong and factually flawed. In the first place, the Board flatly rejected this argument in *AEPCO*, holding that "[t]he fact that the [SARR] would carry a large amount of cross-over traffic does not mean that the complainant should be permitted to shield the SARR from expenses such as billing, rate setting, and customer service." *AEPCO 2011*, STB Docket No. 42113, at 57. DuPont's assumption that the DRR could shift marketing expenses for its traffic to the residual NS is at odds with the very purpose of the SAC test. In addition, DuPont's assumption is factually incorrect. As the below table illustrates, 29% of the DRR's traffic is local, 49% is interline forwarded or received, and only 22% is bridge traffic. The DRR plainly has marketing and accounting responsibilities for its local traffic, but it has much the same responsibilities for interline forwarded, interline received, and bridge traffic. For example, of the 2.3 million cars that the DRR will interchange with Class I carriers, excluding residual NS, 1.3 million are Rule 11 interline. For any Rule 11 traffic, the DRR is responsible for managing the customers and rate making process essentially independent from other carriers.[168] Moreover, 17% is traffic where an NS handling carrier is the origination or termination carrier. These "handling carriers" have contracts with NS to handle traffic to and from specified points on their short line, but NS retains all the marketing and

[168] For example, consider an intermodal shipment originating on UP in Los Angeles, CA and destined to Bethlehem, PA routed via Chicago, IL under Rule 11. UP will negotiate and publish a rate with the customer covering the UP segment between Los Angeles, CA and Chicago, IL. UP will have the responsibility to bill and collect its revenue for that shipment. From Chicago, IL, the DRR will be responsible for negotiating a rate to Bethlehem, PA, which it will settle interline with residual NS. The DRR will have to negotiate and publish the rate as well as bill and collect from the shipper. Even though the DRR can opt for interline revenue divisions with residual NS, it cannot expect UP and UP's customer to abandon their Rule 11 business relationship and revert to an interline settlement process for the entire through rate.

accounting responsibilities.[169] The DRR will assume NS's participation in this traffic, requiring DRR to take responsibility for marketing and customer service.

TABLE III-D-19[170]
DRR Traffic Mix

Traffic Type	Local	Interline Forwarded	Interline Received	Bridge	Total
Coal	141,052	127,179	362,322	556,734	1,187,287
Intermodal	1,182,897	817,965	666,779	261,824	2,929,465
Auto	85,096	88,301	65,905	41,007	280,309
General Freight	399,546	498,998	405,616	497,980	1,802,140
Total	**1,808,590**	**1,532,444**	**1,500,622**	**1,357,544**	**6,199,201**
% of Grand Total	29%	25%	24%	22%	100%

In short, given the diverse traffic mix of the DRR and the fact that the DRR has over six thousand customers,[171] it is completely unreasonable to assume that the DRR could handle this function with a minuscule fraction of the NS Marketing, Sales and Customer Service function.

DuPont's underestimate is all the more striking because its marketing staff will have virtually no technological aids. In contrast, NS's marketing staff use sophisticated technology support, including:

- A sales tracking and reporting tool that allows field staff and headquarters personnel to manage and control the selling effort;

[169] *See* NS Reply WP "Handling Carrier Contract.pdf" at 1, 3.

[170] *See* NS Reply WP "DRR 2010 Reference Table Totals.xlsx."

[171] *See* NS Reply WP "DRR Freight Payers by Market Group.xlsx" (List of DRR customers).

- DELPHI, a budget and forecast system that communicates changes in expected traffic to Transportation and Operations in order to facilitate the flow of information and increase the efficacy of transportation planning; and

- WorkBench, a customized system that provides easy access to traffic history, profitability analysis, competitive rate information, and costing information. WorkBench also aids NS marketing personnel in processing and producing bids and proposals, and managing rate increases.

(i) Marketing[172]

(1) Department Management

DuPont proposes a Vice President – Traffic as head of Marketing and Customer Service. To be conservative, NS accepts DuPont's proposal that a Vice President should head the Department, but notes that most other Class I railroads have a Chief Marketing Officer with a more senior title such as Senior or Executive Vice President, with Vice Presidents reporting to them. One reason for the typical arrangement is that railroad marketing to large customers often requires high-level negotiations. Many major shippers will expect the DRR to have Vice-President involvement in their negotiations, particularly if there is a need to "escalate" negotiations to a more senior level. DuPont's proposed organization provides no ability to escalate important clients and difficult negotiations, because one Vice President cannot possibly manage the department and participate in multiple negotiations. To address this issue and to provide reasonable span of control within the Marketing and Customer Service Department, NS proposes six Assistant Vice President-level personnel to report to the Vice President of Marketing (rebranded from the Vice President – Traffic in DuPont's proposal). These Assistant Vice Presidents will oversee Coal Marketing; Intermodal Marketing; General Freight Marketing; Marketing Services; Customer Services; and Interline & Short Line. NS also proposes two additional Administrative Assistants to help with the day to day management of the Marketing

[172] *See* NS Reply WP "Staffing – Marketing.xlsx."

function. In particular, additional Administrative Assistants are necessary to assist with expense reporting and travel arrangements.[173]

(2) Coal Marketing

NS accepts DuPont's proposal of three Marketing Managers to handle coal traffic. *See* DuPont Opening Ex. III-D-2 at 6. As DuPont explains, this level of staffing is sufficient "because of the relatively small number of mine origins served by the DRR and its relatively small number of coal mines." *Id.* at 7. Indeed, half of the coal volume is bridge traffic with the residual NS. NS agrees with DuPont's staffing of coal marketing with three Managers who will have responsibility for customer relationships; economic analysis and lane management; contract analysis and review; coordination with operations; and fleet management. As with the other marketing groups, the three Marketing Managers will be overseen by an Assistant Vice President.

(3) Automotive Marketing

DuPont proposes a grossly insufficient staff to handle automotive marketing for the DRR. The DRR handles virtually every automotive carload handled by NS in the real world—97% of NS's automotive carloads—and the DRR would receive 69% of NS's real-world automotive revenues. But DuPont proposes only two DRR Marketing Managers for automotive marketing—{{ }} automotive marketing department staffing. Automotive marketing requires intensive customer-specific attention, and it is not possible for two individuals to manage marketing for all of the automotive customers that NS, and therefore the DRR, serves. *See* DuPont Opening Ex. III-D-2 at 6. And DuPont provides no benchmarking

[173] *See* NS Reply WP "Proposed DRR Travel.xlsx." *See also infra* III-D-185 to III-D-189. NS proposes that 137 marketing personnel will travel.

or other evidence to support its proposal that the DRR could assume 69% of NS's automotive revenues while spending {{ }} of what NS spends on automotive marketing.

Mr. Brown has developed an automotive marketing department for the DRR that assumes significant efficiencies over NS's current staffing.[174] The Director of Automotive would have six Managers, each of whom would be assigned to the major auto accounts based on volume: two would be devoted to Ford; one each to General Motors, Chrysler and Toyota; and one to the remaining foreign automotive companies. This group would be responsible for managing over {{ }} DRR customers using over {{ }} pricing authorities.[175] While the DRR would handle 97% of NS's automotive carloads and would receive 69% of NS's automotive revenues, Mr. Brown's proposed staffing of eight employees is just {{ }} of NS's staffing.

(4) Intermodal Marketing

DuPont proposes only three Marketing Managers for intermodal. *See* DuPont Opening Ex. III-D-2 at 6. This proposal substantially underestimates the needed staffing for this function. The DRR will handle 100% of the trailers and containers handled by NS and receive 80% of the revenue, but DuPont's proposed marketing staff is just {{ }} of NS's. DuPont provides no evidence from which the Board could conclude that the DRR could claim the vast majority of DuPont's intermodal revenue while providing almost no marketing support for that traffic. Marketing support is particularly important for intermodal traffic because intermodal customers by definition have access to transportation alternatives. *Improvement of TOFC/COFC Regulations*, 6 I.C.C. 2d 208, 215 (1989) ("[T]he TOFC/COFC market is highly competitive."); *See also Improvement of TOFC/COFC Regulation*, 364 I.C.C. 731 (1981) *aff'd American*

[174] *See* NS Reply WP "Staffing – Marketing.xlsx," Tab "Auto."

[175] *See* NS Reply WP "Staffing – Marketing.xlsx," Tab "Pricing Authorities."

Trucking Assn's v. ICC, 656 F.2d 1115, 1125-1126 (5th Cir. 1981) ("[R]ail and rail-owned truck TOFC/COFC service is competitive with motor carrier service").

In contrast, Mr. Brown developed a least-cost, most-efficient intermodal marketing department for the DRR that assumes significant efficiencies over NS's current staffing.[176] Mr. Brown benchmarked the DRR's marketing staff to NS's marketing staff, with two significant adjustments to assure that his benchmarking is conservative and consistent with a least-cost, most efficient SARR. First, he chose to benchmark marketing staffing by revenues as opposed to by carloads. The DRR handles nearly 100% of NS's intermodal carloads, but claims only 80% of its revenues. While a persuasive argument could be made that carloads strongly correlate to marketing expenses, to be conservative Mr. Brown scaled the DRR marketing department to its share of NS's intermodal revenues. Second, Mr. Brown assumed that the DRR would operate with significantly less upper and middle management than NS. While NS has {{ }} intermodal marketing employees who are Group Managers or higher, Mr. Brown proposes only five senior managers for the DRR: an Assistant Vice President (as explained above) and four Directors assigned to Premium Intermodal Freight; International Intermodal Freight; Domestic Intermodal Freight; and Planning and Yield Management.

Overall, Mr. Brown's conservative staffing assumes that the DRR could function with less than {{ }} of NS's intermodal marketing staff and just {{ }} of NS's senior intermodal managers. This staff of one Assistant Vice President, four Directors, and 23 Managers will be responsible for managing over {{ }} major customers and {{ }} price authorities.[177] The staff is divided into groups, as follows.

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[176] *See* NS Reply WP "Staffing – Marketing.xlsx," Tab "Intermodal."

[177] *See* NS Reply WP "Staffing – Marketing.xlsx," Tab "Pricing Authorities."

The International Group represents approximately 50% of the volume of intermodal traffic but less than 30 customers. These customers are typically handled with single, longer-term agreements and the amount of transactions are therefore minimal. As a result, this group can be staffed with just four Managers.

The Domestic Group handles 20% of the intermodal volume but has a large number of customers, requiring a large number of transactions. This group would be staffed with eight Managers.

The Premium Group accounts for 30% of the volume and has just ten major customers. These customers, however, are important high-volume customers like {{

}} who require significant engagement by the DRR marketing team. The group is staffed with four Managers.

The Planning and Yield Management Group will be responsible for planning functions related to revenue and asset management, including all equipment used for Intermodal and Automotive traffic. This function will manage the overall rate levels in all of the lanes the DRR markets to, a complex function because all the rail customers are competing for the same base of traffic. The DRR will have to balance rate and service levels to maximize yield. Shippers can easily move their business between the various third party intermodal providers with which the DRR interacts. The DRR will need to be careful that it is not providing price or service options to one third-party intermodal provider that allow the intermodal provider to capture shipper traffic, at a lower rate, than the DRR was already receiving through another intermodal provider for the same traffic. Such a shift would merely harm the DRR's overall yield of revenue from intermodal operations. Seven Managers will be required to assist in this function.

(5) General Freight Marketing

Eleven Marketing Managers are proposed by DuPont for general freight, which includes grain and grain products, chemicals and fertilizer, and paper and forest products. Once again, DuPont has proposed that the DRR can take the lion's share of NS' general freight traffic while avoiding the costs of marketing that traffic. Indeed, the DRR handles 97% of NS's general freight traffic on a carload basis and would receive 67% of NS's general freight revenues—but DuPont provides it with a general freight marketing staff that is less than {{ }} staff. DuPont has produced no evidence to lead to the conclusion that the DRR could capture all the revenues in this traffic segment without hiring marketing personnel to win the business. Indeed, the need for sufficient numbers of marketing personnel is particularly acute in general freight, both because so many general freight customers have competitive modal options[178] and because general freight consists of diverse, low-volume movements that require management of significantly more rate authorities.

Mr. Brown developed a general freight marketing staff for the DRR that would be significantly more efficient than NS's current staffing.[179] His 73-person proposed staff is {{ }} of NS's (for a railroad that will handle 97% of NS's general freight carloads), and includes significantly fewer senior managers than NS employs in the real world. While NS's

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[178] *See, e.g.*, *Rail General Exemption Authority – Miscellaneous Manufactured Commodities*, 6 I.C.C. 2d 186, 189 (1989) ("Out of an abundance of caution, we have exempted only those commodity groups whose movement is subject to intermodal competition in virtually all corridors and distance blocks"); *Exemption from Regulation – Boxcar Traffic*, 367 I.C.C. 425, 433 (1983) ("Virtually anything that can be transported in a boxcar can be transported in a truck. Motor carriage tends to be faster, more accessible, more convenient and sometimes less damaging to freight than rail service, meaning that boxcar transportation generally must be priced to reflect these service differences to compete successfully."), *aff'd sub nom. Brae Corp. v. United States*, 740 F.2d 1023 (D.C. Cir. 1984) *cert. den., sub nom. Interstate Commerce Commission v. Brae Corp.*, 471 U.S. 1069 (1985).

[179] *See* NS Reply WP "Staffing – Marketing.xlsx," Tab "General Freight."

general freight marketing department includes {{ }} individuals at the Group Manager level or above, the DRR staff that Mr. Brown proposes has just three senior managers: the Assistant Vice President of General Freight Marketing, a Director of Marketing, and a Director of Field Sales.

The Director of Marketing will supervise thirty Product Managers, who will have responsibility for negotiating, analyzing, publishing and maintaining 5,600 separate rate authorities.[180] Each Product Manager will therefore be required to analyze and review an average of three to four existing rate authorities per week in addition to new requests for new commodities or corridors. Product Managers must understand the market as a whole so that the rates set are appropriate for the competitive market. Product Managers must also make sure rates are properly applied through the IT systems and, if there is any problem, work with accounting to fix these issues.[181]

The Director of Sales will supervise forty Account Managers, who will have responsibility for maintaining and developing relationships with the current DRR customer base of thousands.[182] Account Managers' tasks will include personal sales calls, development of business plans, tracking and expediting shipments as necessary, and reviewing customer equipment needs. Account Managers also communicate the rates set by Product Managers to customers and become involved in any necessary negotiations over these rates.[183]

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[180] *See* NS Reply WP "Staffing – Marketing.xlsx," Tab "Pricing Authorities."

[181] *See* NS Reply WP "Product Manager Job Description.docx."

[182] *See* NS Reply WP "DRR Freight Payers by Market Group.xlsx."

[183] *See* NS Reply WP "Account Manager Job Description.doc."

(6) Other Marketing Services

There are a variety of functions required within a marketing group that DuPont virtually ignores, providing almost no staffing. In its Opening Evidence, DuPont provides for only one Manager of E-Commerce. *See* DuPont Opening Ex. III-D-2 at 6. The E-Commerce function covers all the business-to-business responsibilities of the DRR including customer communication to set up and troubleshoot electronic bills of lading. The function also requires a help desk so customers with problems can call for assistance or intervention. For example, customers occasionally cannot locate a car. Mr. Brown's staffing provides one Manager of E-Commerce and three Analysts working staggered hours to ensure customer coverage beyond the eight-hour work day. (By comparison, NS staffs its E-Commerce function with {{ }} people.)

In addition to E-Commerce, other ancillary marketing tasks DuPont fails to account for includes systems support and contracts support. A Systems Support Group within the DRR's Marketing Department is necessary because the DRR apparently has no IT applications to assist in the marketing function. By contract, NS uses systems such as DELPHI, a budget and forecast system, and Workbench, a customized system providing access to traffic history, profitability analysis, competitive rate information, and costing information.[184] The Oracle ERP that the DRR has purchased does have the capability to support functions like cost analysis, market research and forecasting. But applications for these functions need to be developed and maintained, they do not come off the shelf. Price capture information also needs to be managed and forwarded to the RMI Revenue module to provide necessary information for accurate automatic rating. To accomplish these tasks, a Manager and three Analysts should be included

[184] *See supra* III-D-89.

in the Department's staff. As a point of comparison, NS has six staff members for a similar amount of work.

The DRR also needs staff to manage and monitor DRR publications for accessorial charges such as diversions, demurrage, or storage, and to communicate with customers about these publications and any changes to them. DuPont ignores this function altogether, but it is an essential marketing function that requires staff support. Mr. Brown's staffing includes a small Contracts Support Group of a Manager and three Analysts that is responsible for managing accessorial charge publications and communicating with customers about accessorial charges.

Finally, a Class I railroad's Marketing Department should have a Market Development and Research Group. This group would be responsible for overall market research and identification of trends that would impact the marketing function of the DRR. Product Managers have a short-term focus, while this Group would focus on the long-term. The Market Development and Research Group would also assist and support forecasting efforts, linking the DRR's forecasting with regional, national and global economic activity. Mr. Brown developed a small Market Development and Research Group for the DRR, which is headed by a Director and includes three Managers. As a benchmark, NS's Market Development and Research Group consists of {{ }}employees.

(7) Short Line and Interline Relations

The DRR will have significant interline traffic which, is one of DuPont's purported justifications for light G&A staffing. All seven Class I railroads and more than 40 regional and short line railroads will interchange with the DRR. The railroad will need to manage and develop relationships with current short lines as well as develop processes and procedures for new short lines. Operating and interchange plans will need to be developed, managed and maintained. Per car charges and equipment considerations will need to be managed and

maintained. Relationships with other Class I railroads also need to be nurtured and managed. The DRR also proposes to step into NS's shoes for several extremely complex interline ventures such as the Conrail Shared Assets Areas, where NS owns only a partial ownership stake. *See infra* III-F-298 to III-F-316. These complex interline relationships, similarly, require a good deal of oversight and care.

Other Class I railroads have a Vice President or Assistant Vice President position heading interline and short line management. NS, as a point of comparison, has at least {{ }} short line and interline staff. Mr. Brown developed a small Short Line and Interline Relations Group for the DRR consisting of an Assistant Vice President of Interline and Short Line, a Manager for interline, two Managers for short line, and two Analysts.

TABLE III-D-20
Marketing Department Staff Comparison

Marketing Group	Percentage of NS Carload Traffic DRR Handling	Percentage of NS Revenue DRR Receiving	DuPont Opening	NS Reply	Difference
All	92%	62%	21	136	115
Coal Marketing	77%	43%	3	4	1
Automotive Marketing	97%	69%	2	7	5
Intermodal Marketing	100%	80%	3	28	25
General Freight Marketing	97%	67%	11	73	62
Other Marketing Staff	N/A	N/A	2	24	22

(ii) Customer Service

DuPont posits a Customer Service Group with a Director and twenty-eight Customer Service Managers staffing six 24 hour a day, seven day a week ("24/7") positions with three additional positions on duty during normal business hours on weekdays. DuPont Opening Ex. III-D-2 at 8. DuPont is therefore proposing customer service staffing that is a substantial departure from the Board's most recent precedent in *AEPCO*, in which the Board rejected a shrunken customer service staff due to the complainant's alleged large amount of overhead traffic. *AEPCO 2011*, STB Docket No. 42113, at 57.

Because railroads are ultimately in the business of selling rail services to their customers, the customer service function is an important component of rail operations. A Class I railroad's customer service center must proactively review and monitor railroad operations, solve service issues, monitor service for large customers, monitor car blocking, and review and analyze service in particular lanes to avoid potential congestion, delays, or other problems. Customer service must be on duty 24/7 to respond to issues such as diversions, reshipments, reconsignments, demurrage, storage, and empty repositioning. In order to facilitate the resolution of these issues, customer service personnel must interact with various departments in the railroad, including operating departments, such as terminal operations, and service design, as well as G&A departments, such as accounting and marketing. It is critical these issues be resolved quickly in order to avoid interruptions to rail service.

As with the marketing function, DuPont has provided no technology to support the Customer Service Managers or their customers. DuPont proposes to staff the DRR as if it were an old-fashioned "trace and chase" service center that Class I railroads had in the 1980s, in which a customer had to call the railroad to find out the location of a car because they could not track it themselves through an online portal. To the contrary, today's Class I carriers use

technology to support customer inquiries on car location. For example, NS uses a fully-integrated system called accessNS that allows customers to track cars, perform some diversions and reconsignments, file freight claims, and prepare some general service measurement reports. When NS customers do call NS, a front-end call system monitors incoming caller ID and routes the call to the appropriate person. Direct access to the NS operating system then allows activity logs to be created on specific problems, permitting monitoring and analysis of these issues. Customer service personnel also have full access to schedules, trip plans for each car, and blocking at their finger tips to help resolve issues. DuPont, however, has provided for few of these technological capabilities that would allow for streamlined customer service operations, and therefore cannot claim substantial efficiencies in comparison to NS.

To adequately provide for these needs, Mr. Brown has developed a Customer Service function for the DRR headed by an Assistant Vice President and segmented into four groups, each led by a Director: General Freight, Unit Train, Intermodal, and Automotive.[185]

(1) General Freight Group

The DRR will be handling 97% of NS's general freight traffic. To assist these customers, the General Freight Group will be headed by a Director and assisted by three Managers and a staff of 15.[186] The Managers cover first and second shifts, six days a week, whereas the staff of 15 will allow for coverage on all three shifts so that coverage is 24/7.

(2) Unit Train Group

The Unit Train Group would be headed by a Manager and have a staff of five in order to enable round-the-clock coverage. Unit train issues arise on a 24-hour basis, and require 24/7 customer service involvement. For example, if a train is unloading at a terminal and another

[185] *See* NS Reply WP "Staffing – Customer Service.xlsx."

[186] *See* NS Reply WP "Staffing – Customer Service.xlsx," Tab "Auto GF and Coal CS."

train is en route and will arrive before the first train has cleared, customer service will be involved in determining where to hold the second train.

(3) Intermodal Group

The DRR will be handling nearly 100% of the current NS's intermodal traffic and have 80% of the revenue. Although residual NS will handle approximately 30% of the ramp activity for the DRR, the preponderance of the current NS's intermodal operation will be subsumed by the DRR. Modern customer service for large intermodal railroads is all about using technology to allow large customers to handle the majority of the customer service function on their own, without help from a clerical staff at the railroad. These customers require a responsive and extremely proactive group at the railroad to monitor service interruptions and be in position to advise the customers as to what actions will be implemented. Because the DRR does not have any customer service monitoring and measurement systems, they will need a staff of systems people to develop, maintain and manage a series of ad hoc systems to be responsive to the anticipated needs of customers.

Mr. Brown proposes staffing for the DRR assuming that residual NS and the DRR divide the customer service function proportionally based on the number of originations and terminations, reduced a bit further to be conservative.[187] The proposed Intermodal Group would be headed by a Director and have three Managers. Two Managers would head a Proactive Service Group with a staff of five to be responsive to customer needs. This represents approximately {{ }} of NS's Proactive Service Group. The other Manager would head a Systems Group with a staff of six. This total staff would coordinate all customer service functions, including working with intermodal terminal clerks to address customer inquiries and

[187] *See* NS Reply WP "Staffing – Customer Service.xlsx," Tab "IM Customer Service."

issues. This size is the minimum needed to work with so many customers on a 24/7 basis. This is approximately half the size of NS's Intermodal Systems staff. The total staffing of 15 represents {{ }} of the current NS Intermodal Proactive Service and Intermodal Systems of {{ }}.

(4) Automotive Group

As described above, the DRR has assumed virtually all of NS's automotive traffic—97% on a carload basis. Automotive traffic requires intensive and unique service management, both for monitoring and measuring service and for managing equipment distribution and the AAR's National Multilevel Reload Pool. Railroads and automotive manufacturers work cooperatively to improve fleet utilization for multileveled cars for automobiles.[188] The DRR would not be able to take shortcuts on staffing in this important area. Mr. Brown developed an automotive customer service staff of one Director, four Managers, and 20 Customer Service Representatives, that would be responsible for managing all of these functions on a 24/7 basis.[189] By comparison, NS staffing for this function is {{ }} and the DRR is taking 97% of NS's existing automotive traffic based on carloads.

TABLE III-D-21
Customer Service Staff Comparison

DuPont Opening	**NS Reply**	Difference
29	66	37

(d) Finance and Accounting

DuPont proposes a DRR Finance and Accounting Department consisting of just 66 employees, who would be responsible for a wide range of functions including cash management,

[188] *See* NS Reply WP "Multilevel Railcar Fleet's Good Track Record.pdf."

[189] *See* NS Reply WP "Staffing – Customer Service.xlsx," Tab "Auto GF and Coal CS."

revenue accounting, disbursement accounting, taxation, financial reporting, budgeting, purchasing, and internal audit. For a Class I railroad with over $5.6 billion in revenue, millions of carloads, thousands of customers, and operations in twenty states, a 66-person accounting staff is patently ridiculous. For example, NS has revenues just double those of the DRR, but has a total of {{ }} employees working in these functional areas—almost six times DuPont's proposed levels. Indeed, DuPont's proposed Finance staffing levels are significantly lower than those that the Board has approved for other SARRs with far less daunting accounting needs, as shown by Table III-D-22.

Table III-D-22
Comparison of DuPont Finance Staffing to Board-Approved Staffing In Past Cases

Case	G&A Finance Staff[190]	Revenue (in millions)[191]	Finance Staff Per $100M Revenue
Duke/NS	24	$487.1	4.93
CP&L	24	$453.7	5.29
Duke/CSXT	21	$496.8	4.23
Xcel	16	$341.5	4.69
Otter Tail	25	$581.7	4.30
AEP Texas	21	$384.2	5.46
WFA	15	$218.4	6.87
AEPCO	32	$2,075.8	1.54
DuPont Opening	**66**	**$6,642**	**1.01**

Table III-D-22 demonstrates that DuPont proposes an accounting staff four to five times smaller on an employee-to-revenue basis than in seven of the eight most recent decided cases.[192]

[190] DRR data is located at Table III-D-3 on page III-D-14 of DuPont's Opening Evidence. Data on prior SAC cases was derived as follows: *Duke/NS:* (*Duke/NS*, 7 S.T.B. at 156); *CP&L*: (*CP&L*, 7 S.T.B. at 294); *Duke/CSXT*: (*Duke/CSXT*, 7 S.T.B. at 460); *Xcel*: (*Xcel*, 7 S.T.B. at 648); *Otter Tail*: (*Otter Tail*, STB Docket No. 42071, at C-8); *AEP Texas*: (*AEP Texas*, STB Docket No. 41191 (Sub-No. 1), at 53); *Western Fuels*: (*WFA I*, STB Docket No. 42088, at 43); *AEPCO*: (*AEPCO 2011*, STB Docket No. 42113, at 55).

[191] *See supra* sources cited at note 128.

And the only exception to this rule—*AEPCO*—was a case in which the Board criticized the complainant for failing to provide benchmark analysis or other comparable data to support its proposed staffing levels and only adopted the complainants' proposal because the defendants' evidence was "no better." *AEPCO 2011*, STB Docket No. 42113, at 58. While the Board indicated that it expected better evidence from parties and that it would entertain arguments for higher staffing levels in the future, *id.* at 58-59, DuPont's response to *AEPCO* was to propose an even smaller finance department on a revenue basis than was proposed in *AEPCO* and to completely ignore the Board's call for evidence supported by benchmarks or other comparable data.[193]

NS, on the other hand, has designed its accounting evidence in order to respond to the Board's call in *AEPCO* for evidence supported by benchmarks that support the reasonableness of staffing levels. In this case, where DuPont has designed an 8,000 mile, $6.6 billion SARR that would serve 92% of NS's traffic and claim two-thirds of NS's revenues, the best benchmark of accounting and finance staff for the DRR is NS's own accounting and finance staffing levels, although NS conservatively assumes that the DRR could realize substantial efficiencies over real-world NS. While in a typical coal-only SARR, the simplicity of the SARR's selected traffic means that it would not have to duplicate all the functionality of the incumbent, here the DRR is claiming the lion's share of NS's traffic and would serve a complex traffic mix that mirrors NS's own. That will require a significantly larger finance and accounting staff, particularly in the

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[192] Employee-to-revenue ratios are a particularly relevant means to judge accounting staff levels, because most accounting tasks are a function of the amount of a railroad's incoming revenue and the amount of its corresponding expenses.

[193] DuPont's evidence is almost a carbon copy, with a few additional positions, of AEPCO's evidence, which the Board specifically found insufficient because of a lack of benchmarks or other support. AEPCO Opening, *AEPCO* 2011, STB Docket No. 4211, III-D-34 to III-D-38 (Jan. 25, 2010) *cf.* DuPont Opening Ex. III-D-2 at 8-12.

revenue accounting function, then in past SAC cases. Therefore in this case NS's own staffing (adjusted for functions that the DRR would not need to perform, *e.g.*, SEC reporting) is the best benchmark of what accounting staff the SARR would need to function, conservatively adjusted to assume that the DRR would be more efficient than NS.

Indeed, DuPont's evidence provides no reason to believe that the DRR could function with less finance and accounting staff than NS. The only justification DuPont advances for its bare-bones accounting staff is the standard invocation of "computerized packages and programs." DuPont Opening Ex. III-D-2 at 8. But as demonstrated above, there is nothing special about DRR's programs that is not replicated (if not improved upon) by NS's best-in-class technology. *See supra* III-D-61 to III-D-66. Having computer programs that DuPont admits are "now common in the railroad industry" cannot justify providing the DRR with one-sixth the accounting staff that NS requires to serve its customers. DuPont Opening Ex. III-D-2 at 8

NS's G&A expert has crafted a much more reasonable Finance and Accounting Department staff. The staffing proposed is much smaller than NS has for these functions, but unlike the staffing posited in DuPont's Opening Evidence this level of staffing would realistically be able to accomplish the significant, varied tasks of this Department.

TABLE III-D-23
Total Finance and Accounting Group Staff Comparison

Position	DuPont Opening	NS Reply	Difference
VP of Finance	1	1	0
Administrative Assistant	1	2	0
Controller	1	1	0
Revenue Accounting (including Car Accounting)	22	195	173
Disbursements	7	20	13
Tax	8	22	14
Financial Reporting	5	9	4
Treasury	3	12	9
Internal Audit	1	3	2
Purchasing and Materials Management	3	16	13
Cost and Economic Analysis and Budgeting	5	8	6
Total	66	289	223

(i) Vice President and Assistant Vice Presidents.

NS accepts DuPont's proposal to head the DRR Finance Department with a Vice President who would also serve as the DRR's Chief Financial Officer. But DuPont's proposal that the VP-Finance would manage this diverse department unassisted is not reasonable. In DuPont's view, the Vice President would have seven Directors reporting to him on eight different subject matters—everything from cash management to purchasing to internal audit. This is far too broad a scope for one person to be able to effectively manage on a $5. billion railroad. To correct this issue, Mr. Brown's analysis provides two Assistant Vice President-level positions to allow for more effective management. Specifically, there would be an Assistant Vice President of Internal Audit and an Assistant Vice President of Purchasing and Materials

Management.[194] These additional AVPs will help the Department to function across its broad range of activities, improve strategic planning and the setting of priorities, and ensure adequate oversight of the Department's different groups.

(ii) Treasury.

The three-person Treasury Group that DuPont proposes for the DRR is not sufficient for a $5.6 billion railroad. The Group has five major tasks to address: short term cash management; investment management; credit and collections; debt negotiation; and bank management. In DuPont's proposed three-person Group, one person would manage short-term cash and the other person would handle all other tasks with the Treasurer.[195]

A three-person Treasury team is simply inadequate when the DRR will have an average daily cash intake of over $15 million.[196] That cash flow will come from thousands of different sources in an ever-fluctuating flow. On a day to day basis, it is extremely unlikely that cash outflow will perfectly match cash inflow. The DRR will need to invest any inflow in excess of cash needs. Cash flow, therefore, needs to be forecast and managed based on season, business trends and expenditure needs. The cash management process at the DRR, like any major corporation, will have to be able to shift funds around various short and medium-term investment options as funds become available or are needed. The DRR will also need to maintain lines of credit with several banks to guard against emergency funding needs, such as repair after a natural disaster or derailment. To manage capital programs and employee pensions, the DRR will also need to have funds in long-term investment options. The Treasury module the DRR is

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[194] Revenue Accounting and Disbursement Accounting would remain under the supervision of the Controller.

[195] DuPont Opening Ex. III-D-2 at 9. DuPont assigns short-term cash management to the Cash Manager and the rest of the tasks to the Treasurer and Assistant Treasurer.

[196] For simplicity, Mr. Brown divided total revenue by 365 to approximate daily cash intake.

purchasing in Oracle will help this management process, but cannot operate without DRR personnel control and interaction.[197]

Three people cannot possibly manage this enormous portfolio for a $5.6 billion railroad. Mr. Brown has developed a much more feasible 12-person treasury staff for the DRR, divided into three groups responsible for cash management, credit and collections, and bank relations.

Cash Management. Mr. Brown developed a four person cash management staff. A Director will oversee all activities and be responsible for managing lines of credit. Two Cash Managers will forecast and manage cash inflow and outflow. An Investment Manager will oversee the medium to long-term investment options of the DRR. Given the DRR's annual revenue in the billions and daily cash intake in the tens of millions, this size staff is conservative and reasonable.

Customer Credit and Collections. The Treasury Group will also need to manage customer credit and collections. The DRR will have an average daily cash intake of over $15 million and thousands of customers. Managing the credit of these customers and the collections cycle will require a staff of one Director and four Credit Analysts, who will handle day to day issues of credit and collections.[198] The Director will have responsibility for oversight and for providing information on NS credit. This staff is smaller than NS's real-world staff and it would operate with less technical support. NS uses SAP to help manage the collections process. SAP generates priority work lists for the collections staff based on the invoice's age, amount, and other preconfigured criteria. There is also a customer portal to allow access to change mailing addresses, review bills, dispute cases, and make payment. SAP also allows NS's collections staff

[197] DuPont WP "DRR-Oracle Accounting & HR Package.xlsx."

[198] The Revenue Accounting Group may also have a role in extending and tracking customer credit, but Treasury will handle collections.

to route disputes to other NS SAP users for review or action.[199] The DRR did not include the purchase and implementation of the accounts receivable module for its Oracle package and DRR credit and collections staff will not have significant IT support in this area.

Bank relations. The DRR will also need to maintain accounts with a variety of banks across its territory to facilitate collections, as well as other purposes such as emergency funding needs. This will include lock boxes, lines of credit, purchase business, and investments. NS maintains over 70 bank accounts with eight different banks to help spread the risk and keep an NS presence in a variety of local business communities. The DRR similarly would need to manage multiple bank accounts and maintain relationships with multiple banks. Mr. Brown's staffing provides a Director and a Manager to oversee, manage and maintain relations with banks.

TABLE III-D-24
Treasury Group Staff Comparison

DuPont Opening	NS Reply	Difference
3	12	9

(iii) Internal Audit

The Board has found "that sound business practice requires an internal auditor to oversee the various finance functions." *AEP Texas*, STB Docket No. 41191, (Sub-No. 1), at 56-57. DuPont recognizes this need but provides only one employee for the function, plus an outsourcing charge of $250,000.[200] DuPont provides no information about how that charge was

[199] NS Reply WP "SAP and Collections.pdf."

[200] *See* DuPont Opening Ex. III-D-2 at 9; DuPont WP "DRR GA Outsourcing.xls."

derived and no evidence that it is realistic for a $5.6 billion railroad. Having failed to support its evidence on Opening, DuPont cannot provide evidence on Rebuttal.[201]

Internal Audit is a key business function that cannot be shortchanged. A rigorous internal audit function benefits the railroad's owners and investors, which in the case of the DRR will be the banks and financial institutions providing billions of dollars in startup funds. The DRR's executives and board members will also be protected by the presence of a rigorous review of processes and controls that would help ensure that the organization is acting in an appropriate, legally compliant manner.

NS agrees that the DRR can outsource a significant portion of the internal audit function. But outsourcing would cost far more than the $250,000 provided for by DRR's evidence. A recent publication by the Journal of Accountancy reports that businesses should be spending between .03% and .2% of revenue for internal audit, far more than the .004% proposed by DuPont.[202] Mr. Brown conservatively assumes that the DRR could get adequate outsourced internal audit support at the low end of this range: .03 of DRR revenues, or $1.68 million as discussed *infra* III-D-179 to III-D-180.[203]

Even with outsourcing, managing the internal audit process for a $5.6 billion Class I railroad is too great a task for the single individual DuPont assigns. By comparison, NS has an Internal Audit team of {{ }} people. Mr. Brown increases the internal audit staffing to two: an Assistant Vice President and a Manager. The function of these two DRR employees would be to monitor and control the external support, act as a liaison between the Board and the outside audit

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[201] *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057 at 2 (served Apr. 4, 2003).

[202] NS Reply WP "Journal of Accountancy Internal Audit.pdf."

[203] *See also* NS Reply WP "DRR Operating Expense Reply.xlsx," Tab "Outside Services."

firm, set priorities and scheduling for regular work as well as ad hoc projects for the outside auditor, and help provide necessary data from the DRR's IT systems and staff for the outside firm.

Additionally, DuPont has provided no individual to head risk management. Mr. Brown adds an additional Manager to this function to oversee and monitor the DRR's insurance program. NS has {{ }} Managers to manage an insurance cost of over $204 million in 2011.[204] Because the DRR pays approximately $69.6 million in annual insurance costs, it is reasonable that a DRR employee provide oversight over such a large expenditure.[205]

TABLE III-D-25
Internal Audit Group Staff Comparison

DuPont Opening	**NS Reply**	Difference
1	3	2

(iv) Revenue Accounting.

The DRR's proposed Revenue Accounting Group is unreasonably small for a railroad of its size, traffic mix, number of individual customers, and number of waybills to be processed. DuPont proposes a Revenue Accounting Group with an Assistant Controller and a staff of 21 who will oversee "all customers and interline freight billing and collection . . . billing for demurrage, storage and easements and utility crossings, as well as inputting contract and tariff rate and payment terms into the DRR's billing system." DuPont Opening Ex. III-D-2 at 10. This amount of staff is completely inadequate for a railroad the size and scope of the DRR. DuPont does not bother to provide any justification for its low revenue accounting staff—indeed, its

[204] *See* NS Reply WP "NS Insurance Costs.xls."

[205] *See infra* III-D-7-276 to III-D-279.

discussion of revenue accounting staffing consists of a mere two sentences. *See id.* Having failed to support its evidence on Opening, DuPont cannot supplement it on Rebuttal.[206]

The DRR would need to devote significant resources to revenue accounting. Revenue Accounting has several responsibilities including managing both the freight billing and waybilling process. Freight billing will be the responsibility of the DRR for many cars including all those in local service, most interline forwarded, and some interline received depending on the contractual terms. In addition to its direct freight billing, revenue will also come through the Interline Settlement System and the DRR will need personnel for this function. Revenue Accounting will also be responsible for waybills, which govern the movement of the car and must be processed by the DRR for every carload handled. The group will also need to oversee the submission of waybill data to the Board for the Carload Waybill Sample, a rail shipment database maintained by the Board.[207]

The DRR will need sufficient staff to process, correct, and collect freight bills for thousands of customers;[208] to resolve issues with interline settlements, and supplemental bills; to ensure the proper rating of waybills; to guarantee the accurate and timely reporting of all operating revenue; and to monitor and estimate all revenue-related and receivable reserves pursuant to Financial Accounting Standards ("FAS") guidelines. DRR staff would be responsible for tasks including processing customer shipping documentation to create waybills;

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[206] *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057, at 2 (served Apr. 4, 2003).

[207] 49 C.F.R. § 1244.2.

[208] Revenue Accounting will need to work closely with the customer credit and collections function of the Treasury Group in the Finance and Accounting Department. The Treasury Group will have overall authority for collections, but Revenue Accounting will ensure billing is properly done and the Treasury Group, as well as the customer, have the information necessary for prompt payment.

managing waybill exceptions; generating freight bills; and processing customer overcharge claims.

DuPont's use of a standard RMI software package does not affect the analysis, because having revenue accounting software does not eliminate the need for employees to use the software and to manage exceptions. Indeed, NS's {{ }} revenue accounting department uses customized and advanced revenue accounting technology, which has been modified over many years to serve the specific needs of NS customers. But that technology alone is not sufficient to manage revenue accounting on a Class I railroad.

For example, NS's revenue accounting software allows NS to issue the majority of waybills automatically with no intervention. NS's software has an excellent accuracy level for automatic rating of waybills, correctly rating {{ }} of the {{ }} waybills per year.[209] But that means that {{ }} of waybills, approximately {{ }} in the case of NS, are incorrectly rated and require human intervention. The majority of work done by NS's Revenue Accounting Group is for shipments where there are errors or modifications to these automatic ratings. No computer can fix these errors, which require follow-up and human judgment.[210] The DRR will similarly need human staff to correct errors. RMI boasts of a 90% accuracy level for automatic rating of waybills, meaning that 10% of waybills will need to be corrected by the DRR annually.[211]

Mr. Brown has developed revenue accounting staffing for the DRR using NS's workforce as a benchmark and scaling NS's workforce to the DRR based on the relative number of carloads

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[209] NS Reply WP "Billing Accuracy.pdf." The workpaper shows several other high accuracy rates for NS which also demonstrate the railroad's use of top-of-the-line IT solutions.

[210] *See, e.g.*, NS Reply WP "Accounting Resolutions.xls."

[211] DuPont WP "Exhibit III-D-2 Information Technology" at 27.

handled by NS and DRR.[212] Mr. Brown used the number of carloads because that is the best measure of the railroad's actual workload. The DRR has 92% of NS's actual carloads but, under NS's proposal, will only have {{ }} of the current NS's {{ }} revenue accounting staff. NS's scaling process is extremely favorable to DuPont, because there are at least two reasons to believe that the DRR will not be nearly as efficient as NS. First, the DRR's RMI system has a lower waybill accuracy rate than NS does. Because the majority of work is addressing errors, corrections and changes, the DRR will actually generate more labor-intensive staff work on the same amount of traffic as NS. Second, NS has more local traffic than the DRR. Interline traffic issues can be more complex to address due to the need to interact with another carrier. Nineteen percent of NS's freight bills are for interline traffic but the staff that works on these issues comprises {{ }} of the Revenue Accounting work force. The DRR will have more interline traffic, but NS is not proposing any staffing adjustment to account for this change in traffic mix. Scaling with these adjustments leads to a proposed Revenue Accounting group of 198. A Revenue Accounting Group of that size compares favorably with other Class I railroads. For example, CP[213] had a Revenue Accounting Group of {{ }} employees in 2007,[214] a year in which it had approximately 2.7 million carloads.[215] Mr. Brown is proposing an even smaller Revenue Accounting staff for more than two times the carloads.

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[212] *See* NS Reply WP "Job Functions – Revenue -waybilling.xlsx"; NS Reply WP "Job Functions – Revenue-Cash.xlsx"; "Job Functions – Revenue –MBIL.xlsx."

[213] The study with CP was the only Revenue Accounting benchmark NS had in its files and available for use.

[214] *See* NS Reply WP "Revenue Accounting Benchmarking Study.xls."

[215] *See* NS Reply WP "CP 2007 Annual Report" at 17.

TABLE III-D-26
Revenue Accounting Group Staff Comparison

DuPont Opening	NS Reply	Difference
22	182	160

(v) Disbursements.

DuPont proposes a Disbursements function made up of an Accounts Payable Group and Payroll Group. *See* DuPont Opening Ex. III-D-2 at 10. NS agrees that DuPont has correctly identified the two major groups that need to be included in a Disbursements Group, but, under DuPont's proposal, the DRR is not adequately staffed to carry out the necessary functions.

(1) Accounts Payable

The six individuals DuPont proposes for the DRR's Accounts Payable Group could not feasibly "oversee[] all accounts payable and payroll processing, issu[e] vendor payments, advis[e] the Vice President and Treasurer on cash requirements, and review[] all contracts with outside suppliers." *See* DuPont Opening Ex. III-D-2 at 10. The DRR will have billions of dollars in operating expenses each year, and managing accounts payable for such a large entity requires significant staffing. Even if one assumes that the DRR uses Oracle to assist with Accounts Payable processing and to issue electronic purchase orders,[216] the DRR still needs staff to perform tasks like confirming the receipt of purchases; managing purchase card programs for small purchases required in the general course of business; entering data for non-electronic purchase orders; coordinating with field personnel to assure the prompt payment of vendors; and reviewing and reconciling statements on a monthly basis.

[216] Once again, there is nothing special about DuPont's proposal for the DRR to use Oracle to assist with accounts payable. NS's accounts payable staff use a comparable SAP system. *See supra* III-D-63.

As a comparison, NS has {{ }} responsible for accounts payable. The DRR's accounts payable workload would not be substantially smaller than NS's, and it is not reasonable for DuPont to assume that the DRR could operate with one-fifth NS's workforce.

Mr. Brown developed accounts payable staffing for the DRR by scaling the NS workforce to the DRR based on relative operating expense, because the accounts payable workload is correlated to operating expenses.[217] Specifically, Mr. Brown's G&A staffing includes a Director, three Managers and ten Clerks or Analysts for this group within the DRR. This staff would handle all aspects of payables, including inventory management to ensure that the tracked inventory value matches up to real-world stock on hand.

(2) Payroll

DuPont proposes one Payroll Manager to handle the payroll function for the entire workforce of the DRR, which NS proposes to be 8,808 employees.[218] The remainder of the payroll function would be outsourced to Paychex.[219] NS accepts DuPont's proposal for the DRR to use Paychex, but using Paychex does not eliminate the need for an in-house payroll department, for three reasons.

First, a service like Paychex can issue paychecks and perform simple tasks like calculating the required deductions and remissions for railroad retirement, state and local taxes, and 401(k) contributions. But Paychex can only do this if the DRR is providing it with information about individual employees' compensation and what the required deductions are.

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[217] *See* NS Reply WP "Job Functions – Accts Payable.xlsx."

[218] *See* DuPont Opening Ex. III-D-2 at 3, Table 1.

[219] *Id.* at 31.

Put simply, Paychex is a service that will do the math, but in-house employees are required to tell Paychex what numbers to use in its calculations.

Second, payroll is not simply a matter of preparing checks. Real-world payroll departments must handle a number of nonroutine tasks like responding to subpoenas and requests for earnings information tied to external law suits, addressing court orders for wage garnishment, child support, or tax liens, and responding to Railroad Retirement Board audits.[220] Paychex cannot assist with any nonministerial issues like this; the DRR needs staff to handle them.

Third, DuPont provides no timekeeping function for DRR field or headquarters personnel. In DuPont's estimation, each employee will have an annual salary, with no hourly employees, and be paid uniformly without overtime or any other adjustment to pay. Even if such an arrangement were possible, the Railroad Retirement Board still requires that rail carriers report who is working, who is sick or injured, and who is on vacation.[221] Some type of daily or weekly processing and reporting will need to be accomplished by a payroll staff in order to comply with these regulations.

Fourth, the Payroll Group will need to process expense reports. The DRR will have over 600 traveling employees which will require approximately that number of expense reports to be processed monthly.[222] DuPont has not presented any IT solution for expense reporting, and paper or spreadsheet expense reports that would avoid the need for manual processing. NS proposes this function be handled in the Payroll Group.

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[220] *See* NS Reply WP "Payroll Functions.pdf."

[221] *See* NS Reply WP "RRB Reports.pdf" for examples of the kinds of forms that the DRR would be required to complete.

[222] *See infra* III-D-185 to III-D-189.

Fifth, the Payroll Group will need an employee help desk to address employee questions about pay and withholding issues. To provide perspective, NS fields 30,000 of these calls annually.[223] Scaling this number of calls to the number of DRR employees suggests over 12,000 payroll related calls from the DRR 's employees to its help line annually.

To handle these tasks, Mr. Brown developed a reasonably sized Payroll Group with one Manager and four Analysts. Three Analysts will handle payroll and the fourth will process expense reports.

TABLE III-D-27
Disbursements Staff Comparison

DuPont Opening	NS Reply	Difference
7	20	13

(vi) Tax Function.

DuPont proposes a DRR tax staff consisting of an Assistant Controller, four Tax Accountants, and three Managers of property accounting. *See* DuPont Opening Ex. III-D-2 at 10. DuPont claims that this staffing is appropriate because "[a]ctual tax returns are prepared by an outside accounting firm with property and payroll tax specialists."[224] But DuPont's staffing proposal ignores the significant complexities of taxation for a railroad that would be required to pay property taxes in 800 jurisdictions in over 20 states. Taxation for railroads is significantly more complex than for most other businesses. In part this is because the nature of a rail network

[223] *See* NS Reply WP "Payroll Help Desk Calls.pdf." This figure excludes all calls related to union issues.

[224] *Id.* As discussed above, DuPont provides no support whatsoever for its assertion that the DRR could outsource federal, state and local tax return preparation for only $200,000 a year and property tax preparation for a mere $100,000 a year. *See supra* III-D-67 to III-D-69. Having failed to support its evidence on Opening, DuPont is foreclosed from doing so on Rebuttal in this case. *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057 at 2 (served Apr. 4, 2003).

is to traverse multiple jurisdictions, which subjects railroads to many different tax regimes, and in part it is because of the unique and resource-intensive ways in which most states assess railroad ad valorem taxes. The DRR's substantial taxation needs cannot be satisfied by providing minimal staff and allocating a few hundred thousand dollars to "outsourcing."

The DRR will be responsible for preparing federal income taxes, state income taxes, and state property taxes. State property taxation is perhaps the most complex area, and the one least suited for "outsourcing." The DRR will operate in 20 states, and each state has differing approaches to assessing ad valorem taxes.[225] Fifteen of the states through which the DRR operates use a unit valuation methodology, which requires particularly intensive work from a railroad's in-house staff. The unit valuation process typically requires significant information exchange and negotiation over appropriate methodologies. The negotiation process requires the involvement of an officer of the railroad who must build, nurture and maintain relationships with state tax assessment offices to achieve the best possible valuation outcome for the railroad. For a large Class I carrier like the DRR, there are too many jurisdictions in which negotiations take place for this function to be effectively outsourced.[226] Moreover, unit valuation is just the beginning of the process. Valuation is typically done centrally by a state office, but tax billing is usually done at the local level, and the billing cycle differs from jurisdiction to jurisdiction. Paying the DRR's property taxes in each of the 800 county jurisdictions in which the DRR will operate requires year-round efforts to review and verify each tax bill and to follow up on

[225] *See* NS Reply WP "DRR Ad Valorem Tax Procedures in DRR States.pdf" for a discussion of the unique features of ad valorem taxation in each of the states where the DRR would operate. The five non-unit value states use variations of a summation methodology in which tax assessments are driven by the across-the-fence value of the railroad's real property and not the railroad's unit value as a whole.

[226] Even if outsourcing were justifiable, it could not be done at the absurdly low cost DuPont has proposed. DuPont's claimed $100,000 budget for property tax outsourcing amounts to just $5,000 per state, and DuPont has provided no evidence as to the basis for this estimate.

mistakes and requested corrections. Again, the idea that DRR could outsource this function for $5,000 per state is ludicrous. Because of the unique nature of railroad property taxation and the need for in-house expertise, it is more efficient for the DRR to adequately staff an internal tax group and do the work necessary to keep total tax levels reasonable.

DuPont's proposal to outsource other tax issues is similarly unworkable. Taxation of a $5.6 billion Class I railroad is simply not something that can be outsourced efficiently to an outside accounting firm—particularly not for just $200,000 per year. One reason for this is that in a capital intensive industry like the rail industry, converting book income to tax income in accordance with federal accounting standards is a major undertaking.[227] This is an ongoing process requiring constant communication and consultation with Property Accounting. This back room function is the reason no Class I carrier outsources federal income tax preparation. Another reason outsourcing would not work is that the DRR can expect focused treatment from the IRS that will require near-constant attention by in-house personnel. The IRS audits NS annually and has an average of 1.5 auditors at NS's Roanoke headquarters year-round, auditors for which NS is obligated to provide on-site office space and materials. The DRR, as a Class I railroad, can expect similar focused IRS attention. Because the DRR will need to interact with these on-site auditors, respond to questions, and provide backup detail, outsourcing this function is not reasonable.

Mr. Brown has determined that the DRR would require a tax staff consisting of 22 personnel. This assumes least-cost, best-in-class performance. NS's own tax staff is nearly twice as large as the DRR's staff, and the DRR would be required to pay taxes in most of the jurisdictions in which NS pays taxes. NS's proposed 21-person tax department includes:

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[227] *See* FASB Statement No. 109.

- Six personnel responsible for managing the ad valorem tax process, including a Director, two Managers, and three Accountants. This staff is {{ }} the size of NS's {{ }} staff,[228] and must manage the ad valorem tax process in 91% of the states where NS operates (20 of 22).
- Ten personnel responsible for the income tax process, including one Director, three Managers and six Accountants. This staff is 67% the size of NS's {{ }} staff. One DRR Manager would be a liaison to Property Accounting to ensure capital assets are properly recorded for tax purposes. Another Manager and one Accountant would handle the audit function of working with the in-house IRS agents. The final Manager and five Accountants would handle all review and analysis of tax returns.
- Four property accounting personnel. NS accepts DuPont's three proposed DRR Property Accounting positions, but not its proposal that these property accounting personnel would report directly to the Assistant Controller-Tax. The Assistant Controller Tax has significant other responsibilities and cannot be expected to also directly manage the property accounting group. NS adds a Director to provide guidance and management for the property accounting function.[229]
- One Tax Attorney to assist with legal issues that arise related to taxes.

TABLE III-D-28
Tax Group Staff Comparison

DuPont Opening	NS Reply	Difference
8	22	14

[228] *See* NS Reply WP "Job Functions – State Tax.pdf."

[229] *See* NS Reply WP "Job Functions - Property Accounting.xlsx."

(vii) Financial Reporting.

DuPont proposes a five person Financial Reporting Group.[230] This is too small a staff to cover the varied financial needs of a Class I railroad the size of the DRR. DuPont's Group is made up of an Assistant Controller, two Analysts/Clerks and two Staff Accountants who support this function and the other functions of the Controller.[231]

The vital functions of financial reporting cannot be accomplished with such a small group. The DRR will be able to use technology from Oracle, but this is no better than the comparable ERP SAP used by NS. Both ERPs still require a large staff to meet the requirements of GAAP as well as filings required by the Board and other regulatory agencies at the federal and state levels. The Financial Reporting Group will be responsible for complying with the following requirements:

- Monthly Closing of Books. Each month, the process would include preparing, reviewing, approving and posting journal entries; maintaining the financial system and chart of accounts; preparing balance sheet account reconciliations; and preparing financial statements.

- Board Reporting. The DRR would be subject to the same Class I railroad reporting requirements as the NS and other Class I carriers. Board reporting includes at least thirty-two reports each year, as detailed in Table III-D-29.

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[230] DuPont Opening Ex. III-D-2 at 11.

[231] *Id.* Because NS proposes to adequately staff all of these functions, the two Staff Accountants are unnecessary.

Table III-D-29
Board Required Financial Reports

Document	Due Date	Reports Per Year
Form R-1	March 31 of the Following Year	1
Form R-1 Sch. 250	April 30 of the Following Year	1
Quarterly Report of Fuel Cost, Consumption and Surcharge Revenue	30 Days After Close of Quarter	4
Quarterly Revenues, Expenses and Income	50 Days After Close of Quarter	4
Quarterly Condensed Balance Sheet	30 Days After Close of Quarter	4
Annual Freight Commodity Statistics	90 Days After End of Year	1
Quarterly Freight Commodity Statistics	60 Days After End of Quarter	4
Annual Wage Form A&B	45 Days After End of Year	1
Quarterly Wage Form A&B	30 Days After End of Quarter	4
M-350 Monthly Report of Employees	15 Days After End of Month	12
	TOTAL	36

- Financial Audits. The Financial Reporting staff will be required to cooperate with both internal and external auditors to prepare schedules and analyses, answer questions, provide documentation and draft financial statements and footnotes.

- Benefit Plan Reporting. IRS regulations require Form 5500 and audited plan financial statements to be filed for all Pension Benefit plans, including defined contribution 401(k) plans, covered by ERISA even if benefits no longer accrue, contributions were not made during that reporting period, or contributions have ceased entirely. An employer the size of the DRR will have some type of pension plan requiring the Financial Reporting Group to maintain records, prepare analyses and draft financial statements and footnotes in support of the Form 5500 filing and audited plan financial statements.

- Accounting Research. New accounting standards issued by standards-setting bodies need to be monitored and analyzed to ensure compliance.

To determine the required staffing for a railroad the size of DRR undertaking these functions, Mr. Brown first reviewed all of the Class I railroad reporting requirements of NS and the tasks required to comply with those requirements. Each task was evaluated with respect to the amount of individual work that was needed to complete it by an NS employee. Some reporting NS must do, such as subsidiary reporting, are not required by the DRR. These were excluded from the analysis. Tasks that that were deemed non-essential for an entity such as DRR were also eliminated. This resulted in a task list of requirements that would be necessary to comply with all financial reporting requirements of a railroad like DRR. To be even more conservative, Mr. Brown scaled these tasks based on either revenue or number of employees, depending on the function.[232] That adjustment was made even though in many cases the tasks would not actually vary as a result of these factors, making the NS proposal is conservative. The result of the analytical, fact-based review of financial reporting is that DRR would require a staff of eight to support the Assistant Controller including three Managers and five other Staff Members.[233]

TABLE III-D-30
Tax Group Staff Comparison

DuPont Opening	NS Reply	Difference
5	9	4

(viii) Purchasing and Materials Management

DuPont's attempt to staff the DRR's purchasing function with just three employees grossly understates the number of employees that would be necessary in the real world. DuPont argues that it can do so because the DRR would be "a new railroad" whose purchases "should be

[232] *See* NS Reply WP "Job Functions – Financial Reporting.xlsx."

[233] *See* NS Reply WP "Corporate Accounting Job Functions.xlsx."

limited during the first five years of its existence."[234] But the SAC test requires DuPont to staff the DRR as an ongoing concern, and the DRR must have sufficient purchasing staff to meet its ongoing needs. *WFA I*, STB Docket No. 42088, at 65. Similarly unconvincing is DuPont's claim that "the DRR does not have anything remotely approaching the purchasing demand of a major railroad like NS."[235] On the contrary, the DRR is a Class I railroad extremely similar to NS, moving 92% of NS's existing volume. That means it will have similar consumption requirements for items such as fuel, track, ties, ballast, and work equipment as NS. Indeed, the DCF analysis for the DRR illustrates its materials purchasing needs.[236]

Mr. Brown has designed a least-cost, most-efficient DRR purchasing staff headed by an Assistant Vice President with four functional directors to cover specific areas of purchasing including: Services with two Managers; Fuel and Track Material with four Managers; Transportation Equipment with three Managers; and Technology with two Managers. A company with $5.6 billion in revenues requires purchasing personnel that can focus on specific groups of commodities and can become specialists in their category of procurement. They must also maintain relationships with thousands of vendors of different materials and services. Commodity-specific experience will also help avoid inventory shortfalls which could, if they lead to the shutdown of a DRR activity, be far more expensive than adding purchasing personnel. As the Board has previously explained, purchasing staff is needed because "[n]ot all materials would be sent directly to the location where needed…supplies would sometimes need to be furnished for unplanned maintenance or emergencies…a detailed inventory of materials used [must be kept] so that materials would not run low and maintenance be delayed…[and]…[a]

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[234] DuPont Opening Ex. III-D-2 at 12.

[235] *Id.*

[236] *See* NS Reply WP "Annual Spending.xlsx."

purchasing and materials department would also need to keep abreast of and seek out the best suppliers from whom to obtain materials." *WFA I*, STB Docket No. 42088, at 65. To accomplish all these requirements, the DRR needs an adequately sized purchasing staff. By comparison, NS has {{ }} individuals employed in its purchasing function.

TABLE III-D-31
Purchasing Group Staff Comparison

DuPont Opening	NS Reply	Difference
3	16	13

(ix) Cost and Economic Analysis

NS places the Cost and Economic Analysis functions under a Director of Economics and Planning. NS accepts DuPont's proposal for two Managers of Cost and Economic Analysis and adds an Analyst to assist in these functions.

(x) Car and Equipment Accounting

DuPont has not adequately staffed the Car Accounting and Equipment Accounting function, providing just four Managers and two Analysts. Car Accounting is a complex function involving interfacing with many other accounting functions such as accounts receivable, accounts payable and audit; preparing and sending of reports, payments, statements, and collection letters; handling railcar pooling through TTX and third party billing issues; reconciling of statements from other railroads; and resolution of discrepancies and data reporting errors. In order to handle these responsibilities, Mr. Brown staffs Car Accounting with a Manager and

twelve Analysts.[237] The staffing is based on NS's staff, scaled to reflect the DRR's volume of carloads.[238]

TABLE III-D-32
Car Accounting Staff Comparison

DuPont Opening	NS Reply	Difference
6	13	7

(xi) Budgeting

DuPont has also inadequately staffed the Budgeting function. DuPont has a single Manager of Budgets placed under a Director who DuPont proposes will also have oversight over Car Accounting and Equipment Accounting. *See* DuPont Opening Ex. III-D-2 at 3. This proposal that only two employees are required for "the annual budget" overlooks the fact that railroads must maintain both an operating budget and a capital budget. It is not reasonable to expect the same two employees to manage both budgets for a Class I railroad. NS therefore places two Managers of Budgeting to handle the DRR's budgeting needs under a Director of Economics and Planning. One manager will be assigned to the operating budget, and will work with the Operating Budget staff within Operations and the Revenue Forecasting staff within Marketing to determine needs and resources. The other manager will be responsible for the capital budget, which requires careful planning, review and monitoring of all capital spending including ongoing and future projects. This entails calculating the return on investment for each project and prioritizing based on guidance from the Board of Directors. Each will have an

[237] *See* NS Reply WP "Job Functions – Revenue - MBIL.xlsx".

[238] Car Accounting is placed in the Miscellaneous Billing Section of the Revenue Accounting Group for organizational purposes.

analyst. The DRR spends an estimated $2 billion per year on ongoing capital projects to maintain its physical plant, a vast budget that will require significant staff work.[239]

TABLE III-D-33
Budgeting Function Staff Comparison

DuPont Opening	NS Reply	Difference
2	4	2

(e) Law and Administrative

DuPont proposes that the DRR have a Legal & Administration Department headed by a Vice President with the assistance of a single administrative assistant.[240] But the DRR's Legal & Administration Department covers far too broad a range of areas to be effectively managed by a single individual. One individual cannot simultaneously supervise the DRR's legal function, its human resources function, its Claims Department, its Real Estate Department, and its Police Department without managerial assistance. To correct this defect, Mr. Brown's DRR staffing adds three Assistant Vice Presidents who would report to the Vice President. One Assistant Vice President would manage the Legal Group and Claims; another would be responsible for Asset Protection, including Environmental, Police and Real Estate; and the third would be responsible for Human Resources. The Assistant Vice President for Asset Protection, and the Asset Protection Group as a whole, are assigned an Administrative Assistant because of the large amount of travel required by that group.[241]

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[239] *See* NS Reply WP "Annual Spending.xlsx."

[240] DuPont Opening Ex. III-D-2 at 12.

[241] *See infra* III-D-185 to III-D-189.

(i) Legal

DuPont proposes a DRR law staff of just six lawyers and three paralegals, with "much of the railroad's legal work" being "handled by outside counsel." DuPont Opening Ex. III-D-2 at 13. But DuPont claims that the DRR would pay only $1,075,000 annually for these outside counsel. *See* DuPont WP "DRR GA Outsourcing.xls." DuPont provides no evidence to justify either its internal staffing levels or its external spending. Instead, its outside counsel spending appears to be predicated on two unsupported and unreasonable assumptions: (1) an apparent rule of thumb that the DRR would spend $50,000 in legal fees for each state in which it operates and (2) the claim that the DRR would have fewer legal needs than a real-world railroad, including "minimal STB work" and "no max[imum] rate proceedings." *Id.*[242] Neither of these assumptions withstand scrutiny, and a review of the DRR's legal needs and applicable legal spending benchmarks demonstrates that DuPont has vastly understated the DRR's expenses in this area.

Legal expenses are not something that can be avoided or ignored by an efficient railroad; on the contrary, they are a cost of doing business. A multi-billion-dollar company must have an adequate staff of in-house and outside counsel to handle issues ranging from property disputes to employment litigation, from contract negotiation to environmental issues, from tax work to regulatory compliance. Indeed, as a Class I railroad the DRR likely would have significantly higher legal expenses than a non-railroad. In the first place, the DRR will need resources to ensure compliance with FRA, TSA, environmental, and STB regulations. Railroads face

[242] Having failed to adequately support its evidence on Opening, DuPont is precluded from providing evidence on Rebuttal. *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057, at 2 (served Apr. 4, 2003).

significantly more regulation than most other industries, and the DRR will need sufficient legal staff to navigate the complex regulatory regimes with which the DRR must comply.

The DRR also will confront litigation expenses not faced by non-railroads. For example, railroads, and railroads alone, are subject to the Federal Employers Liability Act ("FELA"), which supplants state workers' compensation schemes with a fault-based liability mechanism. FELA requires that compensation for death or injury be obtained by individual litigation establishing the employer's fault. With very limited exceptions, all other major U.S. companies absorb employee injury costs through a no-fault workers compensation system that does not require the expenditure of significant litigation resources. The fault-based FELA system generates an enormous employee injury litigation docket for railroads that other companies simply do not have. The DRR's outside legal expenses must reflect the extraordinary transaction and handling costs of processing employee injury claims in this litigious model.

In light of the broad range of legal issues that the DRR would confront, DuPont's assertion that $50,000 per state would suffice for DRR outside counsel spending is not reasonable. A benchmarking study by {{ }} found that the median hourly rate for outside counsel was {{ }}, with NS paying {{ }}.[243] Conservatively assuming an hourly rate of $200/hour, a $50,000 budget would pay for only 250 hours of legal work. The DRR would have far more than 250 annual hours of legal work per state—indeed, a single litigation matter could easily require many multiples of that amount of lawyer time. For a railroad that plans to have "[m]uch of the railroad's legal work . . . handled by outside counsel,"

[243] NS Reply WP "Law Dept Spending Survey 2003.pdf" at 12.

an outside counsel budget that barely pays for two months' worth of a single lawyer's time per state is patently ridiculous. DuPont Opening Ex. III-D-2 at 13.

Even more ridiculous are DuPont's assertions that the DRR—which would be the fifth largest railroad in the United States—could function with "minimal STB work" and would face "no max[imum] rate proceedings." DuPont WP "DRR GA Outsourcing.xls." DuPont cannot wish away the legal costs of rate litigation by assuming "no max[imum] rate proceedings" any more than it could assume that its locomotives will never fail or that its trains will never derail. The cost of doing business in a regulated industry where certain customers have the right to challenge the level of their rates includes the cost of defending those rate cases. DuPont's assumption is particularly ludicrous because its traffic group contains traffic that is or has been subject to rate challenges. For example, the DRR traffic group has selected chlorine traffic whose rates are subject to challenge in *SunBelt Chlor Alkali P'ship v. Norfolk Southern Ry. Co.*, STB Docket No. 42130, and 629,000 tons of coal traffic whose rates were subject to challenge in *South Mississippi Electric Power Ass'n v. NS*, STB Docket No. 42128. *See* DuPont Opening WP "2010 Coal 80-Chem 40-Auto 60.xlsx." Even setting rate cases aside, a Class I railroad like the DRR would need to devote significant resources to filings with the STB in a variety of matters. In just the last year, the STB has initiated the following rulemakings: Ex Parte 689 on arbitration and mediation, Ex Parte 715 on rate cases, and Ex Parte 711 on forced access. The $75,000 budget that DuPont allocates to all "Federal matters" would cover only 375 hours of attorney time at a $200/hour rate, not even close to sufficient to handling FRA, environmental, and STB legal matters for a $5.6 billion, 7,344 mile railroad.

Mr. Brown developed legal spending for the DRR based on the legal requirements discussed above and best-practice benchmarks for legal spending. In particular, Mr. Brown

relied upon a benchmark study of legal spending by {{ }} that NS commissioned to optimize its own spending. The {{ }} study found that the best-performing companies with revenues between $6 billion and $10 billion spent {{ }} of revenues on combined inside and outside legal spending.[244] *See* NS Reply WP "Law Dept Spending Survey 2003.pdf" at 2. These best performers significantly outperformed the average companies in that category, which spent an average of {{ }} of revenues on legal spend. This {{ }} benchmark is also substantially better than NS's real-world legal spending, which amounts to approximately {{ }} of NS revenues.

To be conservative, Mr. Brown accepted {{ }} as a benchmark for best-in-class performance and assumed that the DRR would spend a total of {{ }} of revenues on total in-house and outside legal spending. For internal staffing, Mr. Brown made the following additions to DRR's proposed staff: (1) the aforementioned Assistant Vice President – Legal to oversee the legal and claims department; (2) an administrative assistant to aid the Assistant Vice President and others in the legal department with issues like travel arrangements, communications with outside counsel, and docket management; and (3) three additional lawyers (for a total of nine). The six-lawyer staff proposed by DuPont is not sufficient to manage effectively the large number of DRR legal matters and supervise the many outside counsel who would be engaged by the DRR, and the four additional lawyers will allow each DRR lawyer to manage a more reasonable caseload. Indeed, having sufficient in-house lawyers to monitor bills and carefully direct outside counsel's work is essential to controlling costs and achieving best-in-class performance.

[244] Because the DRR would have slightly less than $6 billion in revenues, Mr. Brown's calculation is in fact conservative because a smaller company would have less efficiencies.

Mr. Brown arrived at a specific outside counsel spending target for the DRR by taking the total cost of in-house legal (including salaries, benefits, and materials) and calculating the outside counsel spending that would enable the DRR to achieve the best-in-class {{ }} benchmark.[245] *See* NS Reply WP "DRR Operating Expense Reply.xls," Tab "Outside Services." This model estimates the DRR's outside counsel spending as $15,152,400. This figure is extremely conservative, for extrapolating NS's legal spending as a percentage of revenue to the DRR would result in DRR outside counsel spending of $26,937,600. *See id.* NS's conservative view of DRR legal spending both recognizes the substantial amount of legal work that the DRR would need to have performed in the real world and assumes that the DRR would achieve world-class performance.

(ii) Claims

DuPont includes a claims Sub-Department within the Legal and Administration Department staffed by a Director and two Managers. *See* DuPont Opening Ex. III-D-2 at 13. The claims group allegedly would outsource work to "Claims Investigators" at an annual cost of $250,000. DuPont does not provide any support for its $250,000 figure.[246] DuPont's outsourcing claim is not reasonable, and it has significantly understated the staffing needs for the DRR claims department.

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[245] Mr. Brown determined what costs to include based on the {{ }} study's definition of "Inside Legal Spending" which includes "Cash Compensation & Benefits, Administrative Operating & Office Expenses, Allocated Overhead and Corporate Facilities & Rent, and does not include 'quasi-legal' costs and filing fees, settlement costs, judgments, recoveries, cost of insurance, or expenses of other departments reporting to the General Counsel." NS Reply WP "Law Dept Spending Survey 2003.pdf" at 3.

[246] As discussed *supra* III-D-69, the $250,000 outsourcing costs appears to have been cribbed from SAC evidence submitted for much smaller and simpler SARRs. Having failed to adequately support its evidence on Opening, DuPont is precluded from providing evidence on Rebuttal. *See, e.g., SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057 at 2 (served Apr. 4, 2003).

Railroads typically deal with two types of claims: (1) freight claims for physical damage to a freight car or a shipment; and (2) casualty claims for injuries to employees or injuries or property damage to those outside the railroad and its shippers. DuPont appears to conflate these two very different types of claims into a single department, which is atypical and not reasonable. Freight claims are typically best handled in a railroad's Operations Department, and NS's evidence provides for Operations Department staffing to handle freight claims.

The casualty claims function would be handled in the DRR G&A department. DuPont proposes to almost entirely outsource the claims investigation function, with only two in-house employees overseeing the outsourcing. This proposal to effectively outsource the entire claims function is not feasible, because claims investigation is a fact-intensive endeavor that requires detailed knowledge of a railroad's operations. Casualty claims for railroad employees are compensated in a unique fashion not typical of other industries. Instead of no-fault workers' compensation, railroad employees are subject to the Federal Employees Liability Act ("FELA"), 45 U.S.C. § 51 *et seq*. FELA requires substantial internal investigations following any type of injury to establish fault. The investigations necessitate substantial knowledge of not only the railroad industry as a whole, but the individual railroad's operations in particular. For this reason, NS's Casualty Claims Group requires a thirteen-month training program, with half of that time devoted to intensive study of railroad operations. Claims employees need a full five years of experience before they can handle an incident on their own. That type of intimate knowledge of railroad operations means this function cannot be effectively outsourced.

{{

}}

But even if outsourcing were a feasible option for claims investigation on an 7,344 mile railroad, DuPont's unsupported proposal is woefully insufficient. DuPont's claim that the DRR could spend only $250,000 for the services of "6 claims investigators" vastly understates what outsourcing would cost. DuPont WP "DRR GA Outsourcing.xls." {{

}} Moreover, DuPont provided no evidence that 6 claims investigators would be sufficient. As demonstrated below, the DRR could expect approximately {{ }} casualty claims per year—far too many to be handled by only six investigators.[247]

For these reasons, Mr. Brown designed an in-house claims department for the DRR. His review of data from NS's claims processing department revealed that NS received {{ }} individual casualty claims in 2011, which amounted to {{ }} claims per employee based on the total NS workforce of {{ }}. The average NS claims investigator handled {{ }} of

[247] DuPont cannot simply wish away casualty claims. Accidents and incidents will occur. For example, in 2011 the four largest Class I carriers had 1,302 Highway Rail Accidents, meaning any impact between a rail and highway user, reportable to the FRA. *See* NS Reply WP Folder "FRA Reportable Highway Rail Accidents."

those claims.[248] Scaling to the DRR, based upon the number of employees, implies that the DRR would have approximately {{ }} claims which, based on the average workload of an NS Claims Agent, would require twenty-five Claims Agents. But to be conservative, NS proposes that the DRR operate with just twenty claims agents. Nine Claims Agents would be assigned to each region and two would handle occupational claims.[249] Mr. Brown provides for the Sub-Department to be staffed by a Director and three Managers, one for each region and a third to cover occupational claims.

TABLE III-D-34
Casualty Claims Function Staff Comparison

DuPont Opening	NS Reply	Difference
3	24	21

(iii) Real Estate

DuPont has recognized the need for a DRR Real Estate Group, correctly stating that this group will be "responsible for sales, acquisitions and easements of real estate on the DRR."[250] DuPont provides two directors and two managers to handle the property acquisition function, and reasonably organizes them by north and south regions. NS accepts these positions, as well as the General Attorney DuPont assigns to the Real Estate Group.[251] By comparison, NS has {{ }} people in its Real Estate Group.[252]

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[248] {{
}}

[249] Occupational claims are those that are not the result of a specific incident but rather come from years of repetitive work or repeated exposure.

[250] DuPont Opening Ex. III-D-2 at 13.

[251] *Id.*

[252] *See* NS Reply WP "NS Real Estate Staffing.xls."

But it is not enough for the DRR to acquire property to expand its ROW, terminals, and yards; the DRR also must provide staffing sufficient to handle property development activities such as design and engineering, permitting, and scheduling of construction. Mr. Brown therefore adds four development managers, two for each of the regions DuPont has described. This staffing compares with current NS's Industrial Development staff of {{ }} covering these functions. Within Industrial Development, NS has {{ }} Directors and {{ }} Managers to facilitate plant location, development, and expansion along NS's ROW. In addition, a Technical Services Group is headed by {{ }} with a staff of {{ }}. The Technical Services Group covers engineering, site development, contract services, and supply chain development and strategy. Mr. Brown conservatively assumes that the DRR could accomplish these same functions with a staff of only 4, compared with NS's {{ }}.

TABLE III-D-35
Real Estate Group Staffing Comparison

DuPont Opening	NS Reply	Difference
4	8	4

(iv) Police[253]

DuPont proposes a police force with 15 total personnel, including a Police Chief, two District Commanders and 12 agents divided equally in its two regions.[254] What DuPont proposes is far too limited and does not cover the minimum duties of a railroad's police force required by standard industry practice and by government regulation. DuPont argues that it is a "common practice" for railroads to rely on local police, but offers no justification or supporting evidence

[253] For the Police Group, Mr. Brown consulted with NS expert Joe Osborne, a former NS Vice President – Coal Transportation and Planning and Vice President – Chemicals. Mr. Osborne's qualifications are further described in Section IV.

[254] DuPont Opening Ex. III-D-2 at 14.

and is demonstrably false.[255] Because of the significant security, regulatory, and asset protection requirements of all Class I railroads, sufficient police personnel are necessary to cover the geographically spread out, 7,344 route mile, 20 state territory over which the DRR's network travels. While it is common for railroads to pay local police forces to augment their own force in the case of extraordinary events, DuPont failed to include such costs in its submission.[256]

DuPont mischaracterizes the role of railroad police as simple functionaries that call in local jurisdiction law enforcement whenever an incident occurs. Real-world NS numbers are instructive. In 2009, {{ }} police reports were generated by NS police officers.[257] {{ }} trespassers were reported in 2009, with {{ }} receiving warnings and ejections and {{ }} being arrested.[258] In 2010, {{ }} were warned and ejected and {{ }} were arrested.[259] NS's police force entered numerous other cases throughout 2010 including {{ }} arson cases, {{ }} bomb threats, {{ }} suicides, {{ }} copper wire thefts, and {{ }} thefts from railcars.[260] These are illustrative of the many types of activities to which a railroad police force must respond to.

A Class I railroad's police force is responsible for a multitude of functions, which NS proposes to organize into groups under a Chief, Special Agent in Charge and Secretary:

Communications. The Communications Group will work to ensure that the police have sufficient communications equipment to meet the DRR's operational and safety needs, as well as

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[255] *Id.*

[256] Having failed to justify its evidence on Opening, DuPont is foreclosed from providing any additional support in this case. *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057 at 2 (served Apr. 4, 2003).

[257] *See* NS Reply WP "DRR Network NS 2009 Police Review.pdf" at 8-10.

[258] *See Id.* at 10.

[259] *See* NS Reply WP "NS Police Report Statistics.pdf" at 1.

[260] *See Id.* at 2-7.

regulatory reporting and notification requirements. Government regulations require railroads to maintain certain security and asset protection functions, including having the infrastructure and trained personnel necessary to locate a specific car in response to a security related request within as little as five minutes. 49 C.F.R. § 1580.103(d)(1). The Communications Group also documents all railroad emergencies, road crossing incidents, trespasser violations, potential security threats, and compliance with regulatory reporting rules. The Group will be responsible for maintaining the required toll-free telephone number for the public to report emergencies or other unsafe conditions at highway-rail and pathway grade crossings and helping to direct any necessary response, in accordance with the rule. *See* 77 Fed. Reg. 35164 (June 12, 2012). The Communications Group will also serve as the required point of contact for surveillance and notification for all events on the DRR's network related to 1) The Department of Homeland Security, TSA and the Joint Terrorism Task Force; 2) AAR Communications Group; 3) Department of Defense shipments; and 4) Department of Energy radioactive shipments.

DuPont did not provide for the necessary communications infrastructure of personnel. Mr. Brown and Mr. Osborne propose that ten trained staff be assigned to support all of the important communications functions.

Training and Administration. Railroad police officers are required to be commissioned police officers in the states through which their railroad operates. *See, e.g.*, 49 U.S.C. § 28101 ("[A] rail police officer who is employed by a rail carrier and certified or commissioned as a police officer under the laws of a State may enforce the laws of any jurisdiction in which the rail carrier owns property."). State requirements vary but require training in various laws and state procedures, annual in-service training, and firearms training and qualification. 22 PA. CONS. STAT. § 3303 ("Every railroad and street railway police officer shall successfully complete the

same course of instruction required for municipal police officers."); N.Y. R.R. LAW § 88(7) ("No person shall be granted an appointment as a police officer...unless and until the [railroad] shall certify to the superintendent of state police that the proposed appointee has had adequate firearms training..or...he will receive such training."). Federal and state regulations also require police personnel to undergo training on record keeping and reporting requirements.[261] For business purposes, police must also maintain records of all security and asset protection incidents and training undertaken by the police force. The railroad's police force must also maintain employee identification and security requirements and conduct appropriate identity and background checks on contractors and new hires. The NS Reply proposes one individual to support the police administratively.

Special Investigations. Railroad police forces require a specialized group to protect against fraud and theft of customer and DRR network property. A Special Investigations Group requires specialized skill sets in investigative and surveillance techniques that the broader police force does not need to possess. The Special Investigations Group protects against employee fraud as well as theft and burglary of customer shipments. Without this function, the threat of enormous fraud, theft, and damage costs is great. NS proposes six police officers specifically assigned to this function.

Police Force. The DRR also needs its general police force. Some of the functions of this force include:

- Security Infrastructure and Asset Protection and Incident Investigation: Railroad police forces must have monitoring and surveillance capabilities to proactively protect the

[261] *See, e.g.*, N.Y. CRIM. PROC. LAW § 1.20(p) (including railroad police in the definition of "police officer"). *See also* NS Reply WP "Basic Course for Police Officers" (includes Report Writing).

DRR's infrastructure, right of way, trains, and customer shipments. In addition, the police force must respond to incidents of burglary, trespassing and other threats to normal rail operations. The railroad's police must also comply with the Customs-Trade Partnership Against Terrorism and TSA rules regarding High Threat Urban Areas ("HTUAs").[262] There are twenty HTUAs in the DRR's network.[263]

- Emergency Response: The police will help with the frontline response to emergency incidents, including applying special training and specialized assets to assist swiftly in any emergency or security incident on the DRR.
- Police Relations: The railroad's police must maintain regular contact and joint training with all law enforcement agencies in the jurisdictions through which the DRR operates.

Mr. Brown and Mr. Osborne propose 110 police personnel across the DRR regions to meet these police requirements.

The police force was scaled from NS based on route miles.[264] In certain geographic areas, where the DRR has significantly less route miles than the real-world NS, in order to be conservative, significantly less police personnel were staffed.

TABLE III-D-36
Police Staffing Comparison

DuPont Opening	NS Reply	Difference
15	130	115

[262] *See infra* III-D-144.

[263] The HTUAs in the DRR's network are Washington, DC; Atlanta, GA; Chicago, IL; Indianapolis, IN; Louisville, KY; New Orleans, LA; Baltimore, MD; Detroit, MI; Kansas City, MO; St. Louis, MO; Charlotte, NC; Jersey City/Newark, NJ; Buffalo, NY; Cincinnati, OH; Cleveland, OH; Columbus, OH; Toledo, OH; Philadelphia, PA; Pittsburgh, PA; and Memphis, TN. 49 C.F.R. Appendix A to Part 1580 (identifying HTUAs including twenty in the DRR's network). *See* NS Reply WP folder "HTUA."

[264] *See* NS Reply WP "DRR Network NS Response Police Head Count.xls."

(v) Environmental[265]

DuPont proposes that the DRR would collect $965 million in revenues in 2010 from transporting 397,000 carloads of hazardous materials ("hazmat") traffic. 15,632 of those carloads and $85 million of that revenue is attributable to transporting chemicals that are toxic-by-inhalation ("TIH") or poisonous-by-inhalation ("PIH"). But DuPont claims DRR revenues for this TIH/PIH and hazmat traffic without accounting for the full costs the DRR would incur to transport it. In particular, DuPont's proposed staffing for the DRR does not include sufficient personnel to either (1) manage compliance with the host of regulations governing the transportation of hazmat and TIH/PIH traffic; or (2) respond to hazardous materials safety and security issues that might occur during the transportation of these materials. These functions are an essential service need for TIH/PIH and hazmat traffic, and the DRR must perform them if it is to serve that traffic. DuPont's DRR staffing also lacks sufficient personnel to ensure the railroad's compliance with other environmental regulations like the Clean Water Act and the Resource Conservation and Recovery Act.

DuPont's DRR staffing includes a total of five employees responsible for environmental and hazmat transportation issues:

- One Manager - Testing and Environmental,[266] who is "responsible for testing of materials and environmental compliance, including investigation of any problems involving cars containing hazardous commodities while on the DRR (and related federal reporting requirements)." DuPont Opening Ex. III-D-1 at 10;
- One Director of Environmental Operations and one Environmental Engineer in the DRR Engineering Department (whose duties are unspecified), *id.* at 17;[267] and

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[265] For the Environmental Group, Mr. Brown consulted with NS expert Joe Osborne.

[266] While DuPont's evidence suggests that it has provided a Manager in each of the DRR's regions, DuPont Opening Ex. III-D-1 at 10, its workpapers show only one such manager. DuPont WP "DRR Operating Expenses.xls."

[267] DuPont Opening Ex. III-D-1 at 3.

- Two Managers – Environmental/Safety/Training in the Maintenance of Way Department to "interface with federal and state environmental authorities on compliance, and monitor environmental compliance with respect to the DRR's MOW activities . . . and [who] are responsible for MOW employee training and compliance with Hazmat practices and procedures."[268]

This staffing is grossly insufficient to fulfill all the environmental and hazmat-transportation-related functions of the DRR. These functions include, but are not limited to:

1) EPA, FRA, PHMSA, TSA and other federal regulatory compliance and reporting;

2) Response to spills, non-accident releases, or other incidents;

3) Management and testing of waste water treatment;

4) Community outreach and training of first responders;

5) Railroad Infrastructure Security and Risk Assessment; and

6) Maintenance and enforcement of all rules and procedures to ensure the proper and safe handling of hazmat materials moving along the DRR.

DuPont has no plan for the DRR to handle these requirements; instead, it virtually ignores them.[269] This decision is particularly surprising because DuPont knows full well the complexities of hazmat transportation and associated regulatory compliance. Indeed, DuPont touts its leadership in safety and understanding of these risks.[270] NS's experts, on the other hand, developed environmental staffing for the DRR in light of real-world legal and practical requirements, and in line with reasonable industry benchmarks.

The federal government has long had specific hazmat transportation rules in place for railroads, such as minimum training requirements for those transporting hazmat shipments[271] and

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[268] DuPont Opening Ex. III-D-3 at 17.

[269] Having failed to justify its evidence on Opening, DuPont is foreclosed from providing any additional support in this case. *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057, at 2 (STB served Apr. 4, 2003).

[270] *See* NS Reply WP "DuPont Touts Safety.pdf."

[271] 49 C.F.R. §§ 172.700 et seq.

a 48 hour rule to keep shipments of hazmat from remaining on a rail line for extended periods.[272] But following the September 11, 2001 terrorist attacks, many agencies, the Transportation Security Administration ("TSA") and Pipeline and Hazardous Materials Safety Administration ("PHMSA") in particular, have sharply increased their focus on the safety and security of the transportation of TIH shipments by rail. Both agencies have released significant guidance and rulemakings that all railroads transporting TIH, including the DRR, are obligated to follow. These requirements include:

- TSA's Recommended Security Action Items.[273] TSA has issued three sets of Action Items for the rail transportation of TIH. The action items require the railroads to:
    - Designate a railroad employee with overall responsibility for hazmat transportation security planning;
    - Conduct audits to verify that security plans are being effectively implemented;
    - Restrict access to information about hazmat shipments and security measures;
    - Establish procedures for performing background checks on contractor employees;
    - Develop site-specific security plans to address the risk posed by transportation of bulk TIH products in HTUAs;
    - Reduce the number of hours TIH card are held in yards, terminals and on railroad-controlled leased track in HTUAs; and
    - Minimize the occurrence of unattended TIH rail cars in HTUAs.
- Rail Transportation Security Rule.[274] On November 26, 2008, TSA finalized this rule requiring railroads to, among other things:

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[272] 49 C.F.R. § 174.14.

[273] *See Rail Transportation Security*, 73 Fed. Reg. 72130, 72154, n.50 (Nov. 26, 2008); *See* U.S. Department of Homeland Security and U.S. Department of Transportation, *Recommended Security Action Items for the Rail Transportation of Toxic Inhalation Hazard Materials , Supplement No. 2* (Feb. 12, 2007) *available at* http://www.tsa.gov/assets/pdf/sai_for_tih_supplement2.pdf.

[274] *Rail Transportation Security*, 73 Fed. Reg. 72130, 72154, n.50 (Nov. 26, 2008).

- Develop a system that allows them to provide location and shipping information for TIH rail cars under their physical custody within five minutes of a request by TSA;[275] and

- Enact strict "chain of custody and control requirements" when transferring TIH cars to or from shippers or other carriers.[276]

- PHMSA Hazardous Materials Regulations I.[277] PHMSA enacted new rules on November 26, 2008. The rules require railroads to:

  - Compile data concerning hazmat shipments transported;[278]

  - Analyze the safety and security of the rail transportation route used as well as potential alternative routes;[279]

  - Use the rail transportation route analysis to determine the safest and most secure practicable route available;[280]

  - Retain the rail transportation route analysis for potential review by DOT or DHS officials;[281]

  - Coordinate with shippers to minimize the time a rail car containing hazmat is stored and prevent unauthorized access to the materials during storage or delays in transit, to mitigate risk to population centers associated with in-transit storage; and[282]

  - The FRA promulgated a related rule for the review of determinations that a railroad carrier's route selection, analysis and documentation was deficient.[283]

- PHMSA Hazardous Materials Regulations II.[284] PHMSA enacted additional rules in January of 2009. The rules require railroads to:

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[275] 49 C.F.R. § 1580.103(d).

[276] 49 C.F.R. § 1580.107.

[277] *Hazardous Materials: Enhancing Rail Transportation Safety and Security for Hazardous Materials Shipments*, 73 Fed. Reg. 72182 (Nov. 26, 2008).

[278] 49 C.F.R. § 172.820(b).

[279] 49 C.F.R. § 172.820(c).

[280] 49 C.F.R. § 172.820(j).

[281] 49 C.F.R. § 172.820(i).

[282] 49 C.F.R. § 172.820(h).

[283] 49 C.F.R. § 209.501.

- Enact commodity-specific improvements in safety features and design standards for new rail cars;[285] and
- Set a 50 mile-per-hour speed limit on all trains transporting loaded TIH products.[286]

This complex and ever-changing regulatory landscape requires TIH rail carriers to maintain trained staff who are capable of monitoring regulatory changes and making certain that other DRR personnel are properly complying with the rules. Real-world railroads have incurred, and will continue to incur, substantial costs to comply with this series of government measures. Violating any of these rules is not only a safety and security risk, but could also lead to the imposition of civil penalties or other enforcement action.[287] The DRR will be no different than any other real-world railroad in having to comply with these rules. Yet DuPont has proposed almost no personnel to monitor and coordinate the DRR's activities in this area of intense regulatory scrutiny and public concern.

The DRR will also need to comply with multiple environmental laws, regulations, and industry practices. For example, through its authority under the Clean Air Act,[288] the EPA has promulgated regulations to reduce emissions from locomotives.[289] The DRR will require wastewater treatment facilities at any yard or site where fuel is stored and waste disposed of, necessitating compliance with the Clean Water Act[290] and its accompanying regulations.[291] The

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[284] *Hazardous Materials: Enhancing Rail Transportation Safety and Security for Hazardous Materials Shipments*, 74 Fed. Reg. 1770 (Jan. 13, 2009).

[285] 49 C.F.R. Part 179.

[286] 49 C.F.R. § 174.86.

[287] *See* 49 C.F.R. § 1503.

[288] 49 U.S.C. §§ 7401 et seq.

[289] 40 C.F.R. Part 92

[290] 33 U.S.C. §§ 1251 et seq.

Resource Conservation and Recovery Act[292] specifically applies to rail transportation of hazardous materials, mandating certain procedures when transporting hazardous waste including obtaining EPA identification numbers to track waste, specific detailed manifest documentation requirements, and requirements for cleaning up any materials discharge.[293] The Emergency Planning & Community Right-to-Know Act[294] provides for the notification of emergency releases of chemicals. Its regulations specifically apply the emergency release notification requirements to the rolling stock of railroads.[295] The rules for these and many other environmental statutes are complicated and subject to change. Only a properly staffed Environmental Group can follow developing rules and ensure the DRR is meeting its legal obligations under the environmental statutes.

DuPont attempts to justify its failure to provide adequate staff with the assumption that the DRR would only require "infrequent" cleanups because "[d]erailments are less likely to occur on the DRR than on a Class I railroad such as NS because the DRR begins operations July 1, 2009 with a brand-new track structure that includes [continuous welded rail] on all of its main tracks."[296] In the first place, DuPont ignores the enormous amounts of compliance and training work that the DRR would be required to undertake regardless of derailments. Moreover, DuPont's statement betrays a fundamental misunderstanding of the causes of derailments and

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[291] 40 C.F.R. Part 122.

[292] 42 U.S.C. § 6901.

[293] 40 C.F.R. Part 263; *See also* NS Reply WP "RCRA In Focus Motor Freight & Railroad Transportation.pdf."

[294] 42 U.S.C. § 11001 et seq.

[295] 40 C.F.R. § 355.61.

[296] DuPont Opening Ex. III-D-3 at 29-30.

hazardous materials releases. In 2011 less than 41% of derailments were track-related.[297] And DuPont wrongly assumes derailments are the cause of all incidents involving the release of hazardous materials—completely ignoring non-accident releases ("NARS") caused by leaks, splashes, improperly secured or defective tank car valves, or other reasons.[298]

NS proposes to centralize all DRR environmental functions into one Environmental Group within Asset Protection. The Environmental Group would be headed by a Director and manage all environmental and hazardous materials issues in a comprehensive, coordinated way. It would have clear lines of authority to ensure the DRR's compliance with federal laws and the laws of the 20 states and numerous localities the DRR will serve. The Director will be supported by five Managers, each responsible for a different functional area: Environmental Remediation; Environmental Operations; Compliance; Projects Administration; and Infrastructure Security. The staff for each area is benchmarked with NS and other Class I carriers.[299] Specifically, Mr. Brown and Mr. Osborne went line-by-line through NS's environmental staffing and determined if any comparable individual would be necessary for the DRR. For example, the DRR has a lighter presence in Charlotte than the real-world NS, so no Engineer of Environmental Operations was added for Charlotte. Then, Mr. Brown and Mr. Osborne scaled based on the DRR's overall size compared to NS.

Environmental Remediation. The Manager of Remediation will have a staff of six engineers. The function requires both proactive and reactive activities. Proactively, this team

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[297] *See* NS Reply WP "Derailment Report.pdf." Other significant causes of derailments are human error (30%), equipment issues (12.4%) and signal problems (1%).

[298] NARS means "the unintentional release of a hazardous material while in transportation, including loading and unloading while in railroad possession, that is not caused by a derailment, collision or other rail related accident." *See* http://nar.aar.com.

[299] *See* NS Reply WP "DRR Network HAZMAT Response.xlsx."

will make sure the DRR's operations are being undertaken in an environmentally responsible matter. Reactively, this team will be in charge of any necessary incident respond when and if any type of environmental clean-up is necessary. The Remediation Group will assure compliance with the Emergency Planning and Community Right to Know Act in case a release occurs and make sure that any ensuing clean-up complies with all environmental laws. As a point of comparison, NS had 113 NARS and other releases of hazmat in 2007, 86 in 2008, 83 in 2009, and 93 in 2010.[300] Each of these required some level of response by NS. The similarly sized DRR can expect a similar workload of releases.

Environmental Operations. The Manager of Environmental Operations will oversee a staff of eight Engineers placed throughout the DRR. The Group will perform environmental monitoring and inspections in the field, ensuring compliance with environmental laws. Required monitoring and inspections includes testing for the Clean Water Act, to make certain water pollutant discharge limits are not exceeded, and testing for the Clean Air Act, to guarantee the DRR activity does not violate National Ambient Air Quality Standards. The Environmental Operations Group will also be responsible for waste water treatment facilities, facilities the DRR will require at its locomotive servicing shops in Elkhart, Conway, Roanoke and Chattanooga, as well as any yard facilities where fuel is stored and waste disposed. The Group is also responsible for community outreach including training and working with first responders in the communities the DRR services. The environmental operations staff would also work with shippers to educate and train them on proper, safe and secure loading techniques to minimize the number of NARS occurring on the DRR network.

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[300] *See* NS Reply WP "DOT Incidents.xlsx." This document was produced to DuPont in discovery.

Compliance. The Manager of Compliance will oversee a staff of three Compliance Officers. This Group will also be placed throughout the DRR, coordinating with other groups and be ultimately responsible for all required compliance and reporting. This includes coordinating, with the Infrastructure Security Group, rail transportation route analyses and making them available to government agencies. Compliance staff will work with the Environmental Operations Group to further their reach and ensure that laws and regulations are being properly followed.[301]

Projects Administration. The Projects Administration Manager will work with the other environmental managers to ensure that all special projects undertaken by the DRR comply with environmental, safety, and security issues. For example, to limit water pollutant discharge, the Projects Administration Group can advise on appropriate stormwater management around any project the DRR is working on.

Infrastructure Security. The Manager of Infrastructure Security will work with the Manager of Compliance and the DRR's police force to make certain all DRR hazardous materials are being properly and securely handled. The Manager will be the individual with overall responsibility for hazmat transportation security planning, as TSA has requested in its Recommended Security Action Items. The Manager will have frontline responsibility for implementing all of the TSA and PHMSA hazardous materials regulations at the DRR including helping to establish the chain of custody and control requirements, undertaking rail transportation route analysis, and coordinating procedures to minimize hazmat rail cars' dwell time while in transit. The Manager will be responsible for developing and refining the DRR's

[301] NS Reply WP "Environmental and Hazmat Laws, Rules, and Industry Practices.doc."

security plan, performing in-depth security training, and ensuring compliance with numerous other requirements that apply to rail transportation of hazardous materials.

The resulting twenty-three person environmental staff will allow a least cost, most efficient Class I railroad to meet the minimum requirements in this area. It will be able to operate in an environmentally and security responsible fashion and minimize corporate and personal liability. It is also significantly smaller than the environmental personnel employed on other Class I carriers today. For instance, NS has an environmental staff of {{ }}; CSXT has a staff of {{ }}; BNSF has a staff of {{ }}; and UP has a staff of {{ }}.[302] NS's proposed staffing levels thus would give the DRR best-in-class environmental staffing for a major railroad, while ensuring that the DRR could perform all the functions required of a Class I railroad carrying significant amounts of hazmats and TIHs.[303]

TABLE III-D-37
Environmental Group Staffing Comparison

DuPont Opening	NS Reply	Difference
5	23	18

(vi) Human Resources

DuPont proposes a Human Resources Group of just eight individuals, and once again claims that the DRR can function with a smaller staff because most HR functions lend themselves "well to out-sourcing." DuPont Opening Ex. III-D-2 at 14. This claim fails for two reasons. First, DuPont does not provide for outsourcing of most HR functions. The lip service its evidence pays to the virtues of outsourcing are not accompanied by an actual outsourcing plan, let alone evidence of the costs of outsourcing. In fact, the only HR functions for which

[302] *See* NS Reply WP "CSX Environmental Org. Chart.pdf"; "BNSF Environmental Org. Chart.pdf"; and "UPRR Environmental Org. Chart.ppt."

[303] *See* NS Reply WP "NS DRR Environmental Staffing.doc."

DuPont proposes outsourcing funds are recruiting and training. DuPont does not include the cost of outsourcing any other HR functions and it does not propose sufficient DRR staff to perform those functions in-house.[304]

The DRR's human resources department will be required to perform a host of functions for its 8,808 employee workforce, including:

- Administering the recruiting and hiring process and interfacing with any outside vendors who the DRR retains to assist with recruiting;
- Managing its outsourced training and orientation programs;
- Investigating and resolving employee complaints;
- Administering disciplinary procedures;
- Setting compensation and managing raises;
- Ensuring compliance with federal immigration law (which include the completion of a Form 1-9 and E-Verify screening for each worker);
- Administering benefits programs; and
- Ensuring compliance with a host of federal and state laws and regulations, including Equal Employment Opportunity reporting, affirmative action programs, and Family Medical Leave Act compliance.

The DRR cannot function without adequate resources to perform these tasks, whether those resources be in-house personnel or outsourcing providers. It may be true, as DuPont says, that outsourcing is theoretically feasible because "plenty of external resources exist that will support a small in-house human resources department." *Id.* But DuPont does not propose that the DRR use any of those resources—instead, the only outsourcing it proposes to use is

[304] Having failed to support its evidence on Opening, DuPont is precluded from providing evidence on Rebuttal. *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel,* STB Docket No. 42057, at 2 (served Apr. 4, 2003).

outsourcing for recruiting and training. The other functions must be performed by in-house staff, and DuPont has not provided nearly enough personnel to do the job.[305]

Second, DuPont's bare-bones HR staff is predicated on an absurd attrition rate of 1.8%.[306] DuPont has no credible support for this attrition rate, which is based on a willful misreading of a document of particular unions' quit rate. The idea that less than one out of fifty DRR employees would leave his or her job each year (and thus that DRR employees would have an average tenure of over 55 years) is ludicrous and should be rejected out of hand. Assuming a more realistic attrition rate based on actual NS attrition rates by job type,[307] the DRR will hire approximately 700 new DRR employees per year. While NS accepts that recruitment and hiring would be outsourced, each of these 700 new employees will need to be processed by in-house staff for benefits choices; included in Equal Employment Opportunity and other reporting; and oriented. Churn within the DRR organization also creates substantial HR work. Each opening created by attrition could result in four or five direct movements within the DRR (as employees are promoted up into open spots and as others take their place). Employees do not stay in the same position their entire careers, but rather move around for their own professional development, personal reasons, or to meet the business needs of the organization. Each of these movements creates a need for HR involvement to manage the transition. Internal NS data

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[305] DuPont also proposes that the DRR use Oracle's Human Resources module, but this is not "outsourcing"—it is just a computer program that can be used by personnel to assist with some HR tasks. As detailed above, NS uses a comparable IT system to manage its HR needs. DuPont therefore cannot predict any efficiency gains over NS solely due to its use of similar HR software.

[306] DuPont Opening Ex. III-D-2 at 33; DuPont WP "Attrition Rate.pdf."

[307] Actual attrition rates derived from NS's experience range from 7.5% to 12% a year for various job types. *See* NS Reply WP "2008-2011 Agreement Attrition.xlsx"; NS Reply WP "2009-2011 Nonagreement Attrition.xlsx."

demonstrates that 25% of the non-agreement workforce is promoted or changes position each year, resulting in considerable transactional work flow for the HR Department.[308]

Mr. Brown developed a least-cost, most-efficient Human Resources group for the DRR designed to perform all necessary HR functions, assuming the substantial outsourcing of the recruitment function.[309] Mr. Brown developed staffing levels for this function based on his review of NS staffing levels for similar functions, as well as third party benchmarks. According to Bloomberg-BNA, the median company has a ratio of { } HR employee for every 100 full time employees, and companies with over 2,500 employees, such as the DRR, have { } HR employees for every 100 fill time employees.[310] DuPont proposes just 0.16 HR employees for every 100 full time employees, compared to NS's proposal of .35 HR employees for every 100 full time employees. The HR Group would be managed by an Assistant Vice President and six Directors. An Administrative Assistant would aid the Assistant Vice President and other members in the group with travel requirements,[311] processing paperwork and files, and compiling and tracking reports required by federal law. Each of the six directors will head a functional area and the staffing in each area assumes equal or greater efficiency than NS's staffing.[312]

(1) Human Resources Planning Group

The Human Resources Planning Group will be headed by a Director and staffed with three Managers. The group will be responsible for filling positions within the DRR, managing promotions, and coordinating the merit pay increases process. With over one thousand

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[308] *See* NS Reply WP "Internal Moves Data.pdf."

[309] *See* NS Reply WP "Staffing – HR.xlsx."

[310] *See* NS Reply WP "BNA HR Benchmarks and Analysis 2011.pdf" at 19. The { } median is based on 2010 numbers, the most recent year for which accurate information is available.

[311] *See infra* III-D-185 to III-D-189.

[312] *See* NS Reply WP "Staffing – HR.xlsx."

management employees, the DRR can expect to see over 250 promotions, lateral development moves, and reassignments during the course of a year.[313] Positions resulting from internal churn or attrition will need to be tracked so direction can be given to the outsourced recruitment effort. The staffing levels in this group assume that a substantial portion of outside recruiting will be outsourced. However, that outsourcing needs to be managed by in-house personnel, and in-house personnel will be required to handle tasks related to internal churn and reassignments.

(2) Diversity Group

The Diversity Group is responsible for Equal Employment Opportunity tracking and reporting. A Director and one Manager will staff this function. By law, the DRR must file several diversity and inclusion reports, including the EEO-1 Report categorizing company employment data by race, ethnicity, and gender[314] and the Functional Affirmative Action Program.[315] The Diversity Group will compile and complete these reports. They also will monitor and respond to any complaints regarding diversity issues within the DRR and generally work to foster a diverse and tolerant work place.

(3) Training Group

The Training Group will be headed by a Director and have a staff of four. The staff will be responsible for developing or acquiring training programs and ensuring training is properly delivered to the DRR's personnel. Training would include business training for DRR employees on subjects such as basic business skills, communications, technology including security issues, workplace subjects such as harassment, ethics, and anti-trust issues. The Group will also be

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[313] *See* NS Reply WP "Internal Moves Data.pdf" (showing that approximately 25% of NS nonagreement workforce changes positions annually).

[314] Section 709(c), Title VII, Civil Rights Act of 1967; 29 C.F.R. § 1602.7.

[315] 41 C.F.R. § 60-2.

responsible for a basic orientation program for new hires to become familiar with the DRR's functions and policies. Federal law also requires certain training and certification programs for certain railroad employees, which this Group can coordinate.[316]

(4) Benefits and Compensation Group

The Benefits and Compensation Group will be headed by a Director and six Managers. The group will: manage and consult on compensation levels; manage, negotiate, and administer a cafeteria plan of benefits; manage an employee travel program; and administer Family and Medical Leave Act ("FMLA") benefits. First, the group's compensation management would require staff to review and analyze external studies on compensation methodology and strategy, and to link those benchmarks to the needs, means, and goals of the DRR. Second, benefits management will require staff to negotiate and manage a strong program of benefits, which is crucial to attract the best and most capable new employees and to retain current employees. Third, DRR HR staff will need to negotiate the best possible agreements with airlines, car rental firms, hotel firms, and other vendors. Best-in-class limitation of travel expenses is not achievable without a dedicated effort to control travel costs, and with over 400 employees traveling, this effort is well worth the investment. Indeed, one of DuPont's own workpapers states that 88% of businesses surveyed "reported encouraging use of preferred vendors…to improve future negotiation power" to control travel costs.[317] Finally, the Benefits and Compensation Group will process FMLA paperwork. FMLA allows eligible employees to take unpaid, job-protected leave of varying lengths for specified family and medical reasons. As a

[316] *See* NS Reply WP "Legally Required Reporting (HR).pdf."

[317] DuPont Opening WP "III-D-3 G&A Other.pdf."

point of comparison, NS's Human Resources Department handles an FMLA case for one in three employees annually.[318]

(5) Medical Group

DuPont entirely ignores the need for a medical group for the DRR. But like any other Class I carrier, the DRR would need a medical group to assess employee fitness to return to work after injuries and to administer mandatory drug and alcohol programs. The first essential function of the DRR's Medical Group is to monitor the medical treatment of injured employees and ensure that they are medically fit to return to work before they do so. In 2011, there were 8,922 injuries on railroads reported to the Federal Railroad Administration.[319] In any given year the DRR will have hundreds of injured employees, each of whom need to be cleared to return to work following medical treatment. To be conservative and reduce costs, Mr. Brown posits that medical treatment and return to work determinations for injured DRR employees would be made by non-railroad medical staff. However, the DRR would still be required to provide necessary oversight and to ensure that return to work physicals have occurred and employees are cleared for work. The Medical Group will coordinate between employees and their supervisors to make certain the employee meets all necessary requirements and supervisors are kept up to date on their progress. After consulting with non-railroad physicians, the Medical Group will give final approval for an injured employee to return to work. As a point of comparison, NS spends approximately {{ }} annually on physicals for its employees.[320]

The second essential function of the Medical Group is to manage the DRR's compliance with Department of Transportation regulations requiring drug and alcohol testing of new hires,

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[318] *See* NS Reply WP "FMLA.pdf."

[319] *See* NS Reply WP "2011 Casualties.pdf."

[320] *See* NS Reply WP "NS Medical Services Costs.xls."

following specified incidents, based on reasonable cause, and randomly on an ongoing basis.[321] These tests must be collected, maintained and professionally managed. Drug and alcohol abuse counseling should also be provided to ensure workers are free from substance abuse issues and fit for duty. Department of Transportation regulations require railroads to make such treatment available.[322] Railroads must also submit annual reports to the FRA quantifying the drug and alcohol tests administered during the year.[323] Similarly, the Federal Motor Carrier Safety Administration has drug and alcohol testing and treatment requirements for holders of commercial driver's licenses ("CDLs").[324] On a railroad, many employees operating cranes, back hoes, and other equipment are required to have CDLs. As a point of comparison, NS spends approximately {{ }} a year for drug testing.[325] In addition to testing, NS's drug and alcohol counseling program handles approximately {{ }} cases per year. NS estimates that between {{ }} employees are held out of service at any given time due to their involvement in treatment. NS tracks employees who participated in the program for up to five years, making regular contact to prevent relapses. {{ }} of individuals are, therefore, being tracked and contacted on an ongoing basis by NS's drug and alcohol counseling program.[326] The DRR will need to provide similar services and support.

The proposed staff of one Director and eight professionals would be sufficient for all of the necessary oversight and coordination functions for injuries and drug and alcohol testing.

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[321] *See* 49 C.F.R. §§ 219.1 et seq.

[322] 49 C.F.R. § 219.401.

[323] 49 C.F.R. § 219.800; NS Reply WP "DOT Drug and Alcohol Testing Form.pdf."

[324] 49 C.F.R. § 382.101 et seq.

[325] *See* NS Reply WP "NS Medical Services Costs.xls."

[326] NS Reply WP "Drug and Alcohol Information.pdf."

These are both sensitive areas for employees. They require careful action by the railroad so that employees are fairly treated and the railroad can operate in the safest manner possible.

(6) Ethics Group

The Ethics Group is headed by a Director and has a Manager to assist in its functions. All modern companies the size of the DRR must have an aggressive program to foster ethics. The primary function of this group is to address issues generated from an employee hotline. Employees must be given the ability to call in grievances anonymously and have them responded to in a timely and effective manner. The major function of the Ethics Group is to manage and resolve issues as they arise. Outside of normal business hours, grievances can be logged via a voice mail system, so 24/7 staffing is unnecessary. The Ethics Group will also interact with the training group to help design and implement training programs that address these ethics issues. The Network, Inc., a provider of corporate governance, responsibility and compliance solutions, publishes an annual report on incident reporting within corporations. According to the 2012 report, in 2011 there were { }} incidents per one thousand employees reported for the Transportation, Communications & Utilities industry.[327] Only { } of cases were cleared or required no action.[328]

Overall, NS's proposal for the DRR's HR Group is consistent with third party benchmarks. The Median per capita HR expenditure for companies with over 2,500 employees

[327] NS Reply WP "Ethics and Compliance 2012 Corporate Governance and Compliance Hotline Benchmarking.pdf" at 12.

[328] *Id.* at 18.

is { }.[329] In contrast, DuPont's unrealistic and unsupported proposal of just $230 per employee is ludicrously low in light of the actual HR expenses of best-in-class companies.

TABLE III-D-38
Human Resources Staff Comparison

DuPont Opening	NS Reply	Difference
8	31	24

(f) Information Technology

DuPont has proposed an unconventional method for addressing information technology that has no precedent among comparable existing railroads: complete outsourcing of DRR's rail operating system to RMI.[330] No Class I railroad, and in fact no regional or short line anywhere near the size of the DRR, has elected to completely outsource its rail operating system in the fashion DuPont is proposing. Further, the DRR would rely on a simple Internet connection to handle all data communications for railroad operations, car accounting and revenue accounting.[331] The DRR would also not rely on a mainframe, instead operating as a server-based system.[332] Due to the unprecedented nature of DuPont's proposed IT set-up, NS cannot say with certainty whether or not this is a feasible solution. Because the proposal is unprecedented, there is no benchmark or other point of comparison either within or outside the rail industry.

For the limited purpose of this case, Mr. Brown accepts that a RMI-outsourcing based IT framework for the DRR will work. But if the IT staff of 46 DuPont has proposed will work for DuPont's proposed 4,978 employee railroad, it needs to be increased to meet the needs of the

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[329] "BNA HR Benchmarks and Analysis 2011.pdf" at 43.

[330] DuPont Opening Ex. III-D-2 at 15.

[331] *See, e.g.,* DuPont Opening Ex. III-D-2 at 29.

[332] Not having a mainframe is not unprecedented in SAC cases. But the Board has previously found that a SARR's IT staff cannot be reduced because the SARR is not in a mainframe environment. *See AEPCO 2011*, STB Docket No. 42113, at 60-61.

corrected number of 8,808 DRR employees identified by NS. IT staffing needs correlate significantly to the size of the workforce served by the IT staff, because workforce size both drives the amount of hardware and software that must be maintained and the number of users who require support. Mr. Brown therefore increases DuPont's proposed IT staffing to meet the reasonable staffing level that NS has demonstrated is actually needed to operate the DRR safely and effectively.[333] The reasonableness of NS's proposal is confirmed by a comparison to third party benchmarks. According to Gartner, a technology research company, IT employees represent an average of { } of full time employees in transportation industry companies.[334] DuPont proposes that just 46 full time DRR employees be in the IT Department, which amounts to 0.93%, or less than one-third the average.

An alternative method of scaling DuPont's proposal would be to base it on the size of the IT network including the amount of devices (computers, servers, etc.) an IT Department would manage. NS examined this option and found that the percentage increase in IT staff would have exceeded the percentage increase in total headcount between DuPont's proposal and NS's Reply Evidence. Mr. Brown therefore adopted the more conservative scaling methodology of linking necessary IT staff to the number of employees. It will often be individual employees the IT staff is interacting with as they help set up an employee's equipment, perform updates, handle security, and troubleshoot issues that may arise.

DuPont proposes 46 employees for a 4,978 employee railroad. Scaling the IT staff up proportionally to match the 8,808 employees that NS is proposing for the DRR yields an IT staff of 78 employees. That amounts to a conservative .89% of the total workforce, less than DuPont's proposal and still significantly lower than benchmarks would suggest is appropriate.

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[333] *See* NS Reply WP "Staffing – IT.xlsx."

[334] NS Reply WP "Gartner IT Key Metrics.pdf" at 54.

Mr. Brown makes one additional change to DuPont's IT staffing. DuPont proposes ten Help Desk PC Technicians, a team that would be scaled up to 17 under NS's proposal. Eight of those 17 Help Desk PC Technicians should be removed from headquarters and distributed in the field. Field staff would be able to better assist with equipment issues that occur away from headquarters while still doing the job just as effectively as they otherwise would at headquarters. Mr. Brown assigns these eight employees to the eight hump yards of the DRR located at Enola, Macon, Linwood, Birmingham, Elkhart, Bellevue, Conway, and Chattanooga. Each would need a travel budget, cell phone, and vehicle to be able to reach out to the many line offices and field locations of the DRR that will need IT service.

TABLE III-D-39
IT Staff Comparison

DuPont Opening	NS Reply	Difference
46	78	32

iii. Compensation

(a) Salaries for Non-Executives

NS accepts DuPont's proposed approach to use data from NS's Wage Forms A and B for calculating salaries for the DRR's non-executive personnel, with one exception. Specifically, DuPont misclassifies the DRR's 18 Marketing Managers as "Professionals" (STB Wage Form A & B Code 201) when they should be classified as "Sales and Traffic Representatives and Agents" (Code 205). *See* DuPont Opening Ex. III-D-2 at 19; DuPont WP "DRR Salaries.xls." The Board's Wage Form A & B code number 205 is the only code that directly references sales, the function of the Marketing Managers. It is therefore the most appropriate classification for all of the DRR's marketing personnel. The reclassification has a moderate effect on DRR

marketing salaries, since the average "Professionals" salary is $88,185 and the average "Sales and Traffic Representatives" salary is $111,910.

Where NS's G&A expert corrected DuPont's staffing by adding positions, NS set salaries for those positions at a level consistent with salaries for other positions at that level. NS's salary calculations are set forth in NS Reply WP "DRR Operating Expense Reply.xlsx," Tab "Summary."

(b) Executive Compensation

DuPont has significantly understated compensation for the DRR's President and Vice Presidents. NS accepts DuPont's general proposition that the DRR would need to offer its executives "comparable and competitive compensation packages" and that KCS's compensation package for its senior executives is a reasonable surrogate for DRR's senior executives. The problem with DuPont's approach is that it completely ignores the stock-based compensation that is the primary element of KCS's executive compensation structure. As a result, DuPont proposes that DRR executives would be paid less than half of the compensation received by their counterparts at KCS. This is plainly not the "comparable and competitive compensation packages" that DuPont says the DRR would provide. Instead, it is a significantly less generous package than other Class I railroads offer for these highly demanding positions. Because these stock awards are an essential element of KCS's compensation package and because they are accounted for as a cost by KCS, the cost of those awards must be included in the DRR's executive compensation.

Like many corporations, KCS has established compensation packages for its senior executives that are comprised of several elements, including (1) base salary; (2) bonuses and other annual incentives; (3) long-term incentives including performance share awards, restricted stock and stock options; and (4) fringe benefits. KCS's compensation approach is detailed in its

annual proxy statements.[335] Those proxy statements reveal that KCS carefully manages its "pay mix" for each senior executive such that long-term incentive compensation in the form of stock awards and stock compensation is the primary factor. In 2009, long-term incentive compensation made up 51% to 63% of executive compensation. NS Reply WP "KCS Proxy Statement 2009.pdf" at 43. In 2012, long-term incentive compensation comprised 42% to 54% of total executive compensation. NS Reply WP "KCS Proxy Statement 2011" at 42. KCS's practice in regards to pay mix is in keeping with industry trends. In 2011, the Towers Watson Railroad Industry Compensation Practices Survey Results showed that { } of average railroad CEO pay and { } of average railroad top executive pay is in long-term incentives, made up largely of stock.[336]

DuPont's decision to ignore stock compensation for KCS executives means that it ignores the primary factor in KCS's executive compensation, and thus it proposes salaries for senior DRR executives that are significantly below market compensation. The issue can be put quite simply: Does a DRR Vice President whose total compensation is $455,588 in annual salary have a "comparable and competitive compensation package" to a KCS Vice President who makes $455,588 in salary and bonus plus an additional $750,000 in stock awards? The answer is plainly no. To be "comparable and competitive," the DRR would be required to offer a compensation package of equivalent value to KCS's.

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[335] *See* NS Reply WP "KCS Proxy Statement 2011.pdf" at 33-34; NS Reply WP "KCS Proxy Statement 2009.pdf" at 43.

[336] NS Reply WP "2011 Railroad Industry Compensation Practices Survey Results" at 8. Long-Term Incentives include stock options, restricted stock and performance plans, which are also comprised largely of stock. *Id.* at 18, 23.

While DuPont does not explain its decision to ignore stock compensation, it may have the misguided belief that its action is consistent with Board precedent. It is not. The Board has recognized that stock-based compensation is an important element of compensation that must be considered when using a railroad's executive compensation to derive salaries for SARR executives. *See Xcel*, 7 S.T.B. at 652 (rejecting complainant's evidence of compensation for president because it ignored elements of compensation like stock options). But the Board has held that stock compensation should not be considered if the stock compensation is not counted as an expense by the railroad. *See Otter Tail*, STB Docket No. 42071, at C-12; *AEP Texas*, STB Docket No. 41191, (Sub-No. 1), at 59; *WFA I*, STB Docket No. 42088, at 49. This distinction is predicated on the principle that the SARR should not be charged expenses that a real-world railroad does not incur. Thus, although the Board has excluded stock compensation from executive compensation in some past cases, that determination was based entirely on the fact that at the time KCS did not account for stock options as an expense to the railroad. *See, e.g.*, *WFA I*, STB Docket No. 42088, at 49 (noting that "[KCS stock] options were not counted as an expense by the railroad").

Today, however, KCS does treat the cost of stock awards as an expense (and indeed it is legally required to do so). Prior to 2004, KCS and many other companies used the intrinsic value method of accounting. With intrinsic value accounting, "issuing stock options to employees generally resulted in recognition of no compensation cost." NS Reply WP "Statement of Financial Accounting Standards No. 123 (revised 2004).pdf" at iii. But the Federal Accounting Standards Board ("FASB"), an entity which develops generally accepted accounting principles ("GAAP"), revised FASB Statement of Financial Accounting Standards No. 123 ("SFAS 123R") in 2004 and required "entities to recognize the cost of employee

services received in exchange for awards of equity instruments based on the grant-date fair value of those awards." *Id.* at iii-iv. The revised statement had an effective date of the first interim or annual reporting period after June 15, 2005, for public companies and the first annual reporting period after December 15, 2005 for nonpublic entities. *Id.* at 26.

KCS acknowledged the new standard of accounting for executive compensation in its 2007 Annual Report, where it explained:

> Effective January 1, 2006, the Company adopted the Statement of Financial Account Standards No. 123R (Revised) "Share-Based Payments" ("SFAS 123R") and accounts for all share-based compensation in accordance with the fair value recognition provisions of SFAS 123R. Under this method, compensation expense is measured at grant date based on the then fair value of the award and is recognized over the requisite service period in which the award is earned.

NS Reply WP "KCS Annual Report 2007.pdf" at 67.

KCS observed that under its old method of accounting, "no compensation expense was recognized for financial reporting purposes." *Id.* That was contrasted with the new method where an expense is recognized. In the notes to its 2007 financial statement, KCS reiterated that an "expense of $0.7 million and $0.6 million was recognized for stock option awards for the years ended December 31, 2007 and 2006." *Id.* at 91. Stock options and awards have continued to be counted as an expense by KCS in subsequent years. *See* NS Reply WP "KCS Annual Report 2009.pdf" at 78 (noting compensation expense recognized for stock option awards); NS Reply WP "KCS Annual Report 2011.pdf" at 80 (recognizing compensation expense for stock option and market-based option awards).

As a result, there is no question that the Board's rationale in *WFA I* is no longer applicable. Stock awards to KCS executives are compensation costs that are accounted as expenses. There is no basis under the Board's precedents to exclude these real-world costs from

the analysis of what the DRR would be required to pay in "comparable and competitive" compensation. The value of both cash salary and stock awards must be included in order to accurately reflect fair market compensation for executives and to truly reflect KCS's executive compensation costs. Just as the Board will not allow a SARR to pay a substandard wage to operating personnel, executives must be fairly compensated in accordance with market practices. *West Texas*, 1 S.T.B. at 698 (accepting personnel costs "based on the salaries actually paid to rail employees...consistent with current railroad industry practice"). It is not reasonable to believe that the DRR will be able to attract talented executives by paying only a fraction of what an executive could receive at a competing railroad.

Another fundamental error in DuPont's executive compensation calculations is its decision to use the single year 2009 as its comparable year for executive compensation. Because KCS's executive compensation is primarily incentive-based, compensation in 2009 (the low point of the economic recession) was substantially lower than compensation in other years. *See* Tables III-D-40 and III-D-41 below. The DRR could not realistically maintain the low 2009 executive compensation rate for the life of the SARR (particularly given the robust growth and profitability assumptions that it makes for the DRR).

NS corrects the errors in DuPont's analysis by developing executive compensation that is based on KCS executive compensation but that accounts for compensation elements ignored by DuPont. NS uses an average for all executive compensation of 2007-2011 including salary, bonus, stock awards, stock options, non-equity incentive plan compensation, and all other compensation, all of which KCS counts as an expense.[337]

[337] NS removes KCS employee José Guillermo Zozaya Delano from its calculation of vice president compensation. Mr. Delano is the President and Executive Representative of Kansas City Southern de México, S.A. de C.V., the Mexican portion of KCS. Mr. Zozaya's

NS does not propose that a fringe benefit ratio be applied to the DRR's executives to conservatively avoid any risk of double-counting. While DuPont applied a fringe benefit ratio to all employees, including executives, to determine the cost of benefits, using the same percentage for senior executives likely overstates the cost of benefits for executives. Instead of using the ratio, a more tailored and accurate method of determining benefits is to use the "All Other Compensation" category of executive pay as reported in KCS's annual proxy statement. The category includes 401(k) contributions, life insurance premiums, accidental death and dismemberment premiums, long-term disability premiums, matching charitable gifts, and financial planning reimbursement. NS Reply WP "KCS Proxy Statement 2009.pdf" at 56-57.

Table III-D-40 below presents a complete accounting of KCS's executive compensation for its president and CEO, including all categories of compensation which DuPont must recognize because KCS includes them as an expense in its financial statements. The total average of $2,729,309 is a reasonable approximation of executive compensation for the DRR's president. Indeed, that estimate is quite conservative given the significantly larger size of the DRR. As a point of comparison, a railroad industry survey found the average CEO compensation in 2011 was over { }. The base salary average was approximately { }, the average bonus was approximately { }, and the average long-term incentives were approximately { }. NS Reply WP "2011 Railroad Industry Compensation Survey.pdf" at 2. NS's estimate of DRR's president's compensation is thus well below the industry average.

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compensation is not a useful benchmark for hypothetical DRR executive compensation because several elements of his compensation are governed by special provisions of Mexican law. *See* NS Reply WP "KCS Proxy Statement 2009.pdf" at 42 (explaining Mexican legal requirements applying to compensation).

TABLE III-D-40
Average KCS President and CEO Compensation 2007-2011

KCS Executive	Year	Salary	Bonus	Stock Awards	Option Awards	Non-Equity Incentive Plan Compensation	Other	Total
David Starling, President & CEO	2011	$721,000		$ 750,203	$598,527	$1,247,33	$30,254	$3,347,31
	2010	$612,012		$1,953,46	$328,735	$1,247,33	$29,026	$4,170,57
	2009	$502,500	$178,500	$35,462			$18,961	$735,423
Michael R. Haverty, CEO through 2009	2011	$566,500		$592,817	$429,081	$735,034	$52,922	$2,376,35
	2010	$673,014		$967,968	$785,134	$1,205,73	$52,132	$3,683,98
	2009	$763,320	$387,362	$150,618			$52,458	$1,353,75
	2008	$759,533		$118,340	$473,189		$51,662	$1,402,72
	2007	$727,794		$3,484,52	$679,302		$50,494	$4,942,11
Average Haverty and Starling 2007-2011								**$2,729,30**

Table III-D-41 lists all of the compensation elements for all other executives. The total average of $1,191,179 is a reasonable approximation of executive compensation for the DRR vice presidents. These calculations are also conservative, for DRR executive compensation for vice presidents will be well below industry averages for Class Is. In 2011, the average compensation for railroad top financial executives was over { } with an average of { } in base salary, { } in average bonuses, and { } in average long-term incentives. Average compensation for railroad top legal executives was { }, with {$437,000} in average base salary, { } in average bonuses, and { } in average long-term incentives. NS Reply WP "2011 Railroad Industry Compensation Survey.pdf" at 3, 4.

TABLE III-D-41
Average KCS Executive Compensation 2007-2011

KCS Executive	Year	Salary	Bonus	Stock Awards	Option Awards	Non-Equity Incentive Plan Compensation	Other	Total
Michael W. Upchurch, Executive VP & CFO	2011	$370,800		$245,893	$189,944	$384,890	$33,776	$1,225,303
	2010	$354,400		$259,201	$218,624	$432,000	$27,968	$1,292,193
	2009	$321,600	$97,920	$17,119			$26,592	$463,231
	2008	$240,417		$1,297,31	$41,775	$76,139	$16,118	$1,671,759
Patrick J. Ottensmeyer Executive VP Sales & Marketing Executive VP & CFO	2011	$409,775		$268,678	$189,944	$425,346	$16,226	$1,309,969
	2010	$397,840		$285,617	$218,624	$477,408	$1,812	$1,381,301
	2009	$381,498	$ 116,158	$61,807			$1,706	$561,169
	2008	$376,137		$163,841		$141,894	$4,318	$686,190
	2007	$314,526		$1,160,23		$183,854	$28,648	$1,687,259
Arthur L. Shoener President & COO	2007	$519,859		$857,971		$323,481	$47,156	$1,748,467
Daniel W. Avramovich Executive VP Sales & Marketing	2007	$322,328		$450,341	$110,171	$183,854	$9,438	$1,076,132
	Average of all 2006 thru 2011							**1,191,179**

(c) Outside Director Compensation

DuPont also underestimates the cost of compensation for outside directors, assuming they could be compensated for only $40,000 per year. DuPont Exhibit III-D-2 at 19. DuPont

provides no support for this number,[338] which is unreasonably low in light of typical industry costs for compensating outside directors and the significant responsibilities of the DRR's outside directors. Outside Directors are necessary to "provide sufficient independent oversight from outside the [SARR] management." *Xcel*, 7 S.T.B. at 649. Indeed, boards of directors "have[] responsibility to supervise and, if necessary, replace the managers" as well as "the power and responsibility to approve major corporate actions . . . [and] . . . through the supervisory powers, boards frequently require the managers to obtain board approval for events that are not fundamental to the business, but are nevertheless sensitive or material."[339]

As with executives and operating personnel, directors must be compensated consistent with the marketplace. Just as KCS presents a reasonable model for senior executive compensation, it provides a reasonable proxy of the current market for compensating outside directors at a Class I railroad. Again, the DRR is forecasting significant growth in traffic and revenue, so looking at compensation in 2007 and 2008, when traffic volumes were stronger than in 2009, as part of the average is reasonable. Table III-D-42 presents KCS's average Outside Director compensation for 2007-2011. To remain competitive, the DRR must pay each of its outside directors at least $263,551 a year.[340]

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[338] Having failed to adequately support its evidence on Opening, DuPont is precluded from doing so in this case. *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel* STB Docket No. 42057, at 2 (served Apr. 4, 2003).

[339] *See* NS Reply WP "Fiduciary Duties and Other Responsibilities of Corporate Directors and Officers.pdf" at 1.

[340] NS accepts DuPont's proposed cost for D&O Insurance.

TABLE III-D-42
Average KCS Outside Director Compensation 2007-2011

Year	Average Fees Earned	Average Stock Awards	Average Other	Total
2007	$95,239	$185,015	$200,511	$442,740
2008	$90,452	$184,902	$15,990	$291,345
2009	$86,857	$93,163	$12,975	$207,649
2010	$95,239	$88,972	$18,584	$183,023
2011	$86,000	$96,600	$16,192	$192,996
Average 2007-2011	$90,757	$142,717	$78,650	$263,551

(d) Fringe Benefits

NS applies the same fringe benefit ratio it proposes for its operating personnel. *See supra* III-D-42 to III-D-46.

iv. Materials, Supplies and Equipment

NS accepts DuPont's proposed unit costs for the various materials, supplies, and equipment necessary for DRR employees. The additional employees in NS's proposed DRR staffing will require a corresponding increase in the total DRR expenditure for materials, supplies, and equipment. Utilities and copier maintenance contract costs, similarly, are increased proportional to the increase in staffing. These increases and the supporting calculations are set forth in NS Reply WP "DRR Operating Expense Reply.xlsx," Tab "Summary."

v. Other

(a) IT Systems

NS accepts the IT systems that DuPont has proposed for the DRR, but makes several adjustments to add needed functionality and to provide more realistic estimates of software implementation costs.

(i) RMI

The bulk of the DRR's IT costs are dedicated to RMI expenses, and specifically to expenses for the RMI Transportation Management Services package, Revenue Management Services package, and car hire system. NS accepts DuPont's estimated unit costs for these services. But DuPont has not provided all the software and equipment necessary for the DRR to utilize RMI's services most effectively. Most significantly, DuPont does not provide DRR crews with Mobile Crew Reporting ("M-Crew") devices, and it does not include a cost for RMI's Mobile Crew Reporting Service. Mobile crew reporting allows employees in the field to enter information on train and crew events into wireless devices that can report that information to the RMI system in realtime. Similar devices are standard among Class I railroads, both because real-time reporting is a key part of improving efficiency and network fluidity and because M-Crew reporting eliminates the need for other clerical staff to input reports from the field. A least-cost, most-efficient SARR of the DRR's size would need Mobile Crew Reporting. Therefore, Mr. Brown added the hardware cost of M-Crew devices for each conductor and the software cost of RMI's Mobile Crew Reporting Service to the DRR's operating costs. These costs are based on an estimate provided by RMI, indexed back to 2009 based on the AAR Railroad Cost Recovery Index for the east.[341]

DuPont also substantially understates implementation costs for RMI. DuPont claims one-time RMI implementation costs of $750,000, a figure that it admits is an "Estimate" and for which it provides no support.[342] *See* DuPont Opening WP "Exhibit III-D-2 Information

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[341] *See* NS Reply WP "RMI M-Crew Quote.pdf"; NS Reply WP "DRR Operating Expense Reply.xlsx," Tab "IT Capital."

[342] Having failed to adequately support its evidence on Opening, DuPont is precluded from doing so in this case. *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057, at 2 (served Apr. 4, 2003).

Technology.pdf" at 4. In contrast, NS developed RMI implementation costs for the DRR after consulting with RMI about the recent experiences of railroads who implemented RMI. In particular, NS learned from RMI that {

}} To be conservative, however, Mr. Brown assumes that the DRR could achieve some economies of scale in implementation costs, and he has estimated RMI implementation costs of $27 million.[343]

(ii) Oracle

NS also accepts DuPont's proposal that the DRR could use Oracle for a number of back office IT functions, including general accounting and human resources. *See* DuPont Opening Ex. III-D-2 at 26. But like with RMI, DuPont does not provide all necessary Oracle functionality, and it fails to include appropriate implementation costs. NS also increases Oracle software licensing costs to account for the increased amount of users in departments where NS adds personnel.

First, DuPont provides no IT applications to assist the DRR's Marketing Group with its work. If the DRR's marketing staff are to even approach the efficiency levels of NS's marketing

[343] Mr. Brown's total costs for RMI, including M-Crew devices, is provided in NS Reply WP "DRR Operating Expense Reply.xlsx," Tabs "IT Operating" and "IT Capital."

staff, they will need technology to assist them in processing and producing bids and proposals, managing rate changes, and tracking sales efforts. NS proposes that the DRR purchase the Marketing module and Sales module from Oracle to provide some IT functionality for the major marketing functions of this Class I railroad. The additional capital cost is $508,320.00 and an operating cost of $111,830.40, a small investment for a crucial group to properly operate.[344]

Second, DuPont provides no implementation costs for Oracle and just $100,000 allocated to "training" on Oracle systems. *See* DuPont Opening WP "Exhibit III-D-2 Information Technology.pdf" at 4. DuPont provides no support for this number, which it labels an "Estimate." *Id.*[345] Mr. Brown, by contrast, developed a real-world estimate of implementation costs based on published research and NS's own experience. There have been a number of recent studies on the average implementation cost of enterprise resource planning ("ERP") software, which finds that the average cost of ERP implementation is four to seven times the cost of the software itself. *See* NS Reply WP "ERP Implementation Studies.docx." This estimate accords with NS's experience with its implementation of SAP (an ERP comparable to Oracle). NS paid approximately {{ }} for the SAP software but over {{ }} for implementation.[346] These implementation costs included actual installation, the development of computer-based training courses, creation of NS-specific instructional sheets, and programming and deployment of NS-specific modules for particular activities. Based on this evidence, Mr. Brown concluded that a realistic ERP implementation cost for Oracle would be four times the

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[344] *See* NS Reply WP "DRR Operating Expense Reply.xlsx," Tabs "IT Operating;" "IT Capital."

[345] Having failed to support its implementation costs on Opening, DuPont is foreclosed from providing any additional evidence on Rebuttal. *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057, at 2 (served Apr. 4, 2003).

[346] *See* NS Reply WP "SAP Implementation.pptx."

cost of the software. This cost is both at the low end of published studies of ERP software-to-implementation cost ratios and lower than the ratio experienced by NS itself in the real world.

Third, because Oracle software licensing fees are assessed on a per-user basis, Mr. Brown increased software licensing costs to account for the larger DRR G&A organization set forth in NS's Reply Evidence.

(iii) Email

In its Opening Evidence, DuPont proposes to use Microsoft Cloud for email, which its asserts is "the most efficient method."[347] In its workpapers, however, DuPont does not provide for Microsoft Cloud although it had provided both hardware and software for handling email.[348] NS will assume that DuPont does not intend to use Microsoft Cloud and accepts the approach set forth in DuPont's workpapers with respect to email.

(iv) Hardware

NS accepts the basic hardware configuration proposed by DuPont, with a few corrections. NS's proposed hardware system for the DRR is set forth in NS Reply WP "DRR Operaring Expense.xls," Tab "IT Capital."

First, NS has increased the DuPont network system in direct proportion to the increase in users due to the increase in the size of the DRR's proposed staff.

Second, NS has provided for routers, firewall systems, and sufficient PCs and printers at each point where the DRR's crews would go on duty. Routers and firewalls are necessary at these locations because devices at these locations will need to be able to access the DRR's network, as well as the RMI system. Additional PCs and printers are necessary at on-duty points because train crews going on duty at these points require paperwork including work orders, slow

[347] DuPont Opening Ex. III-D-2 at 27.

[348] *See* DuPont WP "DRR – Capital Budget.xls."

orders, train manifests, and other documents. NS proposes outfitting all locations where DRR personnel go on duty with multiple PCs and, in many cases, multiple line printers to ensure that personnel can get their paperwork without delay. Any delay could cause a train to be held up, which would have a far greater cost effect on the DRR than the expense of an extra printer. NS accepts DuPont's unit price for each item, but increases the quantities based on staffing.

Third, NS increases network switches. DuPont proposes switches with a total of 96 ports to its network, despite proposing a headquarters operating and G&A staff far in excess of that. NS adds switches sufficient to cover the total number of devices being used by DRR personnel.

Fourth, DuPont proposes that all field locations rely on basic Internet connections. *See* DuPont Opening Ex. III-D-2 at 27. This is not a reasonable approach for the highest-volume yards and on-duty locations, because even a brief Internet connectivity problem could cripple these locations and have cascading effects throughout the DRR's system. High volume yards need redundant communication systems and more reliable connectivity to ensure continuous operation. NS proposes that the DRR lease a Telecom T1 line back-up for access to the DRR network and RMI at the eight DRR hump yards that NS is proposing on Reply and the 9 locations where more than fifty crews go on duty per day.[349]

(v) Miscellaneous

NS accepts DuPont's remaining IT proposals, including the configuration proposed for all desktop and laptop PCs, printers, servers, and telephone systems, as well as crew call and dispatch. NS also accepts the per unit price of these items. NS, however, scaled these IT elements up to account for the increased staffing described above. NS accepts DuPont's

[349] Mr. Brown provides the costs for each of these items in NS Reply WP "DRR Operating Expense Reply.xlsx," Tabs "IT Operating;" "IT Capital." For NS's proposal to add hump yards to the DRR, *see supra* Section III-C-176 to III-C-180.

proposals to use AEI Scanners, software maintenance, Railinc services and network security and the quantities of these items, with minor variations reflected in its workpapers. *See* NS Reply WP "DRR Operating Expense Reply.xlsx," Tab "IT Capital."[350]

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As a whole, NS's proposed IT spending for the DRR is well in line with industry benchmarks. A Gartner study has found that transportation companies spend { } of revenue on IT.[351] DuPont's opening evidence proposed IT spending at 0.49% of revenue—{ } that level. NS's more reasoned proposal amounts to .96% of DRR's revenue, still less than peer competitors in the transportation industry.

(b) Other Out-Sourced Functions

DuPont includes a special section in its Opening Evidence for "other out-sourced functions." In total, DuPont argues it can outsource "several finance and accounting functions, including preparation of income, property and payroll tax returns and financial/account auditing, legal services, including claims administration and investigation, and administration of the company's retirement plan."[352] For most outsourced functions, DuPont offers a single spreadsheet listing the item and proposed cost, providing no justification for these numbers.[353] Having failed to support its evidence on Opening, DuPont is foreclosed from providing any in

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[350] For example, NS proposes to increase the number of locations where the DRR's firewall would be placed to improve network security.

[351] NS Reply WP "Gartner IT Key Metrics.pdf" at 20.

[352] DuPont Opening Ex. III-D-2 at 31. As explained previously, DuPont also proposes in its narrative to outsource marketing but provides no evidence for what the cost of the outsourced service would be. *See supra* Section III-D-85 to III-D-86.

[353] *See* DuPont Opening WP "DRR GA Outsourcing.xls."

this case.[354] NS has reviewed each of these functions and determined which are appropriate for outsourcing and what a reasonable cost for such services would be.[355]

(i) Tax Preparation

As explained above, NS does not believe it is efficient to outsource the preparation of tax returns.[356] The complexities of taxation for a $5.6 billion railroad and the amount of oversight the Class I carrier will receive from the IRS means this work needs to be done in-house. NS therefore provides no cost for outsourcing tax preparation. Rather, NS has provided for sufficient staffing in the DRR's staffing levels discussed at III-D-118 to III-D-121.

(ii) Payroll Processing

NS agrees that the DRR will be able to outsource many payroll functions. NS accepts DuPont's proposal for Paychex to process payroll at $50 per head, adjusted to reflect the staffing proposed by NS. NS also adds an outsourced cost for an Employee Assistance Program ("EAP"). At NS and other Class I railroads, an EAP is a commonly provided benefit[357] for non-agreement employees to connect them with services such as child care, mental health and substance abuse programs, and financial advisors. NS pays $4.03 per month per employee for its EAP and adopts that cost here.[358]

(iii) Audit and Internal Review

DuPont proposes to outsource "Audit and internal review" for $250,000—a cost for which it provides no support. The complete failure to explain the basis for this number is not

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[354] *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057, at 2 (served Apr. 4, 2003).

[355] *See* NS Reply WP "DRR Operating Expense Reply.xlsx," Tab "Outside Services."

[356] *See supra* III-D-118 to III-D-121.

[357] *See* NS Reply WP "Employee Assistance Programs.pdf" at 4 ("[T]he vast majority of Fortune 500 companies offer EAPs").

[358] *See* NS Reply WP "EAP Costs.pdf."

surprising as it is completely out of step with what a company would be expected to pay. As explained above, a recent Journal of Accountancy publication found that businesses should be spending between .03% and .2% of revenue for internal auditing, far surpassing the .004% proposed by DuPont.[359] NS conservatively increases the internal audit outsourcing cost to .03% of the DRR's $5.6 billion revenue, approximately $1,680,000[360]. The DRR will also require an external audit, conducted by an independent body to provide an opinion on whether the company's financial accounts are a true and fair reflection of the company's financial position. An external audit is a common practice in the business world to ensure proper financial management. Mr. Brown researched the costs of auditing and concluded that the DRR would need to contract for financial auditing services, which will cost approximately $3.1 million.[361]

(iv) Claims Handling

DuPont proposes to outsource claims handling for the, once again, completely unexplained cost of $250,000. As explained in detail above, DuPont does not seem to fully comprehend what this function entails and why it is ill-suited for outsourcing.[362] Because this function cannot be appropriately outsourced at the DRR, NS zeroes out the outsourcing cost for claims.

(v) Outside Counsel

The final proposed outsourced function is outside counsel. As with most of its other outsourcing proposals, DuPont presents no evidence for the cost it conjured up for this function, $1,075,000.00. In order to come to a more reasonable assessment of outside counsel costs, Mr.

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[359] NS Reply WP "Journal of Accountancy Internal Audit.pdf." *See supra.*

[360] *See* NS Reply WP "DRR Operating Expense Reply.xlsx, "Tab "Outside Services."

[361] *Id.*

[362] *See supra* Section III-D-3-c-(ii)-(d)-(6).

Brown employed a percent of revenue model based on a benchmark study. *See supra* III-D-129 to III-D-133.[363] As explained above, that leads to a more realistic, but still conservative, outsourcing cost of $14,333,780.

TABLE III-D-43
Outsourced Services Comparison

Outsourced Service	DuPont Opening	NS Reply	Difference
Tax Preparation	$300,000	0	($300,000)
Payroll Processing	$248,550	$425,000	$176,450
Employee Assistance Program	0	$411,060	$411,060
Audit and Internal Review	$250,000	$3,759,881	$3,509,881
Claims Handling	$250,000	0	($250,000)
Outside Counsel	$1,075,000	$14,333,780	$13,258,780
Total	**$2,123,550**	**$18,929,721**	**$16,806,171**

(c) Start-Up and Training Costs

DuPont proposes $112.4 million for training and recruitment costs. *See* DuPont Opening III-D-20. NS accepts most aspects of DuPont's proposal, but NS corrects a few methodological errors and makes other adjustments necessary to fully account for all applicable costs.

(i) Training

NS accepts DuPont's calculations of the average cost to train individual employees, but makes three corrections to DuPont's proposed DRR training costs. First, NS adjusts total training costs to incorporate the additional DRR staff positions identified by NS. Second, where training salaries include benefits, NS uses its corrected fringe benefit ratio of 49.2%. Third, NS uses the supported attrition rates detailed above.[364]

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[363] *See supra*; NS Reply WP "DRR Operating Expense Reply.xls," Tab "Outside Services."

[364] *See* NS Reply WP "DRR Operating Expense Reply.xlsx," Tab "Training."

(ii) Recruitment

DuPont estimates recruitment costs to be $1,890 per employee and proposes to outsource this function. *See* DuPont Opening Ex. III-D-2 at 32. NS accepts DuPont's basic approach, but corrects a key error in its methodology. Specifically, while DuPont purports to base the cost of outsourcing the DRR recruitment function on NS's own per-employee recruitment costs, in doing so, DuPont fails to account for the costs of the NS employees who manage its recruitment effort. In other words, DuPont is assuming that a hypothetical recruitment company could operate *without any employees to perform the work*, and DuPont calculates its per-employee recruitment costs on that basis. NS corrects this error by including the cost of its in-house recruiting staff in the calculation of per-employee recruiting costs.

DuPont derives its $1,890 recruitment cost from a workpaper entitled "Training Costs.xlsx," which is an altered version of a document NS produced in discovery. It shows the average cost per year per new hire from the years 2008 to 2010 as shown in Table III-D-44 below:

TABLE III-D-44
Average Cost of Recruiting

Line Item	3 year average	Percent of total[365]
Communications	$ 19,943	0.6%
Prof. & Consultant Svces	$ 144,067	4.3%
Contract & Other Temporary Svc.	$ 801,073	23.7%
Advertising	$ 444,577	13.1%
College Funding	$ 260,000	7.7%
Miscellaneous	$ 4,880	0.1%
Testing	$ 184,908	5.5%
Travel	$ 1,158,562	34.3%
Meetings & Sessions	$ 364,170	10.8%
Total Cost	**$ 3,382,180**	100%
New Hires	1789	
Average (3-year Avg. Cost/New Hires)	**$ 1,890**	

While DuPont has correctly relied upon NS's recruitment expenses, what it fails to account for is that these expenses assume a fully staffed Human Resources Group. Indeed, the "Communications" and "Travel" line items are for NS employees involved in the recruitment process. All of the other line items are for functions that NS employees plan, manage and implement. The proposed recruitment costs for the DRR proffered by DuPont do not include the salary and benefits of those on the NS staff involved in recruitment and, therefore, grossly understate the true cost of outsourcing recruitment.

NS organizational charts show that NS employs a College Recruiting Manager with a staff of seven and an Agreement Recruiting Manager with a staff of six.[366] In order to accurately

[365] Total does not exactly equal 100% due to rounding.

[366] *See* NS Reply WP "NS HR Organizational Chart.pdf." When staffing the HR Group, Mr. Brown excluded recruitment personnel from his scaling because this personnel is outsourced in the DRR. *See supra* Section III-D-3-c-(ii)-(e)-(6).

estimate the NS salary and benefits component of recruitment costs, NS conservatively includes the costs of these Managers and their staffs when calculating the average cost of recruiting per new employee. Table III-D-45 shows the Wage Form A&B compensation and benefits for these positions.

TABLE III-D-45
Salary and Benefits for NS Recruitment Personnel

	Position	Staff	STB code	Salary	Total
College Recruiting	Manager	1	201	$88,185	$88,185
	Asst Manager	3	202	$65,589	$196,766
	Employment Officer	3	202	$65,589	$196,766
	Coordinator	1	212	$56,906	$56,906
Agreement Recruiting	Manager	1	201	$88,185	$88,185
	Asst Manager	1	202	$65,589	$65,589
	Employment Officer	4	202	$65,589	$262,355
	Coordinator	1	212	$56,906	$56,906
	Total	15			$1,011,660
	Benefits		49.2%		$497,737
	Total Wage & Benefits				$1,509,397
	Avg. New hires		1789		$844
	Recruitment Costs				$1,890
	New Cost to Acquire New Employee				**$2,734**

When the cost of in-house employees is added to the other recruiting costs DuPont has proposed, the result is an average recruiting cost of $2,734 per employee. NS uses this corrected recruiting cost in its Reply Evidence.

TABLE III-D-46
Training and Restaffing Comparison

DRR Training and Restaffing				
	DuPont Proposal	NS Reply	Difference	Percentage Difference
Training	$102,647,067	$174,161,231	$71,514,164	70%
Initial Hiring	$9,768,959	$24,569,716	$14,800,757	152%
Total	$112,416,026	$98,730,947	$86,314,921	77%
Restaffing	$ 2,023,488	$16,405,368	$14,381,880	711%

(d) Travel Expense

DuPont significantly understates travel expenses for an 8,000 mile railroad in two ways. Most significantly, DuPont proposes that only a small circle of the most senior DRR personnel travel, and ignores the fact that many more DRR personnel would need to travel as part of their job function. DuPont also understates the amount that travel would cost per traveling employee.

First, DuPont proposes to limit DRR travel to sixty-five individuals at the Manager level and higher, including the outside members of the Board of Directors but excluding Customer Service Managers and the Assistant Controllers. *See* DuPont Opening III-D-21; DuPont Opening WP "DRR Operating Expense.xls." DuPont's view that travel can be limited to only the most senior DRR employees does not fully account for the modern demands of running a Class I railroad. That is particularly the case where the SARR is based in Roanoke, a city that is difficult to travel to and from and is far from many of the DRR's customers and vendors. Indeed, the Board has rejected prior attempts by complainants to limit SARR employee travel in the way DuPont has proposed.[367]

[367] In *AEPCO*, the Board specifically rejected the same proposal that DuPont is making now: to limit travel to SARR "employees at the Manager level and higher." *AEPCO 2011*, STB Docket No. 42113, at 55 (rejecting complainant's proposal for the number of personnel that would travel because defendants "provide for a more realistic number of employees that would travel"); *see*

NS's G&A expert Mr. Brown corrected this vast understatement by conducting a rigorous review of the positions within G&A to determine whether or not the employees would be expected to travel. The review included consultation of NS's own job descriptions for those positions.[368] If a job description called for a minimum of 3 to 5 days per month of travel, Mr. Brown considered the analogous position in the DRR as requiring travel. Mr. Brown also agreed with DuPont that all Assistant Vice Presidents and Vice Presidents would travel.[369] Mr. Brown also included outside Board members in travel because they must, at a minimum, travel to and from Board meetings. Based on that review, Mr. Brown added travel expenses for many DRR employees who would travel and scaled up travel for those positions DuPont and NS agree would travel to match NS's proposed organization size. NS Reply Workpaper "Proposed DRR Travel.xlsx" states the DRR positions for which NS added travel expenses. Among the positions for which NS added travel are:

- Help Desk PC Technicians: DuPont proposes that of the entire IT Department, only its Director would have to travel. But DuPont never explains how IT issues in the field would be addressed when remote repairs are insufficient. Help Desk PC Technicians will need to travel so they can go on-site when necessary to address IT problems.
- Purchasing: DuPont's failure to provide for any purchasing staff travel is also unrealistic. Purchasing employees may need to travel around the DRR's networks to help assess needs, visit vendors, and attend other meetings appropriate for their management level.

AEPCO Opening, *AEPCO 2011*, STB Docket No. 42113, III-D-57 (Jan. 25, 2010) (proposing—just like DuPont—to limit travel to SARR "employees at the Manager level and higher . . . except for Customer Service Managers and the Assistant Controllers").

[368] *See* NS Reply WP Folder "Job Descriptions.zip." *See also* NS Reply WP "Total Legal Expenses (inc salaries and benefits).pdf."

[369] *See* DuPont Opening Ex. III-D-2 at 33 (proposing travel for all DRR employees at the Manager level and higher, such as Vice Presidents, excluding some manager positions and outside Board members). Mr. Brown also assumes all Assistant Vice Presidents will travel. DuPont did not propose any Assistant Vice Presidents, but these would also be Manager level and higher employees which DuPont does designate for travel.

- Claims Agents: As explained above, DuPont has improperly outsourced the claims function. NS proposes to move this function back inside the DRR, which means that Claims Agents will need travel budgets so that they can evaluate and investigate claims, including visiting incident sites and speaking to witnesses.[370]

These are only some of the positions which NS's G&A expert has analyzed and determined require travel.[371] Indeed, Mr. Brown's approach was extremely conservative. Virtually every position at a Class I railroad includes some type of travel in the job description, but Mr. Brown only included positions where travel was called for at least 3 to 5 days per month. Furthermore, many of the positions have 6 to 10 or over 10 travel days assigned per month, meaning the average travel cost calculated below could not possibly meet the real-world expense.

Second, DuPont understated annual costs per traveler by selecting a single recession year as the source for average travel costs. Specifically, DuPont used a 2009 Runzheimer International survey of corporate business travel to derive an annual average of travel costs of $9,751. But a cherry-picked survey from one year is not representative of the travel costs the DRR could expect to incur over the SAC analysis period. That is particularly so when the survey DuPont selected is from 2009, the worst year of the recent economic recession.

A more realistic view can be derived by averaging multiple Runzheimer International surveys.[372] NS proposes a multi-year average of travel expenses based on three years of

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[370] *See* NS Reply WP "Claims Job Descriptions.pdf" in NS Reply WP Folder "Job Descriptions.zip."

[371] *See* NS Reply WP "Proposed DRR Travel.xlsx."

[372] *See, e.g., West Texas*, 1 S.T.B. at 713 ("Using data for a single year increases the risk that the single period is aberrational.") (calculating cost of equity); *WFA I*, STB Docket No. 42088, at 55 ("[U]se of a multi-year average is superior to using just a single year of data") (calculating Loss and Damage); *AEP Texas*, STB Docket No. 41191, (Sub-No. 1), at 107 ("[U]sing data for a single year increases the risk that the single year is an aberration.") (calculating cost of equity).

Runzheimer International surveys, from 2008 to 2010, which were publicly available. Table III-D-47 shows the result of the averaging—an average cost of $10,261 per traveler.[373]

TABLE III-D-47
Runzheimer International Survey Average of Travel Costs Per Employee[374]

Year	Cost Per Employee
2008	$10,740
2009	$9,751
2010	$10,292
Avg. 2008-2010	**$10,261**

Third, DuPont's evidence ignores the cost of entertainment expenses. The Board has previously assumed that travel and entertainment expenses are linked.[375] These expenses would be, for example, the cost of a Marketing Manager taking a potential customer to lunch or dinner. But the Runzheimer International survey used by DuPont does not include the cost of entertainment. This is shown by the fact that a 2009 Runzheimer study that did incorporate entertainment expenses raised the average cost per employee in 2009 to $10,039, demonstrating that these costs are not included in the DuPont figure because their Runzheimer 2009 average is only $9,751.[376] At NS, entertainment costs are approximately 5.4% of total travel costs.[377] NS

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[373] As explained above, given the frequency with which some employees will travel, this is likely a vast underestimate of the railroad's travel costs.

[374] *See* NS Reply WP "Business Travel News – Runzheimer.pdf."

[375] *See, e.g.*, *Xcel*, 7 S.T.B. at 656 (listing travel *and* entertainment expenses); *Duke v. NS*, 7 S.T.B. at 160 (same).

[376] Other Runzheimer studies that specifically incorporate entertainment expenses estimate higher costs than the travel-only study DuPont uses. *See* NS Reply WP "Runzheimer White Paper.pdf" at 2 (identifying average annual travel and entertainment costs per traveler as $10,039 for 2009).

[377] *See* NS Reply WP "Proposed DRR Travel.xlsx," Tab "Expense Calc."

proposes the same number be applied to the DRR, amounting to $554 additional dollars per traveler.

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After making these three adjustments, Mr. Brown adopted an extremely conservative budget for travel and entertainment. In 2009, Runzheimer found that the average organization spends 1.6% of revenue on travel and entertainment.[378] In the case of the DRR, that would be approximately $90 million of NS's projected $5.6 billion revenue figure, approximately 18 times the travel expenses proposed in NS's evidence. Indeed, the DRR is likely to have above-average travel expenses because the DRR is operating from a headquarters in Roanoke, Virginia, which will mean costlier travel and fewer direct flights.[379] As a point of comparison, NS spent {{ }} million on travel and entertainment costs in 2009 and an average of {{ }} million on travel between 2008 and 2010.[380]

TABLE III-D-48
Travel Costs Comparison

	DuPont Opening	NS Reply	Difference
Number of Travelers	65	446	381
Cost Per Traveler	$9,751	$10,261	$510
Cost Per Traveler for Entertainment	0	$554	$554
Total Cost for Travel	$633,815	$4, 823,490	$4,189,675

[378] *See* NS Reply WP "Runzheimer White Paper.pdf" at 4.

[379] Roanoke Regional Airport is only served by four airlines. *See* NS Reply WP "Roanoke Regional Airport Airlines.pdf." The airport's arrival and departure schedule is extremely limited, showing just seven origins and destinations with few flights. *See* NS Reply WP "Roanoke Regional Airport Airlines Arrivals and Depatures.pdf."

[380] *See* NS Reply WP "Travel and Entertainment 2008-2011.xslx."

(e) Bad Debt

The Board has recognized that bad debt is "a legitimate business expense" that should be incorporated into the SAC analysis. *AEPCO 2011*, STB Docket No. 42113, at 64. But DuPont's evidence ignores *AEPCO*'s holding, and it makes no provision for bad debt.[381] Instead, DuPont assumes that the DRR will receive 100% of the revenue that it bills to customers. This assumption is not reasonable, for given the many customers that the DRR will serve, it will have some uncollectible accounts. In the real world, some DRR customers will fail to pay their bills or will fail to pay bills in their entirety. Indeed, applicable accounting standards would require the DRR to maintain an allowance for doubtful accounts. Statement of Financial Accounting Standards No. 5 (FAS5 - Accounting for Contingencies) requires companies to maintain allowances for doubtful accounts for the estimated probable losses on uncollectible accounts and other receivables.

NS estimated the uncollectible accounts for the DRR by considering uncollectible accounts from R-1 Schedule 410. To obtain the best approximation of the average amount of bad debt that the DRR would encounter over the SAC analysis period, NS calculated the average amount of uncollectible accounts as a percentage of revenue for all seven Class I railroads over the five-year period from 2007 through 2011. The average charge for Doubtful Accounts for Class I railroads during this period is 0.05% of revenue. NS therefore assumes that the DRR would have a charge for Doubtful Accounts equivalent to 0.05 % of its revenue, for which it used a weighted average of 2009 and 2010, or $2,603,845.[382]

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[381] Having completely failed to present evidence on bad debt, DuPont is foreclosed from doing so on Rebuttal. *See, e.g.*, *SAC Procedures*, 5 S.T.B. at 445-46; *Xcel*, STB Docket No. 42057 at 2 (served Apr. 4, 2003).

[382] *See* NS Reply WP "DRR Operating Expense Reply.xlsx," Tab "Summary."

vi. Benchmarking to Other Railroads Shows that NS's Proposed G&A Staffing Would Make the DRR a Best-in-Class Efficient Railroad

NS's Reply Evidence produces a G&A staff that is the least-cost, most-efficient G&A staff possible for a Class I railroad with the size and traffic mix of the DRR. The reasonableness of NS's proposal is demonstrated by various benchmarks that confirm the maximal efficiency of NS's proposed DRR G&A staffing and expenses. It should be reiterated that DuPont provides no benchmarks for its proposed staffing or expenses—despite the Board's unambiguous request for SAC litigants to provide such benchmarks. *See, e.g.*, *AEPCO 2011*, STB Docket No. 42113, at 58 (criticizing parties for not providing benchmark analyses or any other sufficient explanation for staffing levels chosen). The appropriate response to DuPont's disregard for the Board's request for benchmarks is for the Board to disregard DuPont's unsupported evidence.

In contrast, Mr. Brown developed NS's G&A evidence by benchmarking wherever feasible. Mr. Brown used three distinct types of benchmarks when developing G&A staffing and spending: (1) published benchmark studies of specific categories of G&A spending and staffing; (2) benchmarks to all Class I railroads based on publicly available data; and (3) benchmarks on a more granular department and group level to NS's real-world G&A spending and staffing. By any of these measures, DuPont's proposed G&A evidence for the DRR is out of step with real-world companies, including those in the transportation industry and other Class I railroads. And adopting NS's well supported proposal would still make the DRR a best-in-class, maximally efficient railroad, while also providing the necessary staffing and support that the DRR would need in the real world.

First, Mr. Brown used benchmarking studies published by neutral third parties where such studies were available. While third party benchmarking studies are not available for all railroad functional areas, such studies are available in areas like information technology, human

resources, and legal spending. These studies thoroughly demonstrate that even after adopting NS's proposals, the DRR will be far more efficient than peer companies.

Information technology is an example of an area where third party benchmarks are readily available. A Gartner study of IT spending found companies, on average, spend { } of revenue on IT.[383] DuPont claims that the DRR would spend just 0.49% of revenue on IT, compared to .96% for NS's more reasonable, but still conservative, proposal. DuPont's proposed IT staffing is also low when compared to benchmark studies. According to Gartner, companies in the transportation industry count { } of full time employees as IT employees.[384] DuPont has proposed only 46 full time employees for IT, just .93% of full time employees. NS, being conservative, proposes an even leaner .89% of full time employees as IT staff.[385]

Third party studies that can serve as benchmarks for DRR spending and staffing are also available for human resources. Under both DuPont and NS's proposals, the DRR's HR spending would be more efficient than benchmark studies have found. DuPont proposes to spend just $230 per employee, an unreasonably low and unjustified number. NS proposes a more realistic, but still optimally efficient, $462 in HR spending per employee. According to a 2011 study by BNA, the median per capita HR expense among employers with over 2,500 employees is ${ }, far more than DuPont's proposal.[386] The same study also found that companies with over 2,500 employees, such as the DRR, have { } HR employees for every 100 full time

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[383] NS Reply WP "Gartner IT Key Metrics.pdf" at 20.

[384] NS Reply WP "Gartner IT Key Metrics.pdf" at 54.

[385] *See supra* Section III-D-3-c-(ii)-(f).

[386] NS Reply WP "BNA HR Benchmark and Analysis 2011.pdf" at 42, 43.

employees, compared to .35 HR employees per 100 full time employees proposed by NS.[387] DuPont, by contrast, proposes an absurd .16 HR employees per 100 full time employees.

Likewise, NS's proposed legal costs are based on a benchmark study of legal spending by {{ }} that NS commissioned in the ordinary course of business to optimize its own spending. That study found that the best-performing companies sized similarly to the DRR spend {{ }} of revenues on legal spending compared to {{ }} for average companies. NS accepted {{ }} as a benchmark for best-in-class performance and applied it to the DRR.[388] NS also used a benchmarking survey by The Network, Inc. to gauge the need for an employee ethics line.[389]

Second, Mr. Brown used the G&A spending of other Class I railroads as a benchmark for the DRR, which would also be a Class I railroad. Mr. Brown has conducted a study of G&A costs of all Class I railroads and compared it to DuPont's proposal for the DRR and NS's own proposal. Between 2009 and 2011, the average Class I railroad had 454 G&A employees per $1 billion of revenue.[390] NS, CSXT, UP and BNSF had an average of 410 employees per $1 billion of revenue over the same period. The DRR proposed a mere 70 employees per $1 billion in revenue between 2009 and 2011. NS's proposal of 249 employees per $1 billion in revenue between 2009 and 2011 is much more consistent with peer benchmarks, while still conservative as is appropriate for a least cost, most efficient railroad.

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[387] *Id.* at 19.

[388] *See supra.* Section III-D-3-c-(ii)-(e)-(1).

[389] *See supra.* Section III-D-3-c-(ii)-(e)-(6).

[390] NS Reply Ex. III-D-2 (G&A Benchmarking.pdf) at 1.

As a percentage of revenue, Class I railroads spent 8.4% between 2009 and 2011 on G&A.[391] NS, CSXT, UP and BNSF spent 8.3% over the same period.[392] Yet DuPont proposes a completely unsupported 1.1% of G&A expense as a percentage of revenue. NS responds with a more reasonable 3.9%, making the DRR efficient but still expending sufficient funds to meet its G&A obligations.

Third, Mr. Brown used NS's real-world G&A staffing and spending as a benchmark for the DRR. Overall G&A spending by Class I railroads is publicly available, but detailed breakdowns by category are not generally reported. NS also produced its organizational chart in discovery to DuPont. In fact, the organizational chart was one of the first documents produced on January 14, 2011. DuPont raised no concern or question about the document, but decided to completely ignore it when drafting its G&A evidence.[393] In addition, the unique nature of the DRR makes NS the best point of comparison. The DRR is taking 92% of NS's traffic and 62% of NS's revenue. It is also closest in size by revenue and mileage to NS, making NS the best benchmark for the DRR's G&A spending. But by that measure, the DRR is unrealistically efficient under DuPont's proposal and, even under NS's proposal, is still optimally efficient. NS had an average of 492 G&A employees per $10 million in revenue between 2009 and 2011 and spent 11.3% of revenue on G&A. Again, the DRR proposed a paltry average of 70 G&A employees over the same period for a 1.1% of expense operating cost. *See* NS Reply Ex. III-D-2 at 1. NS's proposal would be 1.46 staff per $10 million in revenue and 3.02% of revenue.

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[391] *Id.* at 2.

[392] *Id.*

[393] *See* NS Reply WP "NS Organizational Chart.pdf."

Table III-D-49
Real-World NS, DuPont Proposed DRR and NS Reply DRR Comparison

Department	Real-World NS	DRR		DRR % of Real-World NS	
		DuPont Opening	NS Reply	DuPont Opening	NS Reply
Executive	{{ }}	4	16	4%	18%
Marketing	{{ }}	21	140	6%	38%
Finance	{{ }}	66	288	13%	55%
Admin	{{ }}	45	198	7%	30%
IT	{{ }}	46	78	9%	15%
Operations Support	{{ }}	61	225	6%	21%
Mechanical	{{ }}	276	551	4%	9%
Operations Staff	{{ }}	278	558	6%	12%
Conductor Engineer	{{ }}	3166	4500	34%	48%
Engineering Staff	{{ }}	50	271	4%	24%
Engineering Line	{{ }}	958	2153	16%	35%
Total	{{ }}	4971	8978	16%	29%

4. Maintenance-of-Way

DuPont's opening evidence of the DRR's maintenance-of-way ("MOW") staffing and expenses falls far short of its burden to present evidence of likely DRR MOW costs that is "consistent with the underlying realities of real-world railroading." *WFA I*, STB Docket No. 42088, at 15. DuPont's proposed staffing is not nearly sufficient to properly maintain the DRR's expansive network of high-density lines. This fact is aptly illustrated by a comparison of DuPont's staffing levels to the MOW staffing that the Board has found to be reasonable in recent SAC cases. On a track-mile basis, DuPont's MOW staffing is well less than half the level of MOW staffing in the last five decided SAC cases. *See infra* III-D-199, Table III-D-50. DuPont presents no evidence that can explain how the DRR could operate with such a ludicrously small staff, and the Board should reject its unsupported and patently unrealistic evidence.

NS expert witnesses James D. Bagley and David J. Hughes (the "NS MOW Experts") have developed a realistic and well-supported plan for the DRR's maintenance-of-way ("MOW") staffing and expenses, which is detailed below. Each of the NS MOW Experts has extensive real-world experience in overseeing railroad maintenance and planning for MOW needs.

Mr. Bagley served as Vice President Engineering and Chief Engineering Officer of CSXT until March 2008. He also held several senior engineering positions at Norfolk Southern Corporation, including Chief Engineer Line Maintenance on the Northern Region, the Eastern Region, and the Western Region. He has unique qualifications to assess the MOW maintenance requirements for the DRR based on over thirty-five years of railroad infrastructure maintenance and construction experience, much of which was gained managing maintenance of the lines replicated by the DRR. Mr. Bagley also has more than nine years of extensive consulting experience, including numerous engagements involving the assessment of railroad infrastructure maintenance in the United States and internationally. Mr. Bagley is a member of the American Railway Engineering and Maintenance-of-Way Association and has served as a member of the Board of Governors of the American Railway Engineering and Maintenance-of-Way Association.[394]

Mr. Hughes has over three decades of railroad infrastructure maintenance and construction experience. He served as Chief Engineering Officer of the National Railroad Passenger Corporation (Amtrak) from 2002 through 2005 and as Acting President and Chief Executive Officer from 2005 through 2006. Mr. Hughes also served for five years as president of Pandrol Inc., a manufacturer of railroad track fastening systems and president of Speno Rail

[394] *See* Section IV for a full statement of Mr. Bagley's qualifications.

Services Inc., a railroad maintenance contracting company. He has held several other railroad executive and senior engineering positions and has over a decade of consulting experience with dozens of engagements with over 35 railroads in 25 countries. He also has extensive experience with regional and short line railroads, which gives him good insight into the latest infrastructure maintenance practices of railroads with few or no work rules restrictions. He has over 30 years experience as a registered professional engineer and is a past director and member of the board of governors of the American Railway Engineering and Maintenance-of-Way Association.[395]

Both Mr. Hughes and Mr. Bagley began their railroad careers as first line maintenance supervisors and rose to become the chief engineering officer of major railroad companies, giving them bottom to top perspective on railroad maintenance practices, costs, and strategy.

The NS MOW Experts have identified many flaws in DuPont's MOW evidence, which are detailed below. Perhaps the most significant and persistent error in DuPont's evidence is a failure to address and engage with the real-world factors that drive maintenance costs. These real-world factors include both wear-and-tear factors such as relative traffic density and train frequency and external environmental factors such as weather and terrain. DuPont's MOW expert Mr. Crouch claims to have considered the DRR's "geographic scope, terrain, number of trains and gross tonnages" when developing a MOW plan, but DuPont's narrative, exhibits, and workpapers contain no evidence of that consideration. *See* DuPont Opening Ex. III-D-3 at 2. On the contrary, Mr. Crouch appears to have used a one-size-fits-all approach to developing maintenance-of-way evidence. For example, he admits to developing Roadmaster territories by using a one-size-fits-all metric of "roughly 200 route mile[s]" for each. *See* DuPont Opening WP "Exhibit III-D-3 DRR MOW.xls," at "MOW Staff" Tab, Cell S24. DuPont's Roadmaster

[395] *See* Section IV for a full statement of Mr. Hughes's qualifications.

territories were therefore not developed by considering the varying "terrain, number of trains and gross tonnages" across the diverse lines of the DRR system—rather, DuPont used a simplistic assumption that each Roadmaster would be responsible for approximately 200 route miles, regardless of any of the real-world factors that affect maintenance needs. In this and many other respects discussed below, DuPont's MOW plan is simply a paper exercise that mechanically assigns MOW resources to DRR line segments without considering the factors that ultimately drive maintenance needs.

The result of DuPont's flawed process is a MOW plan that is patently insufficient to serve the DRR's needs and is far less extensive than the MOW workforces that the Board has approved in recent SAC cases. This is illustrated aptly by considering the number of MOW staff that DuPont provided the DRR on a track-mile basis. Track miles per employee is a reasonable metric for measuring the relative workload of each MOW employee, and the Board used this metric itself when evaluating MOW evidence in *WFA I*. *See WFA I*, STB Docket No. 42088, at 57. As Table III-D-50 illustrates, DuPont's proposed DRR MOW workforce is vastly smaller on a track-mile basis than MOW workforces accepted by the Board. The average track-mile-to-MOW staff ratio for the Board's five most recent decisions with MOW analyses is 4.1-to-1—less than half of the 10.4-to-1 track-mile-to-MOW staff ratio that DuPont proposes.

TABLE III-D-50
MOW Staffing in Recent SAC Cases[396]

	AEPCO 2011	*WFA*	*AEP Texas*	*Otter Tail*	*Xcel*	DuPont Proposal For DRR	NS Proposal For DRR
MOW Staff	559	97	488	437	166	1,006	2,133
Track Miles[397]	3,326	391	1,664.1	1,485	552.77	10,462	10,639
MOW Staff-to-Track Miles	**5.9**	**4.0**	**3.4**	**3.4**	**3.3**	**10.4[398]**	**4.7**

In short, DuPont proposes dramatically lower levels of MOW staff than those accepted by *AEPCO 2011* and *WFA*. And DuPont does so without any explanation for its assumption. If DuPont believed that some special factor would allow the DRR's MOW staff to be two to three times as efficient as the MOW staffs approved in prior cases, then it was incumbent on DuPont to identify and explain those factors in its opening evidence. DuPont's failure to provide any explanation whatsoever for dramatically slashing MOW workforce from previously-Board-approved levels casts serious doubt on the credibility of its proposals.

In contrast, the NS MOW Experts' approach to the development of the MOW Plan for DRR was methodical and detailed. They first assembled the relevant data necessary to

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[396] *See AEPCO 2011*, STB Docket No. 42113, at 32, 65; *WFA I*, STB Docket No. 42088, at 57; *AEP Texas*, STB Docket No. 41191, (Sub-No. 1), at 27, 67; BNSF Reply, *AEP Texas*, STB Docket No. 41191, (Sub-No. 1), at III-D-167; *Otter Tail*, STB Docket No. 42071, at A-1, C-20; BNSF Supp. Reply in *Otter Tail* at III-D-28; *Xcel* at 48, 79.

[397] The track mile calculations exclude yards, set-outs and helper tracks, as the Board did in *WFA I*. *WFA I*, STB Docket No. 42088, at 57.

[398] The "MOW Staff" Tab of DuPont Opening WP "Exhibit III-D-3 MOW errata.xlsx" calculates DuPont's proposal as 7.23 miles per MOW field employee. But DuPont arrives at this figure by counting route miles per employee rather than track miles. Track miles are a superior measure of MOW workload over route miles, because track miles account for the greater efforts associated with maintaining multiple-track lines.

determine the MOW work load on DRR. For each of the 59 line segments in NS Reply WP "Line Segment Work Load Evaluation.xlsx," the NS MOW Experts considered the track and route miles to be maintained, the traffic density and train frequency over the route, the extent and severity of curvature, and other relevant items affecting workload. The NS MOW Experts also considered external environmental factors, particularly snow, rain, frequent cold temperatures, soil types, and terrain.[399]

After evaluating the relevant DRR and external data, the NS MOW Experts summarized the relevant characteristics that determine workforce requirements for each of the main DRR routes.[400] The NS MOW Experts then assigned the appropriate number of track maintenance crews and signal maintenance employees to each segment as shown in NS Reply WP "Line Segment Work Load Evaluation.xlsx," and grouped them under an appropriate number of Roadmasters and Signal Supervisors. Bridge and Building maintenance gangs were assigned to appropriately sized geographical territories and grouped under an appropriate number of Bridge and Building supervisors. The NS MOW Experts then designed appropriate management, commercial, and technical organizations at the Divisional and Headquarters level, all of which is summarized in NS Reply WP "Exhibit III-D-3 NS DRR MOW.xlsx," Tab "MOW Staff-NS."

a. DRR Operating Staff

The MOW workforce designed by the NS MOW Experts is modern, lean, and well-proportioned, and its size is consistent with the needs of the DRR and with the results of past

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[399] *See* NS Reply WP "DRR Environmental Factors.pdf" for an assessment of the impact of external environmental factors on work load and working efficiency

[400] Prior to preparation of the NS MOW plan, Mr. Bagley inspected key sections of the DRR (Cincinnati to Macon, Columbus, OH to Roanoke, Roanoke to Pittsburgh, Atlanta to Lynchburg, Roanoke to Burkeville, Birmingham to New Orleans, McIntosh to Burstall) to see the conditions along the route first hand and to identify the unique maintenance challenges along the lines. Notes and photos from those inspection trips are shown in NS Reply WP "DRR Inspection Trip Notes and Photos.doc."

SAC cases decided by the Board. The plan results in a reasonable ratio of 4.7[401] main track miles per MOW employee—which means that the NS MOW Experts' MOW workforce would have a track-mile-to-employee ratio that is higher than (and thus more efficient than) the track-mile-to-employee ratios in *WFA*, *AEP Texas*, *Otter Tail*, and *Xcel*.[402]

The staffing for each of the MOW departments is summarized in Table III-F-51 below

Table III-D-51.
Comparison of MOW Workforce by Functional Department

Department	DuPont No. of DRR Employees	NS No. of DRR Employees
Track	725	1,379
Signals & Communications	219	643
Bridges & Buildings	46	166
Technical and Commercial Admin. & Support	16	82
Total	1,006	2,270

Source: NS Reply WP "Exhibit III-D-3 NS DRR MOW.xls", Tab "Comparison - DuPont vs. NS MOW Staff"

Table III-D-52 breaks down the parties' competing MOW staffs by organization level.

[401] Excluding 56 bridge tenders since the SARRs in neither *WFA I* nor *AEPCO 2011* had need for such positions and they are not engaged in maintenance.

[402] The track-mile-to-MOW-staff ratio for the staffing accepted in *AEPCO 2011* was somewhat higher than that for the MOW staffing developed by the NS MOW Experts, but this is primarily because of the significantly more complex and varied maintenance challenges for the DRR that are detailed herein. *See infra* III-D-202 to III-D-207; *see also* NS Reply WPs "Line Segment Work Load Evaluation.xlsx," "DRR Environmental Factors.pdf," and "MOW Line Segment information summary.xlsx."

Table III-D-52
Comparison of Workforce by Organizational Level

Organization Level	DuPont No. of DRR Employees	NS No. of DRR Employees
General Office	30	119
Division	0	28
Field Supervision	136	204
Field Workforce	840	1,919
Total	1,006	2,270

Source: NS Reply WP "Exhibit III-D-3 NS DRR MOW.xls", Tab "Comparison - DuPont vs. NS MOW Staff"

As shown in Table III-D-52, DuPont provides for 136 field supervisors, but no divisional management for its four divisions, which average 1,819 miles in length.[403] Moreover, even without division management the DuPont workforce is top heavy with only 6.2 workers per field supervisor.

The NS plan includes a full, but lean, division management structure of 24 managers and 4 administrative assistants plus field supervision of 204 supervisors to oversee operations of the four divisions. Even so, the NS structure is leaner than the DuPont structure with 8.3 field workers per division manager and supervisor.[404]

b. General Office Organization

DuPont seriously understates the DRR's MOW needs in part because it fails to provide sufficient general office staff for the DRR. DuPont's MOW expert Mr. Crouch has designed a 36 person MOW General Office organization, which is more appropriate for a light density local railroad than for a major Class I railroad like the DRR. Indeed, Mr. Crouch erroneously provides no divisional organization even though he proposes a four division structure.

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[403] *See* NS Reply WP "Exhibit III-D-3 NS DRR MOW.xlsx", Tab "Comparison - DuPont vs NS MOW Staff" for classification of DuPont positions.

[404] 840/136=6.2; 1,919/(204+28)=8.3.

The DRR consists of a complex 7,293 route mile network of high-tonnage lines, high-frequency traffic, many movable bridges, and sophisticated signal and communications systems. Maintaining this system will require an appropriate breadth of capabilities and depth of staff. Indeed, the DRR would be a Class I railroad and the fourth largest railroad in the U.S., smaller[405] than BNSF, UP, and CSX, and larger than CN-GT, CP-SOO and KCS.

For a major Class I railroad like the DRR, a robust General Office is an essential feature of a realistic MOW plan. DuPont's assumption that a 36-person General Office could effectively manage and oversee a MOW workforce of over 2,300 employees is not reasonable. Efficient and effective railroad maintenance requires significant technical expertise, support for railroad commercial functions, and coordination and planning to ensure that resources are deployed optimally. DuPont's proposal simply does not provide sufficient management to ensure that those functions could be performed. Indeed, the DRR MOW General Office staff would be responsible not only for managing and directing the DRR's own MOW staff, but also for negotiating contracts and coordinating relationships with outside contractors. *See* DuPont Opening Ex. III-D-3 at 5. The General Office also must (1) manage the maintenance and replacement of infrastructure assets; (2) maintain road property asset inventories; (3) maintain records for tax purposes; (4) manage infrastructure-related relationships with government entities and other third parties; (5) analyze infrastructure asset performance; (6) establish standards and testing for materials and processes; and (7) develop plans for infrastructure maintenance.

DuPont can only achieve its low General Office workforce levels by completely omitting many essential commercial and technical functions. For example, DuPont does not provide sufficient staff to manage and analyze testing of rail, track geometry, and track strength and

[405] Measured in Miles of Road Operated (excluding trackage rights), AAR Analysis of Class I Railroads, 2010, Association of American Railroads.

manage maintenance contracts and programs; it provides insufficient staff to manage the maintenance of the DRR's microwave, AEI, FED, and train control systems; and it ignores the need for staff to manage joint facility accounts with other railroads, maintain property records, and manage the mapping and GIS systems that are essential to modern railroad maintenance.

The NS MOW Experts designed a General Office staff for the DRR from the ground up by identifying the necessary functions that must be performed. They then designed the minimum organization necessary to perform the essential functions. They have created a MOW General Office that is lean and well-suited to the many functions that the MOW department of a large railroad must perform. The NS MOW Experts General Office staff of 119 (5.1% of total MOW workforce) includes managerial, professional, technical, and administrative and trainees. The principal purpose and principal duties of each job are described in NS Reply Workpaper "MOW Job Titles and Position Descriptions.pdf".

The Vice President Engineering has four direct reports: (1) an Assistant Vice President of Maintenance of Way and Structures; (2) an Assistant Vice President of Communications and Signals; (3) an Assistant Vice President of Engineering Design and Construction; and (4) an Assistant Vice President of Technical Services.

Maintenance of Way and Structures. The Assistant Vice President of Maintenance of Way & Structures is responsible for all maintenance of the DRR's lines (including both operating expense and capital). His direct reports are the Chief Engineer of Maintenance of Way and Structures, Director Maintenance Services, and the Director of Bridges and Structures. The Chief Engineer-Maintenance of Way and Structures is responsible for all track and structures maintenance (including both operating expense and capital), and has four division engineers reporting to him.

The Maintenance Services Group is responsible for the maintenance and reliability of all work equipment; maintenance material logistics; all testing of rail; track geometry and track strength; analysis of testing data; and management of maintenance contracts and programs[406] at the system level. The Group is managed by a Director with five direct reports: Manager of Maintenance Equipment, Engineer Track & Materials, Engineer Rail and Geometry Tests, System Track Analyst, and Manager Programs and Contracts.

The DRR's Bridges & Structures Group can be relatively small, because the DRR's bridges will be newly constructed. That said, the DRR will have 3,933 bridges totaling 163 miles in length to maintain, and many bridge repair and maintenance needs are not tied to the age of the structure. The NS MOW Experts have developed a small group consisting of a Director, two Engineers of Structures, and a Manager Engineering Services.

Communications and Signals. The Communications & Signals Group is responsible for maintenance, operation, testing and design and construction of all signal and communications facilities on DRR. The Group is managed by a Director who has nine direct reports: one Superintendent of Communications & Signals for each of the four divisions, a Director of Advanced Train Control, a Director of C&S Engineering, a Manager of Communications Systems, a Manager of Electronic Systems, and a Manager of Signal Design.

Engineering Design and Construction. The Assistant Vice President of Engineering Design and Construction is responsible for railway project design and construction, utility related construction, architectural services, and improvements for customers and the public. The majority of his department is dedicated to capital projects. As discussed *infra* III-D-246 to III-D-

[406] For example, rail testing, track strength testing, vegetation control, rail grinding, contract ditch cleaning, and similar contracts and programs.

247, while much of the Engineering Design and Construction's work will be allocated to capital projects, some cannot be capitalized and must be allocated to operating expenses.

Technical Services. The Assistant Vice President of Technical Services is responsible for budgeting, costing, and cost control activities; managing engineering business systems, mapping, and utility systems; keeping an up to date inventory of assets in place; creating and maintaining maps, track charts, valuation plans, and land records; creating and maintaining graphical information systems; and providing engineering support for real estate leases, licenses, and sales.

Office Manager, Trainees, and Administrative Assistants. The Office Manager has administrative oversight of trainees assigned to various departments and assigns Administrative Assistants and manages their workload.

DuPont does not provide for MOW trainees. A trainee program is a standard and essential way to efficiently develop employees who can fill entry-level technical and supervisory positions. Assuming an attrition rate of 4% and a training period of eighteen months, the DRR MOW department will require approximately 24 MOW trainees for technical and first line supervisory positions.[407] These trainees are generally recent college graduates who provide a well-trained source of engineering talent to account for attrition. The Office Manager administers the training program in conjunction with the VP Engineering, ensuring timely rotation of trainees into all facets of MOW activity.

There is also a requirement for thirteen Administrative Assistants, conservatively assuming one Administrative Assistant for every ten General Office professional and technical employees and one Administrative Assistant at each of the four MOW Divisions. The Office

[407] *See* NS Reply WP "Exhibit III-D-3 NS DRR MOW.xlsx," Tab "Analysis of NS MOW Staff."

Manager supervises the Administrative Assistants, distributes work load, assigns special duties and generally ensures that the administrative staff fully supports the professional staff.

c. Track Department

DuPont substantially understates the track maintenance workforce that would be required for the DRR, primarily because DuPont creates unrealistically large territories to be maintained by individual Roadmasters and track crews. The flaws in DuPont's track maintenance plan are detailed below and in NS Reply Workpapers "Spreadsheet Analysis of DuPont Track Workforce Plan.xls" and "Text Analysis of DuPont Track Workforce Plan.docx."

The Track Department developed by the NS MOW Experts consists of 1,440 employees, organized into the positions shown in Table III-D-53 below. The annual compensation for each position, by employee and in total, is also shown. The DRR Track Department has been divided into four maintenance-of-way divisions of approximately 1,800 route miles per division each headed by a Division Engineer. There are two MOW divisions in the North Region, hereinafter referred to as "Northeast" division and "Northwest" division, and two MOW divisions in the South Region, hereinafter referred to as "Southeast" division and "Southwest" division. The division boundaries are shown in NS Reply Workpaper "NS DRR Roadmaster Territories.xls".

Table III-D-53
DRR Base Year Track Employees and Compensation

Track	Positions	Salary	Total Salary
AVP Maintenance of Way and Structures	1	$ 272,619	$ 272,619
Chief Engineer - Maintenance of Way and Structures	1	$ 115,910	115,910
Division Engineer	4	$ 109,105	436,421
Assistant Division Engineer - Track	8	$ 102,548	820,387
Roadmasters	69	$ 79,626	5,494,207
Assistant Roadmasters	77	$ 78,096	6,013,364
Track Maintenance Foremen	180	$ 64,455	11,601,815
Track Maintenance Workers	540	$ 49,818	26,901,575
Smoothing Gang Foremen	34	$ 64,455	2,191,454
Smoothing Gang RMOs	68	$ 58,052	3,947,550
Speedswing Operator	8	$ 58,052	464,418
Welders & Helpers	138	$ 55,693	7,685,584
Ditching foreman/Gradall Operator	30	$ 55,693	1,670,779
Swivel Dump Truck Driver	30	$ 55,693	1,670,779
Semi-Tractor Driver	4	$ 50,876	203,505
Mechanic	35	$ 55,693	1,949,242
Backhoe operator	69	$ 58,052	4,005,603
Rail Lubricator Repair Repairman	38	$ 55,693	2,116,320
Material Truck Drivers	16	$ 49,818	797,084
Crawler Dozer operators	8	$ 64,455	515,636
Crawler Trackhoe Operators	4	$ 64,455	257,818
Supervisor Welding & Grinding	4	$ 78,096	312,383
Director - Maintenance Services	1	$ 115,910	115,910
Manager of Maintenance Equipment	1	$ 109,105	109,105
Division Supervisors Work Equipment Maintenance	4	$ 79,626	318,505
Manager MOW Standards	1	$ 79,626	79,626
Engineer Track and Materials	1	$ 79,626	79,626
Engineer Materials Management (North & South)	2	$ 79,626	159,252
Engineer Rail and Geometry Tests	1	$ 79,626	79,626
System Track Analyst	1	$ 79,626	79,626
Manager Programs and Contracts	1	$ 79,626	79,626
Total Track	1,379		$ 80,545,354

Source: NS Reply WP "Exhibit III-D-3 NS DRR MOW.xlsx"

The NS MOW Experts accept DuPont's approach for salaries for the DRR's MOW personnel, and base those salaries on the salaries paid by NS to MOW personnel as shown in

NS's 2009 Wage Forms A and B.[408] The track organizations proposed by DuPont and NS are compared in Table III-D-54 below.

Table III-D-54
Comparison of DuPont and NS Track Workforce

Track	DuPont	NS	Difference
General Office	14	11	(3)
Division	0	16	16
Field Supervision	116	150	34
Field Worker	596	1,202	606
Total Track	726	1,379	653
Source: NS Reply WP "Exhibit III-D-3 NS DRR MOW.xlsx"			

i. General Office Staff

The maintenance of track and structures is led by the Chief Engineer Maintenance of Way and Structures who is responsible for system-wide maintenance of track, bridges, tunnels, and buildings. He has five direct reports: the four Division Engineers and a Director of Maintenance Services.[409] The Division Engineers are responsible for all maintenance of way and structures on their divisions. Each Division Engineer has two Assistant Division Engineers - Track which have the same scope and purpose as the Assistant Engineers - MOW (Field Production) described in the DuPont MOW plan.[410] The Division Engineer also has one Assistant Division Engineer - Bridges & Buildings. Each Division MOW office has one administrative assistant.

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[408] *See* DuPont Opening WP "DRR Salaries.xlsx."

[409] *See* NS Reply WP "MOW Job Titles and Position Descriptions.pdf" for the purpose and principal duties of the positions reporting directly to the Chief Engineer Maintenance of Way and Structures.

[410] *See* DuPont Opening Ex. III-D-3, at 6.

ii. Field Staff

(a) Roadmasters and Assistant Roadmasters

DuPont understates the necessary DRR track maintenance staffing by assigning each Roadmaster an unrealistically large territory to maintain. DuPont proposes 36 DRR Roadmasters with territories that average 202 route miles in length and vary from 159 to 285 main track miles.[411] These territories are approximately twice the feasible length for a Roadmaster Territory.[412] Indeed, DuPont's territories are twice the length accepted by the Board in past cases. *See AEPCO 2011*, STB Docket No. 42113, at 66-67; *WFA I*, STB Docket No. 42088, at 57. DuPont's evidence does not explain the discrepancy, let alone provide an explanation for its assumption that DRR Roadmasters and MOW crews would be twice as efficient as those in past SAC cases.

To establish Roadmaster Territory limits, the NS MOW Experts first placed Roadmasters at the eight major hump yards in recognition of their operational importance. They then grouped main line track maintenance crews into geographically logical Roadmaster territories, with each Roadmaster responsible for an average of 2.6 track maintenance crews. The Roadmaster territories are diverse in the amount of main track they maintain; the shortest is 33 main track miles, including the large DeButts hump yard at Chattanooga with its 178 turnouts and 113 miles of yard track; the longest is 211 route miles of light density line from Buffalo, NY to Rockville, PA. Each territory is designed by considering workload and train interference.

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[411] *See* NS Reply WP "Spreadsheet Analysis of DuPont Track Workforce Plan.xls," Tab "NS Analysis – Roadmasters."

[412] *Id.* at Table 2.

All Roadmasters are responsible for the yard track in their territory. DRR's yard track of 1,411 miles equals 13% of main track miles, well in excess of the comparable percentages of yard track to main track for *WFA I* and *AEPCO 2011* which were 11% and 7% respectively.

Even though DRR has eight hump yards, each Roadmaster covers an average of 106 route miles, which is in the same range as was found reasonable in the *AEPCO 2011* case (110 miles) and in *WFA* (109 miles), where there were no hump yards. The specific territories each Roadmaster is responsible for, by Subdivision and milepost, are included in the workpapers accompanying this Reply Evidence.[413]

The Roadmasters are assisted by one or two[414] Assistant Roadmasters, depending on the miles to be inspected and the number of trains per day on the line. Each Assistant Roadmaster has an assigned territory sized to allow the inspector to complete required FRA inspections[415] according to the required frequency for the class of track. The Assistant Roadmasters conduct track inspections in accordance with all applicable FRA regulations and are trained and certified by the DRR. Track inspections occupy virtually all of their time; the NS MOW Experts believe that the extensive FRA inspections that would be required means that Assistant Roadmasters could spend four to five days per week inspecting main, yard, and other tracks, depending on the length of the inspection territory and the amount of interference from passing trains.

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[413] *See* NS Reply WP "Line Segment Work Load Evaluation.xlsx".

[414] Eight of the 69 Roadmasters have two assistant Roadmasters due to the 180-200 miles of main track to be inspected on those territories.

[415] The frequency of track inspections is dictated by the FRA track class involved and/or tonnage. The DRR has mostly FRA Class IV track or Class III track with more than 10MGT/year, both of which require inspection twice per week. *See* 49 C.F.R. § 213.233.

(b) Track Crews

DuPont provides for 90 DRR track maintenance crews. Once again, DuPont's staffing would require each track crew to maintain far more track than the Board has found to be reasonable in past SAC cases. For the DRR to maintain the 10,628.40 main track miles that DuPont proposed for the DRR with only 90 track maintenance crews would require each crew to maintain an average of 118 track miles, double the miles per maintenance crew found feasible in the *AEPCO 2011* and *WFA I* cases.[416] And once again, DuPont does not provide any support for this alleged dramatic efficiency improvement. Moreover, DuPont's track crew evidence is plagued by errors and omissions. For example, Mr. Crouch fails to assign maintenance crews for Roadmaster districts 35 and 36, leaving 353 miles unmaintained, and an additional five line segments were either assigned to two crews or were not assigned a crew to maintain them.[417]

To determine the required number of DRR track maintenance crews, the NS MOW Experts followed a two-step process. They first defined the factors that determine the amount of work a crew must perform and the conditions under which it must be performed. The major factors that determine workload for a mile of track are traffic density per track in MGT,[418] the amount and severity of curvature, and the number of switches, crossings and lubricators per mile that must be maintained. The efficiency of a track maintenance crew in performing this work is heavily dependent on the time between trains per track. For each line segment, based on the NS MOW Experts' assessment of the workload factors and the degree that train traffic interfered

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[416] *See* NS Reply WP "Spreadsheet Analysis of DuPont Track Workforce Plan.xls," Tab "NS Analysis – Roadmasters"

[417] *See* NS Reply WP "Text Analysis of DuPont Track Workforce Plan.docx" for a discussion of the many other serious errors, omissions and failures of professional judgment in DuPont's track workforce plan.

[418] For example, on a line with 1 track with traffic density of 30 MGT over the route, the density per track would be 30 MGT. On a line with 2 tracks, the density per track would be 15 MGT.

with maintenance as measured by minutes between trains, the NS MOW Experts estimated the length of track that a maintenance crew could maintain given the work load and train traffic. The NS MOW Experts used a minimum of 40 track miles per crew and a maximum of 80 track miles per crew for main line and 90 track miles per crew for branch lines. The result is 165 track maintenance crews for main lines and 11 track maintenance crews for branch lines. The second step was to group the track maintenance crews together into Roadmaster territories, taking into account the amount of maintenance represented by hump yards. The final result was 180 track crews—each made up of a Foreman and three Crew Members (track laborers)—organized under 69 Roadmasters.

Each crew is responsible for day-to-day maintenance of the track in a defined territory averaging 59 track miles.[419] They perform various tasks in connection with routine track maintenance, such as repairing detected rail defects, replacing missing/broken joint bars and bolts, replacing failed tie plates/insulators/clips, replacing occasional defective ties at critical locations such as joints, switch points, and frogs, removing snow/ice from switches, replacing/repairing damaged signs, correcting minor drainage problems, removing fallen rock and trees, and repairing minor high water damage to track, and maintenance of yard and other tracks in the area.

The ratio of 59 track miles per track maintenance crew is similar to the 65 track miles per crew found reasonable by the Board in the *AEPCO 2011* case, and the 55 track miles per crew found reasonable in the *WFA I* case[420], suggesting the NS MOW Experts' plan for track maintenance crews is within the range that the Board has found to be realistic for a least-cost

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[419] *See* NS Reply WP "Exhibit III-D-3 NS DRR MOW.xlsx, Tab "Analysis of MOW Workforce."

[420] *AEPCO 2011* at 68; *WFA I* at 58..

most-efficient SARR. While the track-mile-per-crew ratio is instructive, it significantly understates the actual efficiencies assumed in the NS MOW Experts' plan, for under the NS plan the DRR's MOW forces will maintain an additional 749 miles of hump yard track and 1,311 switches not included in the ratio. Indeed, the NS MOW Experts' estimate should be recognized as even more conservative, because the DRR faces the following additional environmental challenges that increase the workload and decrease the feasible length of the maintenance territory for a track crew.

First, the DRR is situated in an area with four times the rainfall of the area in which the *AEPCO 2011* SARR was situated.[421] This factor aggravates almost every element of track maintenance. For example:

- More track smoothing is required due to the higher moisture content and resultant lower strength of the track and subgrade.
- Rail welding cannot be performed in the rain.
- Muddy roads and slippery rail slow movement of crews.
- More minor drainage incidents occur regularly, and generalized high water is an annual spring event.
- The wetter climate of the east results in more vegetation and in the development of soils that are weaker and more sensitive to moisture than in the west.422

Second, the DRR is located in a more populated area than either the *AEPCO 2011* or the *WFA I* SARRs, which also increases the maintenance workload. For example:

- Populated areas have many more road crossings and yard tracks.
- Traffic can slow movement of crews

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[421] *See* NS Reply WP "DRR Environmental Factors.pdf."

[422] *Id.*

- There are many more nuisance events like trash dumping, right-of-way encroachments, and incidents at road crossings.
- Off-ROW development changes drainage patterns, causing local flooding.
- Drainage through populated areas is generally poorer and more difficult to maintain.

In short, the wetter and more populated territory in which DRR is situated both adds significant workload and creates additional impediments to crew performance.

(c) Roadway Machine Operators

Mr. Crouch provides 42 roadway machine operators for the DRR. Thirty-six are assigned to operate backhoes; one per Roadmaster district. The other six are assigned to dozers available system-wide plus additional operators for smoothing and ditching that are discussed in following sections. Like other elements of the DuPont MOW plan, the resources provided are inadequate, to the extent provided at all, and incomplete in that no provision is made for heavy material handling vehicles.

The NS MOW Experts agree that each Roadmaster would require a backhoe and operator, but have scaled up the total amount of backhoes and operators to account for the greater number of Roadmaster territories set forth above.[423] A backhoe is a key piece of equipment required by each Roadmaster, but it is not sufficient to effectively perform all roadway machinery operations. The DRR will also need more specialized equipment like track mounted dozers, excavators, and Speedswings.

- Dozers. The NS MOW Experts agree with DuPont that track mounted dozers are required and that they should be a Division, not Roadmaster resource, but disagree as to the type and number required. The NS MOW Experts provide for two crawler dozers per division and man them with 8 machine operators. These crawler dozers are unique pieces of equipment that perform functions not possible by any alternative type of equipment.

[423] *See supra* III-D-210.

- Excavators. The crawler excavators are also unique and necessary equipment. While excavators share some characteristics with Gradalls, they are more powerful in every way, but less adept at fine grading, like shaping side slopes and ditch side or bottom. They are used for excavation in situations where neither a Gradall nor a dozer is capable. The NS MOW Experts provide for one crawler excavator per division and man them with 4 machine operators.

- Speedswing. The NS MOW Experts also provide for a Speedswing and operator for each of the 8 Roadmasters headquartered at hump yards to perform tasks requiring nimble lifting.

Machine operators also are provided for smoothing and ditching crews (which are discussed below).

NS accepts DuPont's estimate that the cost of DRR MOW maintenance material would be 35% of MOW direct labor—a ratio that is based on the ratio of costs for materials, supplies, fuel and lubricants to direct labor reported by Class I railroads in their R-1s. But DuPont's MOW plan neglects to include trucks and drivers needed to transport maintenance material and machines to the locations where they would be needed on the DRR network, nor does DuPont include costs for outside contractors to perform this service. The 35% R-1-derived ratio for materials costs does not account for the transportation costs of either job site delivery or local transportation of material and equipment. In the experience of the NS MOW Experts, Class I railroads almost exclusively use their own equipment for this internal MOW materials and equipment transportation, and the costs of in-house trucks and truck drivers are not reflected in the R-1 line items for materials.

The NS MOW Experts have corrected DuPont's failure to account for the transportation costs of MOW materials and equipment by providing four semi-trucks and sixteen material trucks and drivers allocated equally among the divisions. The semi-trucks will move large pieces of machinery such as dozers, excavators, tampers, and ballast regulators between Roadmaster territories, and they will handle material such as rail, frogs, and other material too

large to be readily handled on material trucks. Material trucks will distribute and move routine maintenance material such as switch machines, track and switch ties, and other miscellaneous track, bridge and signal material.

(d) Welder/Helper/Grinders

DuPont provides one welding gang per DRR Roadmaster for a total of 36 Welder/Helper/Grinder crews, which is completely inadequate. DuPont justifies this staffing level by claiming that "[t]here are very few turnouts in each district compared to the real-world NS, and very few joints to maintain, so there will not be a need for much welding repair on the new DRR." *See* DuPont Opening Ex. III-D-3, at 8. However, the proper standard of comparison is not the existing NS workforce, but the actual work load of DRR. The DuPont DRR reaches 34 MGT/route mile, substantially greater than the NS average density of 15 MGT/route mile in 2009. That fact alone more than doubles the requirement for rail maintenance by welding.[424] According to DuPont, DRR consists of 10,462 miles of main track with 2,576 turnouts to maintain, which means that every gang would have to maintain 291 main track miles and 72 turnouts. Welding crews are required to perform such tasks as installing thermite-weld joints where replacement rail is installed or insulated joints are replaced; and repairing engine wheel burns, frog point maintenance, chipped rail ends, and localized rail flow problems.

The inadequacy of DuPont's welder crew staffing is demonstrated by considering the average number of field welds that each crew would have to perform. In the experience of the NS MOW Experts, well-maintained high-tonnage railroad in good condition will normally have one or two rail failures per mile per year. Conservatively assuming only one failure per mile per year on the DRR means that each DRR welder would handle 291 failures (1x10,462/36),

[424] *See* NS Reply WP "DRR System MGTM.xlsx"

requiring 582 welds per crew per year for rail failures alone, or 2.2 welds per crew each working day. One field weld requires an average of 60 minutes of uninterrupted track occupancy. On lines like the DRR designed to operate at near full capacity, with many lines handling 30 trains per day (average time between trains of 44 minutes), 60 minute work windows will be very difficult to obtain resulting in significant delay for welders. With welding territories averaging 202 route miles (7,277/36), the crew would have to travel an average of 101 miles per day, endure significant train delay, and make 581 welds for rail replacement alone, plus make two welds for each insulated joint replaced. In addition, each crew would maintain 72 turnouts and perform all other welding work on their territory. This constitutes an impossible workload for a welding crew considering that, in territory averaging almost 30 trains per day, like the DRR, a welder can make a maximum of two (2) welds per day, and often less.

As a result of this analysis, the NS MOW Experts find that the DRR track network would actually need 69 Welder/Helper/Grinder crews, one for each Roadmaster District,[425] each consisting of a two-person welding and grinding crew consisting of a welder and a welder helper. Each welding crew has a territory averaging 106 route miles with 154 main track miles with 38 switches. The crew would need to make only 308 welds per year, or 1.2 welds per day for rail replacement, leaving time available for insulated joint replacement, frog welding, and other miscellaneous welding and grinding.

(e) Rail Lubricator Repairmen

Mr. Crouch makes multiple errors in calculating the number of rail lubricators required by DRR and the staff required to maintain them. First, he determines the number of lubricators with another simplistic "rule-of-thumb" method; specifically, he calculates one lubricator for

[425] One welding crew per Roadmaster territory was the standard in both *AEPCO 2011* and *WFA I*. *See AEPCO 2011*, STB Docket No. 42113, at 69; *WFA I*, STB Docket No. 42088, at 59-60.

every 20 route miles, or 364 lubricators.[426] DRR requirements for curve lubricators are unrelated to route miles, but closely related to miles of curved track. In assuming this grossly erroneous ratio, DuPont provides lubricators on 4,437 route miles of tangent track that do not need them, and omits lubricators for 2,934 miles of multiple track where some lubricators are required. DuPont then provides one maintenance person per 400 route miles; an assumption that is as flawed as calculating lubricator requirements based on route miles.[427] Mr. Crouch's assertion that rail lubrication will carry ten miles on each side of each lubricator is also incorrect. Proper placement of rail lubricators is quite complex, but research has shown that lubricators must be spaced less than 5 track miles apart in heavy curvature.[428] A physical count of lubricators currently installed on DRR replicated lines indicates there are actually 1,652 lubricators installed on lines to be constructed and that number is included in capital costs in III-F. The NS MOW Experts provide dedicated lubricator maintenance staff in places where heavy lubricator density justifies them. In locations where there are not enough lubricators to justify dedicated staff, lubricators are included in the track maintenance crew workload. The DRR's lubricator repairmen requirements must be determined, not by some arbitrary rule-of-thumb number of lubricators per repairmen, but rather by the location, density, and accessibility of the lubricators.[429]

(f) Roadway Equipment Mechanics

The NS MOW Experts agree that one Roadway Equipment Mechanic per two Roadmaster districts is adequate, considering the quantity and type of equipment to be

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[426] *See* DuPont Opening WP "Track Construction Costs errata.xls", Tab "Summary," Cell E54.

[427] *See* DuPont Opening WP "Exhibit III-D-3 DRR MOW errata.xls," Tab "MOW Staff," Cell G30.

[428] See NS Reply WP "CP_100%_Effective_Lubrication_Initiative.pdf."

[429] *See* NS Reply WP "Line Segment Work Load Evaluation.pdf."

maintained. However, as discussed above, the DRR will need 69 Roadmaster districts, and the NS MOW Experts accordingly provided for 35 Roadway Equipment Mechanics. With 364 pieces of MOW equipment,[430] each mechanic would be responsible for about nine machines.

(g) Ditching Crews

Mr. Crouch provides for 16 ditching crews; four assigned to each division. Each crew is equipped with a Gradall or excavator, a hi-rail swivel dump truck and a conventional pick-up truck. The NS MOW Experts accept the proposed crew size and equipment per crew, but disagree about the number of ditching crews required.

Ditch cleaning is performed to keep railway ditches defined and clear so that water runoff will be effectively drained away from the subgrade. Maintaining the subgrade strength by moving water quickly away from the track is of the utmost importance (particularly on track with high tonnages), and subgrade stability depends on good drainage. As shown in NS Reply WP "DRR Environmental Factors.pdf," soils in the east are typified by red clay, which swells when wet and shrinks when dry. Therefore, a yearly ditching program is particularly critical to avoid blocked drainage and pockets of water that soften and erode the subgrade—especially in cuts and culvert locations. Ditches tend to fill up with silt, weeds, vegetation, rocks and other debris, and they can clog due to sloughing of cut slopes. The absence of regular, frequent ditch cleaning results in saturated embankments, clogged ditches, and clogged culverts, which leads to softened subgrade and resultant restrictions on train speeds, higher maintenance expense for increased surfacing or undercutting of track, and higher potential for derailments due to unstable subgrade.

Ditch cleaning is thus a cost-effective preventive maintenance procedure that reduces total costs by eliminating unnecessary subgrade repairs and surfacing cycles and avoiding

[430] *See* NS Reply WP "Exhibit III-D-3 NS DRR MOW.xlsx" for list of equipment.

derailments. Industry standards provide for a minimum maintenance width three feet at the base of the ditch. For example, the Track Cyclopedia specifies that the "minimum bottom width in earth materials should be 3 feet."[431] A ditch section of dimensions less than this standard will have inadequate capacity to contain soil erosion or rock fallout from the excavated back slope, let alone to carry water runoff through a long cut section. Side wash and silt quickly would contaminate the ballast section. In addition, in those areas in which grades are 1% or less, water flowing in an unlined ditch will have very low velocity, resulting in a small throughput capacity. Any obstruction will cause the water to stand, creating soft subgrade and reducing the roadbed's ability to withstand the heavy axle loadings. These conditions eventually will lead to a track pumping action where subgrade soils intrude up into the ballast resulting in a weak ballast section and irregular track surface, which will in turn require imposing slow orders on train operations until corrective action is taken to restore the track surface and ballast section.

DuPont alleges that most of the NS roadbed for the lines being replicated by the DRR that was observed during field inspections by Mr. Crouch's team is perched, meaning the roadbed is on fill or embankment with no parallel ditches except in cut sections. *See* DuPont Opening Ex. III-D-3 at 10 n.10. DuPont therefore concludes that most of the DRR's route does not have any ditches that need cleaning or repairing, and that sixteen two-person ditching crews would be sufficient to maintain ditches on the entire DRR System. *See id.* However, DuPont does not provide any justification or supporting documentation in its narrative regarding how the

[431] The Track Cyclopedia 10th edition, H.C. Archdeacon, Simmons Boardman Books, Inc. (relevant pages included in NS Reply workpapers).

number of sixteen ditching crews was determined or any documentation of the "field inspections" whereby DuPont supposedly determined that most NS roadbed was perched.[432]

The NS MOW Experts reject DuPont's allegation that most of the NS roadbed for the lines being replicated by the DRR is perched. Mr. Bagley is very familiar with the lines being replicated by the DRR, and he has recently hi-railed more than 2,600 miles (36%) of those lines. Based on his many years of experience maintaining these same lines and his direct recent observations, Mr. Bagley can attest that DuPont's allegation that most of the NS roadbed on the lines being replicated by the DRR is perched is not accurate.

Based on more than three decades of experience in the industry—including maintaining many of the lines being replicated by the DRR—the NS MOW Experts estimate that a two-person ditching crew equipped with a hi-rail Gradall, a hi-rail rotary dump truck, and a conventional ¾ ton extended cab pickup with 100 gallon fuel cell could, at best, adequately maintain parallel drainage ditches along about 200 route miles of main and branch main track on the DRR. The NS MOW Experts provide for thirty two-person ditching crews on the DRR, who would have the capacity to clean 6,000 miles of ditches on about 6,000 route miles[433] of the DRR system. This capacity added to the capacity provided by dozers and excavators will be adequate to clean ditches and perform miscellaneous other maintenance earth moving on DRR's 7,293

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[432] DuPont did not ask NS to allow DuPont's experts to perform any inspections of the NS right-of-way during the discovery period of this case, and NS is unaware of any "field inspections" allegedly performed by DuPont's experts.

[433] Economical railroad design depends on balancing cut and fill quantities, striving to avoid either offsite borrowing of material for embankment or spoiling excess material from cuts. Therefore there should be a rough balance between the miles of cut and the miles of fill on a railroad. As a result, 200 route miles typically will have about 2x200/2 = 200 miles of ditch. While a significant portion of every line is neither pure cut nor fill (but rather side hill cut with ditch on one side), such lines also have a typical proportion of 1 mile of ditch per 1 mile of road.

mile system, including yards. In this case, each ditching crew would have responsibility for an average of 200 route miles, which is roughly equivalent to 200 miles of ditch.

(h) Smoothing Crews

Smoothing crews provide spot smoothing and spot surfacing, and lining of track and switches to correct surface and alignment irregularities noted during visual track inspections and irregularities detected by geometry test cars operated over the track. The NS MOW Experts accept the per-gang staffing and equipment proposed by Mr. Crouch for smoothing crews and accept that approximately one smoothing crew per two Roadmaster districts is appropriate. However, because the NS MOW Experts have provided for an increase in the number of Roadmasters, a corresponding increase in the number of smoothing crews is required. As a result, the NS MOW Experts provide 34 smoothing crews for the DRR. Thirty smoothing crews would be assigned to 60 of 61 main line Roadmasters, but could be reassigned temporarily as conditions require, Four smoothing crews would be mobile system crews for use where needed, including on the main lines maintained by Roadmasters headquartered at hump yards and the yard tracks associated with the hump yard. On average, each of the 34 smoothing crews would be responsible for 308 main track miles. In addition, the smoothing crews would provide the required smoothing on the 1,660 miles of yard and interchange tracks on the DRR.

d. Communications and Signals

DuPont proposes a Communications and Signals ("C&S") staff of 219[434]. This total is less than half the number of C&S staff actually required, for three reasons. First, DuPont assumes that signal maintainers can maintain an average of 2,000 AREMA units—a number that is far above common experience in the real world and is almost double the average number of

[434] *See* DuPont Opening Ex. III-D-3, at 12.

units per maintainer found reasonable in Board decisions of past cases.[435] Second, as described more fully below in § III-F-6, the DRR signal system DuPont proposes to build has many flaws, including the fact that it has no relation to the actual DRR track configuration. As a result, the inventory of required signal equipment is incomplete and therefore the count of AREMA signal units upon which DuPont bases its signal maintainer requirements is also understated. NS has corrected the signal design for the DuPont DRR network and finds that the number of AREMA signal units should be 417,555 AREMA units, rather than the 358,722 AREMA units counted by DuPont's experts. *See infra* at NS Reply III-F-6 for a description of the inadequacies of the signal system proposed by DuPont and the NS remedies. Third, DuPont completely overlooks the General Office support staff that is necessary to operate and supervise a signal and communications system of the extent and complexity of that required by DRR. The NS MOW Experts provide remedies for these failings below.

To determine the number of communications and signal staff required for the revised DRR signal system, the NS MOW Experts performed a bottom up evaluation of each of the DRR's line segments to determine the number of signal maintainers required on each line segment and the needed number of field support personnel such as signal technicians and signal inspectors. *See* NS Reply WP "Line Segment Work Load Evaluation.xlsx." The NS MOW Experts also designed a C&S maintenance force for the eight hump yards required by DRR. The NS MOW Experts then designed a supervisory, management, and technical organization for the field and General Office to oversee the maintenance and operation of the C&S system. The resulting C&S organization comprised of 643 employees is shown in Table III-D-55 below.

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[435] For example, the Board accepted staffing of 1,250 units per maintainer in *AEPCO 2011* and 1,239 in *WFA I*. *See AEPCO 2011*, STB Docket No. 42113, at 73; *WFA I*, STB Docket No. 42088, at 63.

Table III-D-55
DRR Base Year C&S Employees and Compensation

Communications and Signals	Positions	Salary	Total Salary
AVP Communications & Signals	1	$ 115,910	$ 115,910
Superintendents of Communications & Signals	1	$ 115,910	115,910
Assistant Signal Superintendent	4	$ 109,105	436,421
Signal Inspector	38	$ 72,935	2,771,524
Signal Supervisor	38	$ 79,626	3,025,795
Terminal Supervisor C&S	8	$ 65,713	525,708
Signal Technicians – Hump	8	$ 65,713	525,708
Signalmen – Hump	48	$ 65,713	3,154,246
Signal Technician	38	$ 65,713	2,497,112
Signal Maintainers	380	$ 65,713	24,971,118
Relief Signal Maintainers	19	$ 65,713	1,248,556
CTC Center Technicians	5	$ 65,713	328,567
Communications Technicians Radio	28	$ 63,952	1,790,669
MOW Control Center Supervisor	5	$ 65,713	328,567
Director Advanced Train Control	1	$ 102,548	102,548
Engineer Train Control	1	$ 65,589	65,589
Engineer Records and compliance	1	$ 65,589	65,589
Engineer PTC Communication Systems	1	$ 65,589	65,589
Engineer Positive Train Control (PTC)	2	$ 65,589	131,178
Director C&S Engineering	1	$ 102,548	102,548
Manager Microwave and Data systems	1	$ 88,185	88,185
Coordinator Communications Control Center	1	$ 65,589	65,589
Engineer AEIs and FEDs.	1	$ 65,589	65,589
Manager Communications Systems	1	$ 88,185	88,185
Communication Engineer VHF Systems	1	$ 65,589	65,589
Communications Engineer Communications Plant	1	$ 65,589	65,589
Manager Electronic Systems	1	$ 88,185	88,185
Electronic Engineer ATC (Automatic Train Control)	1	$ 65,589	65,589
Engineer Railway Electronic Systems	1	$ 65,589	65,589
Manager Signal Design	1	$ 88,185	88,185
Administrator Grade Crossing Program	1	$ 65,589	65,589
Highway Crossing Engineer	1	$ 65,589	65,589
System Engineer	2	$ 65,589	131,178
Process Control System Engineer	1	$ 88,185	88,185
Total Signal & Communications	643		$ 43,465,666

Source: NS Reply WP "Exhibit III-D-3 NS-DRR MOW.xlsx"

The C&S organizations proposed by DuPont and NS are compared in Table III-D-56 below.

Table III-D-56
Comparison of DuPont and NS Signal Workforce

Communications & Signals	DuPont	NS	Difference
General Office	5	24	19
Division	-	4	4
Field Supervision	16	46	30
Field Worker	198	569	371
Total Communications & Signals	**219**	**643**	**424**

Source: NS Reply WP "Exhibit III-D-3 NS-DRR MOW.xlsx"

i. General Office Staff

Mr. Crouch provided for only five General Office staff for C&S, a totally unrealistic number given the requirements for operating and maintaining complex systems for failed equipment detectors, CTC control and field systems, automatic train control, automated hump yards, systems engineering and communications systems, positive train control (beginning in 2015), and electronic and electromechanical interfaces that are essential to keep these systems functioning safely and reliably. In contrast, the NS MOW Experts provide for 24 C&S General Office staff to provide operational, regulatory, technical, and system reliability services. The primary purpose and primary activities for each position are shown in NS Reply Workpaper "MOW Job Titles and Job Descriptions.pdf".

ii. Field Staff

DuPont provides for 16 signal supervisors with territory lengths averaging 455 miles, supervising an average of 11 signal maintainers. While one supervisor might reasonably supervise 11 maintainers, the 180 maintainers proposed by DuPont cannot possibly maintain the DRR C&S system as proposed by DuPont, as explained below.

In addition, DuPont fails to provide for management oversight of DRR signal supervisors. Even if 16 supervisors were adequate, they would need someone to report to at the divisional level.

The NS MOW Experts have the C&S supervisors report to an Assistant Signal Superintendent at the divisional level. There is one Assistant Signal Superintendent per division with territories averaging an ambitious 1,818 miles, each responsible for about 10 C&S supervisors.

iii. Signal Maintainers, Inspectors and Technicians

As discussed above, the 180 signal maintainers proposed by DuPont are too few (1) because the assumption that an average maintainer can maintain 2000 AREMA signal units is inconsistent with common practice and with past case decisions; and (2) because the estimate of the number of signal units to be maintained is too low. The NS MOW Experts count 417,555 AREMA units for their highly engineered signal system, 25% more than the 358,722 AREMA estimated units of the inadequate system proposed by DuPont. The fact that signal maintainer work capacity is overstated and the work load in AREMA units is understated result in DuPont providing less than half the required number of signal maintainers. DuPont also fails to recognize that signal maintainers require the support of signal technicians and signal inspectors to assist with troubleshooting and testing.

In performing their evaluation of the DRR signal maintainer workload, the NS MOW Experts examined several typical NS signal maintainer territories in an effort to understand the relationship between signal maintainer productivity, territory length and train frequency[436] and to

[436] Note that areas with high train density also have high signal density per mile and that areas with low train frequency have low signal density, often only grade crossing signals with no traffic control signals.

obtain factual information about real world productivity of signal maintainers.[437] The territories examined ranged in length from 7 to 104 route miles with traffic density of 5 to 40 trains per day. Notwithstanding the very large differences in territory length and train frequency, the differences in maintainer productivity were small, differing by only about 10%. The actual AREMA units per maintainer ranged from 896 to 1,045 and averaged 950 AREMA units per maintainer territory.[438]

Based on these real-world facts, the NS MOW Experts conservatively used a ratio of 1,100 AREMA units per signal territory to determine the required number of signal maintainers required daily and 417,555 AREMA units for the DRR system, resulting in a requirement for 380 full time signal maintainers. While the Board accepted AREMA units per territory of 1,239 and 1,250 for the SARRs in *WFA I* and *AEPCO 2011*, both figures were based on unsubstantiated opinion rather than on any objective evidence. *See AEPCO 2011*, STB Docket No. 42113, at 73 and *WFA I*, STB Docket No. 42088, at 63. In this case, however, the evidence includes a study that real-world signal maintainers maintain an average of 950 AREMA units. The fact that in past cases the Board accepted higher averages based on the evidence presented in those cases is irrelevant. *Cf. AEPCO 2011*, STB Docket No. 42113, at 58-59 (Board's acceptance of certain assumptions in past cases does not mean it will not consider evidence that different assumptions are warranted).

In addition to staffing each signal maintainer territory with a signal maintainer, there is a requirement for relief signal maintainers to replace regular signal maintainers who are off for vacation or other reasons for more than a day or two. The primary duty of a signal maintainer is

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[437] *See* NS Reply WP "Signal Maintainer Productivity.xlsx" for details of the analysis discussed in this paragraph.

[438] *See id.*

the task of making required Federal Railroad Administration ("FRA") tests in a timely manner. Proper maintenance and testing is vital in ensuring the equipment is in compliance with FRA regulations. The testing and maintaining required to meet the FRA regulations must be completed on "not to exceed" frequencies; some of which are every 30 days,[439] some of which are every 90 days, some of which are every two years and some of which every four years.[440] Failure to make and record the tests results in fines.[441] A history of failure to comply with testing requirements not only results in fines, but creates a permanent record that could imply insensitivity to safety on the part of the railroad, so it is important to keep a signal maintainer territory manned to keep the tests and inspections up to date. Beyond the regulatory imperative to comply with testing schedules, there is an operational imperative to ensure quick responses to failures of train control signals or grade crossing protection systems to avoid train delays and delays to the traveling public.

Because of the stringency of regulatory requirements and because of the importance of rapid response to train control signal failures or grade crossing signal failures, signal maintenance territories must be covered for any vacancy lasting over a day or two. The NS MOW Experts provide a modest 5% of the signal maintenance force[442] for this purpose. For all other MOW positions, vacation and other absences are covered by other regular employees.

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[439] Thirty days does not mean once a month; it means every 30 calendar days, or less.

[440] *See,* NS Reply WP "FRA Signal Test Schedule," an instruction document for NS signal maintainers that summarizes required FRA signals tests and the frequency that those test must be performed.

[441] *See* 49 C.F.R. § 234.6.

[442] Two weeks vacation per year is equal to 3.8%; the remaining 1.2% is for illness and other unexpected extended absences.

Consequently, the NS MOW Experts provide regular maintainers for 380 territories[443] and 19 relief maintainers, or a total of 399 signal maintainers.[444]

Signal Inspectors perform two year, four year, and ten year FRA mandated tests with the assistance of the Signal Maintainer.[445] These tests are beyond the qualifications of a signal maintainer and frequently require two people (inspector and the signal maintainer) to carry out. The NS MOW Experts provide for one signal inspector per signal supervisor for a total of thirty-seven signal inspectors.

A Signal Technician performs maintenance and troubleshooting on electronic signal equipment such as code units, electronic track circuits, electronic grade crossing gate controls, and data radio handling CTC signals at control points. This work is beyond the skills of a typical signal maintainer. The NS MOW Experts provide for one technician per signal supervisor for a total of thirty-seven signal technicians.

iv. Hump Yards

DRR has eight hump yards,[446] each of which requires a dedicated signal maintenance workforce. Each yard requires a C&S Terminal Supervisor and one electronic technician who maintains the processor based control system for the hump yard. This includes monitoring the system to see if any adjustments need to be made because of weather changes or other changing conditions. The technician will also troubleshoot and repair electronic equipment such as track circuit loops, the distance to couple unit, and radar systems. The position is on call when not working the normal first shift.

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[443] 417,500 AREMA units / 1,100 units per territory = 380.

[444] Relief maintainers are not included in the comparison of AREMA units per maintainer since, mistakenly, there were no relief maintainers provided in *AEPCO 2011* or *WFA I.*

[445] 49 C.F.R. Part 234, for grade crossing signs; 49 C.F.R. Part 236, for train control signals.

[446] Elkhart, Bellevue, Conway, Enola, Chattanooga, Birmingham, Linwood, and Macon.

Six signalmen are also required at each hump yard; four on first shift and two on second shift. The first shift maintains the master, group and skate retarders to ensure proper operation. To operate properly, these retarders must be checked to ensure they are in proper adjustment and can properly control the speed of the cars being humped. Allowing a car to be released at too fast a speed results in either a derailment or damage, too slow results in a stalled car that must be coupled into and pushed by a locomotive to couple with the other cars, which results in humping delays. Testing and adjusting these retarders is time consuming and if retarder brake shoes have to be replaced also very physical. Since work is generally going on in more than one location, a minimum of two men must be assigned to every "on track" project to meet FRA Roadway worker safety regulations when a track cannot be made inaccessible.[447] The two signal employees that work second shift primarily do testing and small repairs as well as troubleshoot trouble if necessary. Again, two employees are needed to meet FRA roadway worker requirements on the second shift.

v. Dispatch Center

In addition to understating the required number of Signal Maintainers and omitting Signal Inspectors and Signal Technicians, DuPont also misjudged the requirements for the maintenance of the dispatch center. Mr. Crouch provides "on call" service by a communications technician, a signal maintainer, and an IT specialist from the General Office. This is a wholly inadequate and inappropriate group of people to support the critical nerve center of railroad operations. NS accepts the on-call IT specialist and communications technician proposed by DuPont, but a single signal maintainer is wholly inadequate to maintain the dispatch center. The dispatch center requires 24/7 coverage by specialized Maintenance Technicians in the dispatch center to

[447] *See* 49 C.F.R. Part 214, Subpart C – Roadway Worker Protection.

keep signal, communications and computer equipment critical to the control of trains in operation without interruption. The NS MOW Experts provide for five technicians for the dispatch center to ensure round-the-clock coverage. The maintenance technicians also monitor the performance of the microwave system from a station in the CTC center.

vi. Communications Technicians

DuPont provides for 18 communications technicians. Sixteen are based at DRR's yards to perform radio repairs. Two are roving relief technicians. However, DuPont offers no supporting evidence that 18 technicians is sufficient for the work load or adequate for geographic coverage. DuPont's indication that the technicians are "based at the DRR's yards" is too vague to even evaluate. DuPont Opening Ex. III-D-3, at 13. Moreover, the logistics of employing two roving relief technicians on a 7,293 mile system (3,647 miles per relief technician!) are clearly not feasible. DuPont's plan is plainly inadequate for the DRR to maintain its radio equipment.

The NS MOW Experts have carefully evaluated the work load and geographical coverage requirements for the DRR, and they determined that 28 communications technicians are required. Major radio shops will be located at hump yards, where demand for service is large, as well as some major yards and crew interchange points. Some geographical areas will be serviced by nearby radio shops. Communications technicians at these radio shops will perform repair of mobile, portable, and engine radios. The number of employees at each radio shop is based on estimated work load; major yards will require more support than outlying smaller locations. The 28 technicians are located in 14 locations to assure geographical coverage. Two technicians are assigned to each radio shop to provide radio repair on a timely basis to keep train and hump delays to a minimum. Because radios will come into the radio shops for repair from outlying points, additional work will be required to handle shipping and transportation. Just this fact alone makes it impractical to have only one employee at these radio shops. These radio shops

will also be required to install and maintain company radios in DRR vehicles and work equipment. Installations are time consuming, and it would not be practical to stop all radio repairs to do the installation work. In cases such as this, two employees in each radio shop is a more efficient operation as one can be making the install while the other is making repairs.

e. Bridge & Building Department

DuPont proposes a Bridge & Building ("B&B") Department of 46 employees.[448] As was the case with both Track and C&S departments, DuPont dramatically understates the requirement for B&B resources. DuPont's assumption that one crew can cover 910 route miles is unrealistic, and it almost entirely ignores tunnels and the special maintenance requirements of movable bridges. As explained below, DRR B&B actually will require 166 maintenance employees, plus 56 bridge tenders. The specific positions and compensation levels of the NS MOW Experts' workforce for this department are shown in Table III-D-57 below.

[448] *See* DuPont Opening Ex. III-D-3, at 14.

Table III-D-57
DRR Base Year Bridge and Building Employees and Compensation

Bridges & Buildings	Positions	Salary	Total Salary
Director of Bridges & Structures	1	$ 115,910	115,910
Engineer Structures	1	$ 109,105	109,105
Asst. Engineer Structures	2	$ 88,185	176,371
Manager Eng. Services Bridges & Structures	1	$ 88,185	88,185
Clearance Engineer	1	$ 65,589	65,589
Asst. Div. Engineer - Bridges	4	$ 102,548	410,193
Bridge & Building Supervisor	8	$ 79,626	637,010
Building Maintenance Foreman	0	$ 61,091	-
Multiskilled Building Tradesmen	0	$ 52,431	-
B&B Foremen	16	$ 61,091	977,457
Multiskilled Bridge Maintenance Workers	48	$ 52,431	2,516,710
B&B Machine Operator	16	$ 58,052	928,835
Bridge Inspectors	12	$ 65,202	782,428
Bridge tenders	56	$ 61,091	3,421,101
Total	166	[redacted]	$10,228,894

Source: NS Reply WP "Exhibit III-D-3 NS-DRR MOW.xlsx"

The B&B organizations proposed by DuPont and NS are compared in Table III-D-58 below.

Table III-D-58
Comparison of DuPont and NS Bridge and Building Workforces

Bridge & Building	DuPont Opening	NS Reply	Difference
General Office	**2**	**6**	**4**
Division	**0**	**4**	**4**
Field Supervision	**4**	**8**	**4**
Field Worker	**46**	**148**	**102**
Total Bridge	**52**	**166**	**114**

Source: NS Reply WP "Exhibit III-D-3 NS-DRR MOW.xlsx"

i. General Office Staff

DuPont provides a single engineer in the General Office to perform all functions for the bridge department for a railroad that, if built, would be the fourth largest railroad in America with 163 miles of bridge structures. This is plainly unreasonable in light of the significant

amount of bridge maintenance and repair that must be managed by the General Office. In contrast, the NS MOW Experts provide a six-person General Office staff for B&B that reflects the tasks that must actually be performed. For example, the Clearance Engineer is responsible for clearing heavy, wide, and high loads across DRR's system. Although none of the DRR's bridges has a height restriction, there remain weight, height and width restrictions in the clearance envelope that must be considered, particularly in tunnels and on curved track. The NS MOW Experts also provide one Engineer Structures and two Asst. Engineer Structures[449] who check structural plans submitted by customers and others and who are responsible for the reliable operation and maintenance of DRR's movable bridges and other bridge and tunnel maintenance that require structural supervision.

ii. Field Staff

The NS MOW Experts understand that the newly constructed bridges and tunnels proposed for DRR have different maintenance requirements than the bridges that currently exist on NS. Nonetheless, new bridges and tunnels still need a workforce for ongoing maintenance, inspections, and repairs, as detailed below.

(a) B&B Supervisors

DuPont provides for four B&B supervisors, with territories averaging an impossible 1,819 miles in length. Such a long territory prohibits the B&B Supervisor from covering his territory on a reasonable frequency. The NS MOW Experts provide a more practical eight B&B supervisors with territories averaging 908 miles. While these territories would be shorter on most real-world railroads, the limited amount of work to be done and the number of crews to be supervised led the NS MOW Experts to conservatively propose unusually long territories. The

[449] These positions are allocated 50% to maintenance and 50% capital recollectable and other.

roles of the supervisors are substantially as described by DuPont. The B&B supervisors report to an Assistant Division Engineer–Bridges, who has overall responsibility for an average of 808 structures totaling 41 miles in length on his 1,819 route mile territory.

(b) Bridge Inspectors and Other Field B&B Employees

DuPont's B&B Department's field employees include four Bridge Inspectors, who perform annual bridge inspections as a part of their daily routine, four B&B Machine Operators, and eight B&B Crews that perform routine bridge, tunnel, and culvert maintenance in assigned territories averaging about 900 route miles each. Each of the B&B Machine Operators is equipped with a bridge hoist/crane. Each B&B Crew consists of a Foreman, a Welder, a Helper, and a Carpenter.

DuPont's proposed B&B field force is wholly out of proportion with DRR's requirements. First, according to DuPont's plan, each four-man B&B gang would have to maintain an average of 910 route miles of territory, 739 bridges totaling 107,336 feet in length, 8 tunnels totaling 7,654 feet, and 3,623 culverts. Even allowing for the design and age of the DRR's bridges, this is an impossible workload considering the quantity of assets to be cared for and the travel implied in a 910 mile long territory.

While little routine maintenance will be required, routine repairs and operating tasks must be performed. To name a few examples, damage will be caused by derailments and washouts; hand rails will be damaged by foreign objects falling from cars; wooden ballast retainers must be maintained; driftwood must be removed from bridges and culverts; bridge drainage systems must be kept free of debris; and movable bridges will require servicing and occasional maintenance from the outset.

To more appropriately provide for operation and maintenance of the DRR's structures, the NS MOW Experts have provided twelve Bridge Inspectors, who perform annual bridge inspections, each covering about 606 route miles, 16 B&B Machine Operators, and 16 B&B Crews, four per Division. Since the territories are so long, the B&B crew must be completely self-contained. Each B&B crew consists of a foreman, a welder, and two helpers and is equipped with a standard railroad bridge maintenance truck. A dump truck with a backhoe on a trailer accompanies the crew, in lieu of the bridge cranes provided by DuPont. The NS MOW Experts do not object to bridge cranes, but believe that putting a backhoe with each gang is more effective. (Backhoes are also less expensive than bridge cranes.) A significant part of the gang's work will consist of removing accumulated debris from the upstream side of the bridge and performing minor slope repairs and rip rapping where the backhoe can be more useful than a bridge crane. They perform routine bridge, tunnel, and culvert maintenance in assigned territories averaging about 450 route miles each.

f. Miscellaneous Administrative/Support Personnel

DuPont provides for 16 Engineering administrative and support personnel. The positions described in the MOW support organization proposed by DuPont are woefully inadequate for a railroad of the extent and complexity of the DRR. As demonstrated below, DuPont has not provided sufficient staff to manage critical tasks such as mapping and geographical information systems, accounting and budgeting, and support for real estate leases, licenses, and sales.

Table III-D-59
Comparison of DuPont and NS Design, Technical Services and Administration Workforces

All Other Management & Administration	DuPont Opening	NS Reply	Difference
Design and Construction	4	19	15
Technical Services	2	22	20
Administration & Trainees	3	41	38
Total General Office	**9**	**82**	**73**

The NS MOW Experts propose an alternative administrative support organization made up of a Design and Construction department[450] of 19 employees and a Technical Services and Administration department made up of 63 employees.

Table III-D-60
DRR Base Year Design and Construction Employees and Compensation

Design and Construction	Positions	Salary	Total Salary
AVP Engineering Design and Construction	1	$ 115,910	$ 115,910
System Engineer Design	1	$ 109,105	109,105
Design Engineer	4	$ 88,185	352,741
System Engineer Public Projects	1	$ 88,185	88,185
Utility Construction Administrative Engineer	1	$ 65,589	65,589
Public Utility Engineer	1	$ 65,589	65,589
Manager Construction	1	$ 65,589	65,589
Manager Architectural Services	1	$ 88,185	88,185
Public Project Engineer	8	$ 88,185	705,482
Total Design & Construction	19	[redacted]	$ 1,656,375

Source: NS Reply WP "Exhibit III-D-3 NS-DRR MOW.xlsx"

Design and Construction functions are essential for a railroad the size of the DRR, even if newly constructed. Many activities occurring on or around the railroad require engineering design expertise. For example, fiber optic construction, wire and pipe crossings, drainage projects, over/under railroad bridge construction, and billboard construction all require engineering review of construction plans and must be performed to the design satisfaction of the railroad and executed in a way that protects railroad operations from accident or disruption. Only 32%[451] of the time of the individuals in the Design and Construction group would be engaged in operations and maintenance activities related to customers or third parties and work

[450] *See* NS Reply WP "Exhibit III-D-3 NS DRR MOW.xls" for percent charged to operating expense.

[451] *See* NS Reply WP "Exhibit III-D-3 NS DRR MOW.xls."

that is neither capitalized nor recollectible. The remaining 68% of the department cost is allocated to capital and recollectible work. NS Reply Workpaper "MOW Job Titles and Job Descriptions.pdf" details the specific tasks that would be performed by members of the Design and Construction group.

The Technical Services Group is responsible for managerial and cost accounting, operating and capital budgets, maintenance of business information systems, mapping and geographical information systems, and support for real estate leases, licenses and sales. Over 90% of the time of the employees in this group is charged to operating expense. NS Reply Workpaper "MOW Job Titles and Job Descriptions.pdf" details the duties of each position and NS Reply Workpaper "Exhibit III-D-3 NS DRR MOW.xls" sets forth the amount of time of each position that is dedicated to operating and maintenance matters. All of the functions and services provided for in the Technical Services Group are essential to the efficient and profitable operation of a major railroad like the DRR.

Table III-D-61
DRR Base Year Technical Services Employees and Compensation

Technical Services	Positions	Salary	Total Salary
AVP Technical Services	1	$ 115,910	115,910
Director of Engineering Costs and Business Systems	1	$ 109,105	109,105
Manager - Engineering costs	1	$ 88,185	88,185
Cost Control Analyst (1 OE, 1 Cap)	2	$ 65,589	131,178
Manager - Engineering Systems	1	$ 88,185	88,185
Systems Analyst	2	$ 65,589	131,178
Joint Accounts Engineer	2	$ 65,589	131,178
System Engineer Mapping & Utilities	1	$ 88,185	88,185
System Track Analyst	1	$ 65,589	65,589
Engineer - Planning	1	$ 65,589	65,589
Asset Inventory Engineer	1	$ 65,589	65,589
Supervisor Eng Tax Reporting	1	$ 65,589	65,589
Map Engineer	1	$ 65,589	65,589
Micrographic Technician	1	$ 65,589	65,589
Geographical Information Systems Manager	1	$ 65,589	65,589
Engineer System Design - GIS	1	$ 65,589	65,589
Engineer GIS	2	$ 65,589	131,178
System Engineer - Real Estate	1	$ 65,589	65,589
Assistant Engineer Real Estate	2	$ 65,589	131,178
Director MOW Safety and Training	1	$ 88,185	88,185
Office Manager	1	$ 65,589	65,589
Management Trainees	24	$ 65,202	1,564,856
Administrative Assistant/Clerk-GO	9	$ 56,906	512,156
Administrative Assistant-Division	4	$ 56,906	227,625
	63	[redacted]	$ 4,194,170

Source: NS Reply WP "Exhibit III-D-3 NS-DRR MOW.xlsx"

i. Engineer of Programs and Contracts

DuPont provides for one Engineer of Programs and Contracts who is responsible both for implementation and monitoring of the DRR's contracts for program and other maintenance and for preparing the Engineering Department's overall budget for approval by the Vice President-Engineering and other senior management.

The NS MOW Experts accept one position for the purpose of administering programs and contracts, but on a full time basis. A single position dedicated to programs and contracts is the absolute minimum required for this function for the many contracts accounting for $34 million in expense scattered over a 7,283 mile long, high-density railroad. Budget matters are handled by others in Technical Support.

ii. Public Project Engineers

Mr. Crouch provides for four Public Project Engineers (one for each of the DRR's 4 geographic divisions) to interface with governmental agencies and other entities in handling requests for various types of public projects including rail/highway grade separations, new grade crossings, utility projects, and right-of-way encroachments. They also provide engineering expertise and support to the Roadmasters for issues related to such projects in their territories. However, Mr. Crouch provides no reporting structure or professional support for these positions.

The NS MOW Experts believe that eight positions are required to cover the network, considering the extent of the DRR system and the dozens major cities in the upper Midwest, the east coast and stretching south and west to the Mississippi River. The Public Project Engineers would each cover over 900 route miles and several major metropolitan areas. They would be in the field to perform preconstruction site visits and visits during construction to deal directly with fiber optic construction, wire and pipe crossings, drainage projects, over/under railroad bridge construction, billboard construction, right-of-way encroachments, crossings at, above and below grade. However, they must report within a professional structure that provides them with standards and professional engineering support, plan review, and design guidance. For that reason, the NS MOW Experts place these positions within the Design and Construction department.

iii. Manager of Administration & Budgets

DuPont provides for a Manager of Administration & Budgets, who interfaces with the Human Resources Department with respect to hiring MOW employees. He also assists the Engineer of Programs and Contracts in preparing the annual Engineering/MOW budget, and is responsible for the MOW payroll and monitoring/payment of contractor invoices.

The NS MOW Experts find that the tasks assigned to this single position are far greater than could be handled by any individual. Moreover, DuPont's list of management and administration tasks that must be performed is quite incomplete. To remedy this shortcoming of DuPont's plan, the NS MOW Experts eliminate the jack-of-all-trades "Manager of Administration & Budgets" position proposed by DuPont and distribute the functions to be performed by that individual to other employees in the Technical Services department described above.

iv. Managers Environmental/Safety/Training

DuPont proposes two Managers - Environmental/Safety/Training to interface with federal and state environmental authorities on compliance and monitor environmental compliance with respect to the DRR's MOW activities. DuPont proposes that they also manage the vegetation control program for the Track Department and be responsible for MOW employee training and compliance with Hazmat practices and procedures.

The NS MOW Experts find that environmental issues, with their regulatory, reporting and technical complexity, require completely different skills from safety and training. NS takes a more focused approach and places responsibility for environmental issues in an Environmental group, described above at III-D-142 to III-D-151. Administrative responsibility for MOW training and safety rests with a Director of Safety and Training reporting to the VP Engineering. This position is responsible for overseeing the overall MOW program in training and safety,

though the primary responsibility for safety rests with first line supervisors and line managers. The Director of Safety and Training is responsible for supporting the 232 managers and supervisors in securing necessary training in maintenance and safety. He also evaluates the safety performance of the MOW organization and reports to the VP Engineering regarding training and safety, and he recommends undertakings by the MOW department to improve safety and competency for the 2,234 MOW employees in the field.

v. Manager Mechanical Operations

DuPont provides for a Manager of Mechanical Operations, who is responsible for coordinating the deployment, use, and maintenance of MOW equipment. DuPont proposes that this Manager would work closely with the Director of Mechanical Services, who is part of the Vice President-Mechanical's staff (and included with the DRR's other Operating employees).[452] However, the NS MOW Experts' review of Opening Exhibit III-D-1 reveals no listing of a Director of Mechanical services and, even if there were one, his role regarding MOW equipment is not specified in DuPont's narrative.

Because DuPont has failed to identify an adequate staff to oversee the use and maintenance of MOW equipment, the NS MOW Experts provide for an appropriate MOW equipment maintenance function comprised of a Manager of Maintenance Equipment and four division supervisors of work equipment to ensure the reliable and economical operation of DRR's 342 pieces of work equipment and to supervise DRR's 35 work equipment mechanics. Each division supervisor would be responsible for an average of nine mechanics over a 1,819 mile territory.

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[452] DuPont Opening Ex. III-D-3, at 17.

vi. Water Plant and Fuel Technicians

DuPont provides for six Water Plant and Fuel Technicians responsible for maintaining and repairing water and fuel equipment systems. The position is responsible for monitoring systems and performing preventative maintenance and general maintenance as necessary.

DuPont's approach appears rooted in the 1980s when water and fuel service employees maintained these facilities. Moreover, DuPont does not specify a reporting structure for these employees or any of the ten other employees in his Admin/Support group shown in III-D-3 Table 5, leaving them all with no one to report to but the VP Engineering.

As proper operation and maintenance of pollution control facilities has become more critical and highly regulated, the maintenance and operation of these facilities has had to become more professional. NS provides for this function within the Environmental group, discussed above at III-D-142 through III-D-151. NS provides no MOW employees for this function.

vii. Other Administrative / Support Personnel

Additional administrative and support personnel are required for a fully capable MOW department. The need for an Office Manager, trainees, and administrative assistants is discussed above in the General Office section.

viii. Allocation of MOW Personnel to Operations and Maintenance Expense

DuPont allocates unrealistic amounts of time to non-operating activities. Those allocations are inconsistent with DuPont's assertion that all MOW work other than routine maintenance will be contracted out. The appropriate allocation of MOW time between operating and non-operating activity is described below and in NS Reply Workpaper "Correction of DuPont assignment of time to operating expense.docx."

The NS MOW Experts allocate a realistic portion of the time of positions in the MOW workforce to non-operating activities within the framework of a much more meticulous description of the required MOW organization. The NS MOW Experts' rationale for assigning time to operations and maintenance are discussed below.

The great majority of positions in the NS MOW Experts' MOW workforce are engaged entirely in maintenance and operations of the railroad. However, a few essential positions are engaged in both operations and maintenance and capital and other work.[453]

The Assistant Vice President of Maintenance of Way & Structures is assigned 85% to operations and maintenance, because DRR capital maintenance is contracted out and operating management of that work is the responsibility of contractors. The remaining 15% of time of the Assistant Vice President of Maintenance of Way & Structures is involved with the identification of necessary capital projects and ensuring the results meet DRR specifications. Like the Assistant Vice President of Maintenance of Way & Structures and for the same reasons, 85% of the time of the Chief Engineer–Maintenance of Way and Structures is allocated to operations and maintenance. The Director of Bridges and Structures is allocated 70% to operating expense based on the allocation of the staff reporting to him. Likewise, the Engineer Structures is allocated 50% to operating expense, and one of the two Assistant Engineers of Structures is allocated fully to operating expense[454] while the other is entirely allocated to non-operating activities. The AVP Communications and Signals and the Superintendents of Communications

[453] Only positions that are fully or significantly engaged in operations and maintenance of the infrastructure are included in the NS MOW workforce. Positions that would be fully dedicated to capital and recollectable work are not included in the NS MOW workforce. The NS MOW Experts' MOW plan provides for all non-routine infrastructure maintenance work to be contracted out, as does the DuPont plan.

[454] Oversight of the reliable operation and routine maintenance of movable bridges, review of project plans submitted by customers, design of structural repairs due to storm or other damage to structures and other operating and maintenance tasks are operating expense.

and Signals are respectively allocated 99.8% and 100% to operating expense in accordance with allocation of time of employees reporting to them. The Manager Signal Design is 55% allocated to operating expense based on the allocations of the positions reporting to him.

The Assistant Vice President Engineering Design and Construction is 36% allocated to operating expense based on the allocations of the positions reporting to him. The System Engineer Design and the Design Engineers are 10% allocated to operating expense, for not all of their time can be recovered from capital projects. The System Engineer Public Projects is 46% allocated to operating expenses based on the allocations of the positions reporting to him. The Utility Construction Administrative Engineer is 85% allocated to operating expense because he represents the railroad in negotiations and planning of a myriad of potential projects, many of which never come to fruition. His activities are part of the normal operational costs of the railroad. The Manager of Construction, Project Engineers, and Manager of Architectural Services are each allocated 25% to operating expenses because much, but not all, of their time is capitalized or recollected from others. The Engineers Public Improvements Bridges and Structures are 50% capitalized because their time is associated with improvements that often benefit the railroad and their time is often provided as an "in kind" contribution.

The Assistant Vice President of Technical Services is allocated 96% to operating expense based on the allocations of the positions reporting to him. The Director of Engineering Costs and Business Systems is 67% allocated to operating expense based on the allocation of the positions reporting to him. The Manager of Engineering Costs and his two direct reports are allocated 50% to operating expense; one Cost Control Analyst is allocated entirely to capital and one to operating expense.

The remaining positions are fully engaged in operations and maintenance of the railroad. *See* NS Reply WP "MOW Job Titles and Job Descriptions.pdf" for details of principal purpose and principal duties of positions.

Overall, the General Office workforce is allocated 86% to operating expense. If all positions were included that are entirely devoted to capital or recollectable work, the percentage charged to operating expenses would be substantially lower than 86%. However, only those positions that are materially engaged in operations and maintenance are included in the MOW workforce plan.

g. Non-Program MOW Work Performed by Contractors

DuPont provides for the outside contracting of some MOW work. The NS MOW experts generally accept this approach, but correct the costs as detailed below. The costs associated with the contract work performed in these areas of maintenance are summarized in Table III-D-62 and described below.

Table III-D-62
DRR Base Year Contract Maintenance Expense

Contract Service	NS Reply	DuPont Opening	Difference
Geometry Testing	$5,080,447	$1,955,797	$3,124,650
Rail Flaw Detection Testing	$2,402,989	$3,653,070	($1,250,081)
Rail Grinding	$7,993,078	$5,568,260	$2,424,818
Yard Cleaning	$1,893,091	$959,400	$933,691
Vegetation Control	$9,969,433	$4,278,546	$5,690,887
Major Bridge Inspection Cost	$935,379	$165,382	$769,997
Ballast Cleaning	$1,866,775	-	$1,866,775
Re-Paving Crossings	$2,060,240	$2,060,240	$0
Snow Removal	$750,000	$325,000	$425,000
Storm Debris Removal	$250,000	$100,000	$150,000
Washouts	$500,000	$100,000	$400,000
Environmental Cleanup	$100,000	$100,000	$0
Annual Average Clearing for Wrecks	$6,169,106	$2,521,178	$3,647,928
Annual Average Derailment Cost	$11,339,799	$2,386,642	$8,953,157
Annual Bridge Maintenance	$380,000	$120,000	$260,000
Annual Building Maintenance Cost	$719,782	$719,782	$0
Communications System Maintenance	$4,124,965	$4,124,965	$0
Total	$56,535,084	$29,138,262	$27,396,822

Source: NS Reply WP "Exhibit III-D-3 NS DRR MOW Plan.xlsx"

h. Planned Contract Maintenance

The NS MOW Experts accept DuPont's assumption that DRR would contract out track geometry testing, ultrasonic rail testing and rail grinding services and that these are necessary functions. The NS MOW Experts disagree about the quantities of testing to be performed and the unit cost of performing the tests, as described below.

i. Track Geometry Testing

DuPont uses a cost of {{ track mile tested, which it asserts is based on data provided by NS in discovery.[455] However, the rate on which DuPont relies is not a rate for outside contracting; on the contrary, it is only the out-of-pocket costs incurred by NS for the operation of NS-owned testing equipment in 2010. As Mr. Crouch plans to contract out

[455] DuPont Opening Ex. III-D-3, at 20.

geometry testing, the correct rate for track geometry testing is the contract rate for testing by the Holland Company of {{ }}/track mile tested.[456]

DuPont provided no documentation in support of its proposed number of miles by density class so it is impossible to confirm the calculated miles of track geometry testing. The NS MOW Experts have created an alternative geometry testing plan based on NS's revised network and tonnage as shown in NS Reply WP "III-D-3 NS DRR MOW.xlsx," Tab "Geometry Testing - Reply." The NS MOW Experts accept Mr. Crouch's testing frequency of annual testing for lines with 5-30 MGT, testing every 6 months for lines of 30-60 MGT, and testing every four months for lines over 60 MGT.

ii. Ultrasonic Rail Testing

The NS MOW Experts accept Mr. Crouch's use of { } per mile for ultrasonic testing, but reject his calculation of testing quantities. The methodology evident in the opening workpaper[457] does not conform to the Opening Narrative nor the requirements of 49 C.F.R. § 213.237 - Inspection of Rail. DuPont seems to have erroneously replicated its approach to geometry testing in its calculation of ultrasonic rail testing requirements.

The NS MOW Experts have calculated testing frequency and resultant miles of required testing in conformance with FRA regulations[458] in Reply workpaper "Exhibit III-D-3 NS MOW Plan.xlsx," Tab "Rail Flaw Testing-Reply." The NS MOW Experts have created an alternative analysis of testing requirements that conforms to FRA regulations.

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[456] *See* DuPont Opening WP "Exhibit III-D-3 DRR MOW errata.xls," Tab "Ultrasonic Testing."

[457] *See* DuPont Opening WP "Exhibit III-D-3 DRR MOW Plan errata.xls," Tab "Ultrasonic Testing."

[458] 49 C.F.R. § 213.237.

iii. Rail Grinding

The NS MOW Experts accept DuPont's policy to grind rail every 60 MGT for tangent track, with one pass for tangent rail and rail in curves less than 3 degrees, and two passes for curves equal to or greater than 3 degrees. The NS MOW Experts also accept DuPont's rail grinding unit cost per track mile of { }. However, the NS MOW Experts reject DuPont's suggestion that premium rail in sharp curves does not need to be ground before 100 MGT. This assertion does not comport with published research on good rail maintenance practice.[459] The NS MOW Experts have calculated required rail grinding miles using a grinding frequency of 25 MGT for curves 3 degrees or more where annual gross tonnage is greater than 20 MGT, 30 MGT for all other curves, and 60 MGT for tangent track, consistent with best practice recommendations.[460] *See* NS Reply WP "Exhibit III-D-3 NS DRR MOW.xls," Tab "Rail Grinding – Reply" for details.

DuPont's proposal to capitalize rail grinding costs squarely conflicts with Board precedent and NS practice. In *WFA I*, the Board accepted treatment of the cost of rail grinding as an operating expense, notwithstanding the complainant's argument that it should be capitalized because it extends rail life.[461] The Board reaffirmed the practicality of expensing rail grinding in *AEPCO 2011*.[462] DuPont is factually incorrect in stating NS capitalizes rail grinding. NS charges rail grinding to operating expense.[463] Accordingly, NS includes annual rail grinding in

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[459] *See, e.g.*, Peter Sroba, National Research Council of Canada, "Rail Grinding Best Practices," 2003, p. 11, *available as* NS Reply WP "Rail Grinding Best Practices.pdf."

[460] *Id.*, Table 3.

[461] *See WFA I*, STB Docket No. 42088, at 71.

[462] *See AEPCO 2011*, STB Docket No. 42113, at 77.

[463] *See* NS Reply WP "Rail Grinding SEC Letter" (NS response to SEC inquiry stating that NS does not capitalize rail grinding costs and that "[w]e expense . . . all costs for rail grinding and

DRR annual MOW operating expense. DuPont provides no justification for its decision to depart from Board precedent, and its failure to do so requires rejection of its arguments. *See SAC Procedures*, 5 S.T.B. at 446 ("the parties to SAC cases are cautioned not to attempt to relitigate issues that have been resolved in prior cases. Unless new evidence or different arguments are presented, we will adhere to precedent established in prior cases.").

iv. Yard Cleaning

Mr. Crouch proposes that DRR's yards be cleaned once a year in order to ensure that debris does not affect rail operations. The total annual cost for yard cleaning is $390,000 per year based on a verbal quote from ARS, a company used by Class I railroads for yard cleaning.[464]

The NS MOW Experts agree that for safety and health reasons, yard tracks must be cleaned at least annually to remove all foreign materials that fall from rail cars when cars are moved during handling operations. The NS MOW Experts also accept the daily rate of $2,600 proposed in DuPont Opening Workpaper "Exhibit III-D-3 MOW," Tab "Yard Cleaning." However, DuPont's allowance of three work days per yard is not realistic.

DuPont's workpaper on Yard Cleaning costs only allowed for three days for each yard location (one day for mobilization, one day for cleaning yard tracks, and one day for demobilization) without any consideration for the size of the yards or the level of train activity. Because DuPont claimed that its costs were obtained from a 2009 conversation with ARS Corporation, the NS MOW Experts contacted Mr. Vinnie Vaccarello, co-president of ARS Corporation, to confirm average daily production rates for its yard cleaning machines and

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shoulder ballast cleaning[] when incurred"); NS Reply WP "Rail Grinding Email" (explaining that NS does not capitalize rail grinding).

[464] DuPont Opening Ex. III-D-3, at 22.

average cost per day of the machine.[465] Using a ten-hour workday with a very liberal eight hours of productive on-track work time, and assuming only one pass over the track to adequately remove all spilled material from rail cars, Mr. Vaccarello provided an average daily yard cleaning machine production rate of approximately 10,000 track feet and a per day machine cost of approximately $2,600.00, not including fuel and lubricants.[466]

Based on this average daily production rate of 10,000 track feet, the NS MOW Experts took a more methodical and realistic real world approach to calculating yard cleaning costs. Using the 1,379[467] miles of yards for the DRR System and an average daily yard cleaning production rate of 10,000 track feet, the NS MOW Experts calculated the total annual cost of yard cleaning for the DRR to be $1,893,091.[468]

v. Vegetation Control

NS accepts DuPont's general approach to determining vegetation control needs: that DRR vegetation control costs will be a proration of NS actual 2009 costs for these cost categories. However, Mr. Crouch made several errors and omissions in his estimate of DRR's vegetation control costs. NS has corrected those errors. First, DuPont calculated average vegetation costs per route mile by dividing NS's costs by its total route miles – but it included thousands of route miles that are not maintained by NS. Specifically, DuPont's calculation is

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[465] Mr. Vaccarello explained there are many factors which affect daily production rates, *i.e.*, whether cars are readily available for loading the material removed from the track structure; the availability of yard crews or work train crews to handle rail cars for loading the material removed from the track structure; the available on-track work time for the yard cleaning machine; and the number of passes required over the track to adequately remove material spilled from rail cars.

[466] The NS MOW Experts were unable to obtain a written estimate from Mr. Vaccarello to memorialize the oral estimate cited above because of Mr. Vaccarello's recent sudden death.

[467] Excludes intermodal, auto, and bulk transfer yards.

[468] *See* NS Reply WP "Exhibit III-D_E NS DRR MOW.xlsx"

based on NS's reported total route mileage in its R-1, which was 20,623 in 2009. That number includes 4,570 miles of Class 5 track that are operated but not maintained by NS, meaning that NS operated and maintained only 16,053 route miles in 2009.[469] The NS MOW Experts correct the error, and appropriately base their calculations on NS's 2009 R-1 (since DuPont is using 2009 vegetation control costs).

Second, DuPont omitted critical categories of vegetation control. In discovery, NS provided costs for the ballast program, a program to spray the ballast section and toe-path area. This is an essential part of NS's vegetation control costs that DuPont omitted from its cost calculations and that the NS MOW Experts have included.[470]

Third, DuPont assumes that the DRR would incur little or no brush cutting costs, because spraying of construction-cleared right of way would greatly inhibit the growth of brush.[471] There are, however, some areas where herbicide brush control cannot be used, such as urban areas where there are ornamental shrubs and locations where there are crops growing. Most towns have vegetation ordinances that require brush to be maintained to a certain height. It is therefore necessary to mechanically cut portions of the route in addition to brush spraying. Without an aggressive brush spray program, it would be necessary to cut the entire route every three to four years. With a good brush spray program, brush cutting can be limited to many fewer miles per year. The NS MOW Experts estimate that the DRR would require approximately 364 route miles (five percent) of contract brush cutting annually at an average cost per route mile of { },[472] for a total annual cost of { }.

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[469] *See* Reply WP "NS 2009 R-1 Mileage Excerpt.pdf."

[470] *See* NS Reply WP "Exhibit III-D-3 NS DRR MOW.xls," Tab "Vegetation Control – NS."

[471] DuPont Opening Ex. III-D-3, at 23.

[472] *See* NS Reply WP "Exhibit III-D-3 NS DRR MOW.xls," Tab "Vegetation Control-Reply."

vi. Crossing Repaving

The NS MOW Experts accept DuPont's estimated annual costs of $2,060,240 for this maintenance task. However, the NS MOW Experts reject DuPont's assumption that all costs associated with the need for at-grade crossing repaving would be capitalized. The only activity of this work task, as described by DuPont, is to replace pavement, not to replace the entire crossing as would be the case with a capital program. When only crossing paving is done, the crossing timbers, track ties and ballast are left undisturbed by crossing paving. Hence, this is a routine maintenance function, not a function properly charged to capital.

vii. Shoulder Ballast Cleaning

DuPont omitted the essential maintenance function of shoulder ballast cleaning. While DRR will need no such work in the first three years, it will require shoulder ballast cleaning thereafter on four- to ten-year cycles.[473] Shoulder ballast cleaning removes ballast from the ends of the ties and from under the first six inches from the end of tie and cleans that ballast to ensure that water that accumulates in the ballast section has a free path to escape from the track. Shoulder ballast cleaning is a cost effective way to protect the subgrade from saturation, which is particularly important given the soils under DRR. Shoulder ballast cleaning historically has been widely practiced by eastern railroads, but seldom done by western railroads, probably because of the difference in subgrade soils and the fact that coal has always been a major eastern commodity.

Coal dust removal is a significant ballast maintenance need. Coal dust accumulates in ballast as follows. Coal is loaded in open top cars, which are loaded to capacity. The coal extends above the top of the cars, and some of it spills out in transit. This spillage falls onto the

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[473] *See* NS Reply WP "Exhibit III-D-3 NS DRR MOW.xls," Tab "Shoulder Ballast Cleaning – NS" for required cleaning cycles on DRR lines.

shoulders of the ballast section. The spillage is worse on the low side of curves due to the super elevation in the curves. As a result there is a large amount of coal in the ballast where the water should drain from the track structure. This coal and other spillage from rail cars, including airborne dirt, must be removed from the ballast to keep the ballast from becoming clogged, thereby restricting drainage of the track structure and resulting in muddy track conditions which affect the surface and stability of the track structure.

The NS MOW Experts have learned, through many years of experience, that the most economical method to clean the ballast is with the shoulder ballast cleaner. These are large machines with 30" wide ditching wheels on each side of the track. These wheels pick up all of the ballast from the ends of the ties to the toe of the ballast section. The ballast is then placed on conveyors and moved to a large screen, where it is shaken and particles less than 1" are separated from the ballast. The debris is deposited on the right of way, and the cleaned ballast is returned to the track by a conveyor system. The ballast cleaners either have a ballast regulator built into the machine or there is a ballast regulator operated as an independent machine. Most of the ballast can be salvaged in this operation. Where there is a large amount of fine material removed, it is necessary to unload additional ballast behind the operation. If the shoulder ballast cleaner is not operated on a regular cycle, the track will become contaminated with mud, which causes geometry defects, increased maintenance costs, and potential for derailments. Once the ballast gets in this condition, the track must be undercut and all the ballast replaced with new ballast.

DuPont completely misjudged the need for shoulder ballast cleaning on the DRR, alleging that shoulder ballast cleaning was not applicable for new construction.[474] On the

[474] *See* DuPont Opening WP "Exhibit III-D-3 DRR MOW errata.xls," Tab "Totals," Cell B35.

contrary, for the reasons described above a Class 1 railroad carrying coal over DRR's terrain and soils would require an annual program for shoulder ballast cleaning to adequately maintain the track structure of the 10,639 miles of main and branch main track.

To establish reasonable annualized shoulder ballast cleaning program requirements and associated costs for the DRR, the NS MOW Experts first determined what DRR lines would require ballast cleaning, and how often cleaning would be required. After considering factors like density and the amount of coal transported over particular line, the NS MOW Experts divided the DRR's line segments into four categories: (1) lines requiring ballast cleaning every four years; (2) lines requiring ballast cleaning every five years; (3) lines requiring ballast cleaning every ten years; and (4) lines that do not require shoulder ballast cleaning. The result of this analysis was a conservative estimate that the DRR would require shoulder ballast cleaning on an average of 2,260 track miles of main and passing siding miles annually.[475] To determine the costs for shoulder ballast cleaning, the NS MOW Experts investigated NS's use of outside vendors specializing in this type of maintenance activity. {{

}}[476] Using the hourly contract rates for shoulder ballast cleaning in the 2002 contract with {{ }}, escalated to 2009 costs of {{ }} per 10 hour day, the NS MOW Experts calculated a very conservative annualized cost of $1,866,775 for shoulder ballast cleaning on the DRR. The cost per pass mile cleaned is a very conservative {{ }}.

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[475] *See* Reply WP "III-D-3 NS MOW Plan.xlsx," Tab "Shoulder Ballast Clng – Reply."

[476] The NS MOW Experts do not believe the NS 2010 unit cost of {{ }} is representative of average shoulder ballast screening costs for a least-cost, most efficient SARR. Accordingly, they have not relied on this figure and have instead created a shoulder ballast screening program with a substantially lower unit cost of {{ }}/mile.

viii. Equipment Maintenance

Heavy maintenance of company leased equipment is contracted out, although the DRR has 18 in-house mechanics that perform routine maintenance and repairs to the basic equipment used by the field track forces. The equipment that is partially maintained by contractors includes hi-rail trucks, dozers, Gradalls and backhoes, ballast regulators, tampers, air compressors, and certain power hand tools. The DRR's mechanics are prepared and equipped to perform preventive maintenance and straightforward repairs to this equipment. The NS MOW Experts accept DuPont's proposal that the cost of annual maintenance of the DRR's equipment would be five percent of its purchase price. The NS MOW Experts calculate the annual maintenance cost of the DRR's equipment to be $11,898,144.

ix. Communications System Inspection and Repair

The NS MOW Experts accept DuPont's proposal that communications system maintenance would cost two percent of the equipment's cost. This maintenance cost has been adjusted to account for the different communications systems values set forth below in NS Reply § III-F.

x. Bridge Inspections

DuPont's evidence on the cost of contracting bridge inspections is flawed in several respects. First, DuPont's proposal that bridges be inspected "on a five-year cycle" is irreconcilable with FRA regulations. The FRA mandated "Bridge Management Program" set forth at 49 C.F.R. § 237.101 requires that all railroad bridge structures be inspected annually. That requires that an inspector have the ability to see the components and examine them closely. That standard cannot be met on many bridges without a Snooper truck inspection. Snooper trucks are specially designed with positional platforms and baskets that allow inspectors to examine the underside of the bridge structure.

Second, DuPont's list of "Major Bridges" needing inspection omits 65 major bridges that would require the use of a Snooper truck for inspection.

Third, on the 30 bridges that it does properly identify as requiring inspection, DuPont incorrectly claims that the entire length of each bridge would requiring inspection utilizing a Snooper truck. In fact, a Snooper truck is not required for the entire spans of many major bridges. For example, the Lake Pontchartrain bridge is 30,733 feet in length, but because most of the structure is approximately 12 feet above water level the majority of the bridge does not lend itself to inspection utilizing a Snooper truck. The only portion of the Lake Pontchartrain bridge that warrants Snooper truck inspection is an elevated 217' lift span. The NS MOW Experts have corrected DuPont's errors in reply workpapers that reflect the location and length of each bridge, the number of tracks at each location, and the length of bridge that would require contractor inspection utilizing a Snooper truck.[477]

DuPont's MOW witness indicates that he relied on information in DuPont Opening Workpaper "MOW - MAJOR BRIDGE INSPECTIONS.pdf" to calculate the estimated cost of {$4.67} per foot of bridge inspection. However, notations on the face of the work paper calculate a different cost. Moreover, only the cost of equipment rental, per diem and travel is itemized on the bill; there is no cost for the professional services of the bridge inspectors. Consequently the source cited by DuPont is unreliable.

The NS MOW Experts obtained estimates from two reputable qualified companies (C&S Companies, and HDR Engineering) for bridge inspection services utilizing a Snooper truck. C&S was the least expensive.[478] Using the C&S quote as a basis, the NS MOW Experts then applied an average cost of $7.75 per track foot of bridge length for contractor inspection, which

[477] *See* Reply WP "III-D-3 NS DRR MOW Plan.xlsx," Tab "Bridge Inspection – Reply."

[478] *See* Reply WP "C&S Bridge Inspection Quote.pdf"

is based on a total of 120,694 track feet of bridges. The annual cost of inspecting Major Bridges on the DRR using contracted inspections is $935,379.[479]

xi. Building Maintenance

The NS MOW Experts accept DuPont's assumption that the cost of building maintenance would be two percent of total building costs. This maintenance cost has been adjusted to account for the different building values set forth in NS Reply III-F.

i. Unplanned Contracted Maintenance

i. Snow Removal

DuPont proposes an unsubstantiated estimated expense of $325,000 per year for contract snow removal, but provides no documentation supporting a conclusion that such an estimate is reasonable.[480] The NS MOW Experts—both of whom have both held senior track maintenance positions and had budgetary responsibility on railroads similar to DRR—concluded that this cost was far too low given the weather conditions on the DRR's lines. *See* NS Reply WP "DRR Environmental Factors.pdf." The NS MOW Experts believe that DRR snow removal costs would exceed $750,000 annually.

ii. Storm Debris Removal

Following high water and other storm events, storm debris will be left on the DRR track or against the upstream side of bridge structures. The southeastern part of the U.S. is particularly prone to this kind of damage. DuPont provides an unsupported estimate of $100,000 contractor expense for storm debris removal. *See* DuPont Opening Ex. III-D-3, at 27. The NS MOW

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[479] *Id.*

[480] The NS MOW Experts note that the DuPont MOW expert Mr. Crouch's qualifications do not indicate that he ever served in any railroad maintenance capacity in a zone where snowfall was common.

Experts, based on Mr. Bagley's decades of experience maintaining the very lines DRR replicates, conclude that $250,000 is a conservative estimate of this expense.

iii. Building Repairs

The NS MOW Experts accept DuPont's proposal that building repairs would be subsumed in the general building maintenance cost described above.

j. Large Magnitude Unplanned Maintenance

i. Derailments

The NS MOW Experts reject both DuPont's methodology and calculation of annual cost for repairing damage resulting from derailments and the cost of clearing wrecks on the DRR. DuPont's evidence is flawed for several reasons.

First, DuPont fails to recognize that newly constructed railroads are not exempt from the risks of derailments. DuPont's allegation that "[a] new railroad constructed to modern standards is less likely to experience a major derailment then [sic] the older plant of existing railroads" implies that derailments only occur as a result of track deficiencies. DuPont Opening Ex. III-D-3, at 28. That is not accurate. On the contrary, most main track derailments are not track-related.[481] In addition, the fact that the DRR's track will be new does not make it less susceptible to track-caused derailments than railroads with well-maintained older track. Indeed, newly constructed track presents special risks for track-caused derailments, for new track is subject to differential settlement at bridge abutments, over culverts and on high fills. In short, in the experience of the NS MOW Experts, new track is not materially less subject to derailments due to track defects than older well-maintained track.

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[481] In 2011 less than 41% of NS derailments were track-related. *See* NS Reply WP "Derailment Report." Other significant causes of derailments are human error (30%), equipment issues (12.4%), and signal problems (1%).

Second, in calculating the "2009 Derailment Costs in DRR States" DuPont's experts used an incorrect number of 20,114 road miles for NS in the States in which DRR would operate. DuPont's experts again erroneously included some 4,166 road miles over which NS operates on trackage rights over other railroads in calculating the percent of SARR road route miles and the resulting 2009 derailment costs for the DRR. *See supra* III-D-252 to III-D-253.

Third, DuPont has relied on the FRA accident reporting database to estimate the cost of damages due to derailments. However, as described in FRA Guide for Preparing Accident/Incident Reports, the costs reported to FRA are incomplete. The only costs reported to FRA are the direct costs of labor and material and rental of equipment and similar costs due to the derailment. The cost of fringe benefits, all overheads, and costs for use of owned equipment are not included.[482] In addition, costs for derailments below the reporting threshold are not reported at all.

Fourth, in calculating the "Estimated 2009 Costs for Clearing Wrecks on DRR" DuPont's experts once again used an incorrect number for the Miles of Road for NS in the States in which DRR would operate. As with vegetation control, DuPont incorrectly used a figure from NS's 2010 R-1, Schedule 702, that included 4,271 road miles over which NS operates on trackage rights and has no maintenance responsibility.

A more complete accounting of derailment damage costs can be found in the NS Form R-1, Schedule 410, line 18—Road Property Damaged[483] which amounted to $13,114,000 in 2009.

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[482] FRA Guide to Preparing Accident/Incident Reports, Federal Railroad Administration Office of Safety, at 20-21 (May 23, 2011) (included in NS Reply Workpapers).

[483] The information in this line item is set forth in 49 C.F.R. Part 1201, Section 3(a)(2)(48):

> (48) Road Property Damaged—Repair of roadway property and structures, used in revenue service, and all equipment not used in revenue service, when damage is caused by derailments, collision, fire, explosions, sabotage, other casualties, and excluding damage resulting through normal operations or use; such as part

This system-wide cost can be apportioned to DRR based on total traffic handled measured in gross ton miles, since accidents are directly related to the amount of traffic moving over track, not the miles of track or miles of route. Scaling NS's 2009 actual derailment costs to the DRR's average of 2010-2018 gross ton miles[484] results in a DRR cost for derailments at 86% of NS actual cost in 2009, or $11.34 million. *See* Reply WP "Reply Derailment and Clearing Wrecks.xlsx."

Like property damage due to derailments, the cost of clearing wrecks directly relates to the number of wrecks, which directly related to the amount of traffic. NS's actual cost for clearing wrecks in 2009 was $7.15 million. Since DRR will handle an average of 86% of the tonnage handled by NS, its cost of clearing wrecks should be 86% of $7.15 million, or $6.17 million. *See* NS Reply WP "Reply Derailment and Clearing Wrecks.xlsx."

ii. Washouts

High water events are responsible for both storm debris removal expense and washouts. The NS MOW Experts reject DuPont's annual allocation of a trivial $100,000 for track structure repairs resulting from washouts. Many of the lines being replicated by the DRR are located in areas known to have experienced annually significant flooding and washouts resulting from hurricanes and extremely heavy rains. *See* NS Reply WP "DRR Environmental Factors.pdf." Based on real-world experiences in maintaining the exact same lines being replicated by the DRR, Mr. Bagley estimates that the DRR could expect to annually incur rather significant

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failures, overloads, overheating, short circuits and similar events. Part failures through normal operations are those where the resulting damage is restricted to the unit of road property which experienced the failure. When the damage extends to other units of road property, related expenses shall be charged to this function.

[484] NS 2009 gross ton miles for cars and lading were 298 billion according to Schedule 755 of NS's R-1. The DRR's gross ton miles for cars and lading will grow from 227 billion in 2010 to 288 billion in 2018, and will average 257 billion, or 86% of NS's actual gross ton miles for cars and lading in 2009.

washouts, especially in the southeast and southwest areas and the Appalachian and Piedmont regions of the DRR System. Based on Mr. Bagley's experience in having responsibility for maintaining the very lines being replicated, he estimates the DRR would experience annual costs for materials and contract services of upwards of $500,000.

iii. Environmental Cleanups

NS accepts DuPont's estimate of $100,000 for environmental cleanup.

k. Program Maintenance

DuPont's unsupported assumption that one-third of the salaries of the Vice President-Engineering and the MOW administrative/support staff should be capitalized is not reasonable in light of the limited role these employees would have in contracted program work. *See* DuPont Opening Ex. III-D-3, at 30. Since all program work on DRR is capitalized, the involvement of the General Office staff is much less than would be the case if program work were performed by railroad employees using railroad-owned equipment and using material purchased and handled by the engineering department. In particular, the only functions of the engineering department with respect to the contracted program work are to specify what work should be performed and to confirm that the work is performed according to specifications. With this reduced scope of involvement in program work, the NS MOW Experts set the allocation of the VP Engineering at 15%, rather than one-third. Supervision of the program work is performed by a small number of project managers and inspectors who are entirely charged to the capital program. The field maintenance force is not materially engaged in the contracted program work.

The correct allocations of time to program and capital work are shown in NS Reply Workpaper "Exhibit III-D-3 NS DRR MOW.xlsx," Tab "MOW Staff – NS."

i. Rail Grinding

Rail grinding expenses are discussed *supra* at B.1.d and shown in NS Reply Workpaper "Exhibit III-D-3 NS DRR MOW.xlsx." The NS MOW Experts have charged rail grinding to operating expense rather than capital.

In *WFA I*, the Board accepted treatment of the cost of rail grinding as an operating expense, notwithstanding the complainant's argument that it should be capitalized because it extends rail life.[485] The Board reaffirmed this conclusion as to the expensing of rail grinding in *AEPCO 2011*.[486] Accordingly, NS includes annual rail grinding in DRR annual MOW operating expense.

ii. Bridge Substructure and Superstructure Repair --

The NS MOW Experts accept DuPont's proposal that superstructure and substructure repairs per major bridge may be $4,000 per year. *See* DuPont Opening WP "III-D-3 MOW errata.xls," Tab "Bridge Inspection." However, the NS MOW Experts increase repair costs to account for the 65 major bridge structures that DuPont overlooked, resulting in an annual cost of $380,000.[487]

iii. Equipment

The NS MOW Experts accept the types of track maintenance equipment and highway vehicles proposed by DuPont with the following additions and exceptions.

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[485] *See WFA I*, STB Docket No. 42088, at 71.

[486] *See AEPCO 2011*, STB Docket No. 42113, at 77.

[487] *See supra* III-D-258; NS Reply WP "III-D-3 NS DRR MOW Plan.xlsx," Tab "Bridge Inspection - Reply."

Additional Vehicles and Equipment

DuPont provided no vehicle of any kind for Roadway Equipment Mechanics it employs. Consistent with long standing common practice, the NS MOW Experts have provided these workers with standard trucks equipped with a utility body to improve the mechanics' efficiency.

DuPont also failed to provide any vehicle for the smoothing gangs. The NS MOW Experts provide a flat-bed truck outfitted specially for a smoothing gang with a fuel cell to carry fuel for the equipment and miscellaneous tools and parts.

Each B&B maintenance gang has been provided with a standard B&B maintenance truck; DuPont neglected to provide specialized maintenance trucks for bridge gangs.

Assistant Roadmasters have been provided with standard track inspection vehicles rather than the hi-rail pickup. This type of equipment is standard for track inspectors.

Signal maintainers, inspectors and technicians have been provided with standard trucks normally provided with utility bodies equipped to suit their routine tasks. Maintainers in main line territories have hi-rail equipped trucks. Signal maintenance forces in hump yards do not need hi-rail trucks, and none have been provided for them .

The NS MOW Experts have provided one hi-rail Suburban for the division engineer of each division to be used on inspection trips.

The NS MOW Experts have provided one Speedswing in each of the hump yards.

The NS MOW Experts also added a 53,200 GVW MOW bridge maintenance truck, because DuPont's provision for pickup trucks with a capacity of around 8,500 GVW will not be adequate for these crews. Similar bridge maintenance trucks are the standard of equipment of bridge maintenance gangs and allow them the capacity to carry the tools and light crane necessary for their work.

Materials and Equipment Transportation

DuPont omitted any capacity to transport material and equipment to the locations on the DRR where it will be needed. The NS MOW Experts have provided two standard material handling trucks and one semi-tractor with trailer per division to assist with moving machines from place and handling large material such as rail and frogs. All MOW maintenance organizations have some capacity to transport material and equipment, but DuPont failed to provide for this essential requirement.

Monthly Rental Unit Costs For Equipment

The NS MOW Experts also accept the monthly rental unit costs proposed by DuPont except as follows.

Without explanation or support, DuPont uses a factor of 60 to convert purchase prices of all vehicles and equipment to lease rates. This methodology significantly understates lease rates, particularly for equipment with a normal life of five years or less. A comparison of Danella lease rates with NS purchase price for similar equipment shows that a purchase price to monthly lease factor of 33 more closely reflects arms-length transactions in the real world for light vehicles.[488] {

}[489]. For longer life vehicles, DuPont's factor of 60 is reasonable.

The NS MOW Experts have adopted the following factors for converting purchase prices to estimates of lease rates, depending on the gross vehicle weight (GVW) of the vehicle[490]. For light vehicles under 6,500 pounds GVW, the purchase price is conservatively divided by 36. For

[488] *See* NS Reply WP "MOW Vehicles.xlsx," Tab "Comparison of Lease vs Purchase."

[489] *See* Reply WP "MOW Vehicles.xlsx," Tab "Summary."

[490] Heavy vehicles have a longer life than light vehicles like sedans.

vehicles with GVW over 6,500 pounds up to 10,000 pounds, a factor of 48 is used; for vehicles over 10,000 pounds GVW and for work equipment, a factor of 60 is used.

The alternative lease rates shown below were either derived from (1) actual Danella lease rates provided to DuPont in discovery or (2) using actual purchase prices provided to DuPontin discovery divided by the appropriate factor to estimate monthly costs. For derivation of the lease rates applied in the paragraphs below, See Reply WP "MOW Vehicles.xlsx," Tab "Summary":

- The monthly rate on Case 580 backhoes is revised from { } which is the average rental rate for 17 backhoes rented in 2009.
- The monthly rate for trailers for backhoes is revised from { } which is the average rate for 37 trailers rented during 2009.
- The NS MOW Experts add a hi-rail Suburban at a rate of { } per month based on an average purchase price of { }
- The price for hi-rail pickups is changed from { } to { } based on the average of 31 rented hi-rail pickups in 2009 shown in data in discovery.
- The monthly price for standard pickups is changed { } based on the average of 3 rented standard rail pickups in 2009 shown in data in discovery.
- The monthly price for a sedan is changed from { } based on the average purchase price for 19 sedans of { } and a conversion factor to rent of 36 as discussed above.
- The monthly price for a track maintenance truck is changed from { } to { } based on the average purchase price for 28 track maintenance trucks of { } in 2009 and a conversion factor to rent of 60 as discussed above.

Finally, the NS MOW Experts accept the use of a Plasser 09-16 DynaCat tamper for smoothing, but the manufacturer confirms that the cost of the tamper would have been $2,000,000 in 2009.[491]

[491] *See* NS Reply WP "Plasser email confirming price of tamper.pdf"

5. Leased Facilities

DuPont heavily relies on existing NS joint use and trackage rights agreements to operate over 818.87 miles of track at 32 different locations along the DRR. DuPont Opening at III-B-2, III-C-5. DuPont asserts that it "steps into the shoes of NS" to utilize these agreements. DuPont Opening at III-C-5. However, DuPont has repeatedly misused NS's operative trackage rights agreements and claimed rights for the DRR that NS does not currently enjoy. While the DRR is permitted to step into NS's shoes, it is required to accept all the terms, conditions, and prerequisites of the trackage rights agreements. *See AEPCO 2002*, 6 S.T.B. at 328. By permitting a SARR to "step into the shoes" of the incumbent, the SARR is permitted to "have the benefit of the same opportunities *under the same terms*" as the incumbent. *Id.* DuPont has taken liberties with NS's trackage rights that result in a failure to assume the benefit of NS's agreements under their terms.

DuPont utilizes trackage rights agreements at 32 points along the DRR and repeatedly fails to abide by the terms of those agreements. DuPont has incorrectly calculated the costs associated with many of the trackage rights agreements, has utilized third party track along which DuPont does not have trackage rights, and has relied upon trackage rights in lieu of building DRR line segments that are necessary to serve all of its selected traffic. As such, DuPont has failed to account for the full stand-alone costs of serving the issue traffic. *See Coal Rate Guidelines*, 1 I.C.C. 2d 520, 542-43 (1985); *AEPCO 2002*, 6 S.T.B. at 329 ("[T]he SARR may be assumed to have the same cost-sharing arrangements as the defendant carriers have on each segment, so long as the terms of those arrangements (including operational provisions and terms of compensation) are the same as those applicable to the defendant carriers.").

During discovery, DuPont was afforded access to NS's Real Property Management System ("RPMS"), an electronic database that contains certain contracts and agreements,

including trackage rights and joint facility agreements. *See* NS Reply WP "M. Warren 6/3/2011 Letter to J. Moreno re: RPMS Access.pdf." Through RPMS, DuPont had access to NS's trackage rights and joint facility agreements. NS's records indicate that DuPont accessed 1132 unique agreements. *See* NS Reply WP "Dupont_Access.xlsx." Through RPMS, DuPont was also permitted to save and print as many documents as it chose. DuPont had ample opportunity to correctly identify and apply the correct trackage rights and joint facility agreements. Nevertheless, DuPont's evidence is riddled with assumptions that conflict with NS's agreements with other railroads.

On Opening, DuPont asserts that the DRR could operate over trackage rights on 32 individual segments for a total of $42 million. NS's analysis determined that the DRR would incur trackage rights costs totaling $74 million—an increase of 75%. As NS has illustrated in Sections III-C and III-D, because DuPont's operating expense estimates—including its trackage rights estimates—are inextricably linked to its fatally deficient Operating Plan and RTC Model simulation, there is no credible evidentiary support for its estimates. Conversely, NS's trackage rights costs are supported by its evidence. *See* NS Reply WP "Trackage Rights Costs NS Reply.xlsx." In order to correct DuPont's trackage rights expenses, NS relied on outputs from MultiRail, which identified the total volume, train miles, car miles, and car counts for each individual trackage rights segment. NS used the outputs from MultiRail, as well as NS's trackage rights agreements that apply to each individual segment, to calculate trackage rights fees. NS's trackage rights expenses are supported by its evidence and as such should be accepted as the only reliable evidence of accurate expenses the DRR would incur.

Individual line corrections are identified in NS Reply Exhibit III-C-6 and NS Reply WP "Trackage Rights Costs NS Reply.xlsx." NS recounts some of the most pervasive errors DuPont committed below.

a. DuPont Repeatedly Misapplied Trackage Rights Fees.

DuPont has repeatedly miscalculated the fees the DRR would owe other railroads for the use of trackage rights over their lines. Many of DuPont's trackage rights fee calculation errors result from the flawed methodology that DuPont employed to develop the DRR's train service. That methodology, as explained in Section III-C above, resulted in the failure to capture tens of thousands of trains that are needed for the DRR to provide complete origin-to-destination (or on-SARR junction to off-SARR junction) train service. *See* III-C-11. DuPont's failure to model these trains resulted in major "gaps" in DRR train service that affected 725,661 carloads of general freight traffic and resulted in an utterly unreliable Operating Plan and RTC Model. *See* III-C-14.

As a result of its failure to capture tens of thousands of trains and its failure to properly route traffic, DuPont repeatedly miscalculated the number of car miles that the DRR would incur over its selected trackage rights segments. For example, DuPont did not properly identify the shipments routed over CP/D&H in New York state. NS adjusted DuPont's erroneous car counts based upon NS's MultiRail analysis, and determined that the DRR would incur $8 million in trackage and haulage fees over the CP/D&H between Binghamton, NY and Rouses Point, NY. *See* NS Reply Ex. III-C-6 (segments 21 and 22); NS Reply WP "Trackage Rights Costs NS Reply.xlsx.

In addition, DuPont significantly understated the costs of trackage rights over the TRRA. Rather than build the NS proprietary tracks in that area, DuPont relied heavily on the TRRA to

route traffic over two routes in the East St. Louis, IL area. DuPont again significantly understated the number of DRR cars that would move over the TRRA. NS accepted DuPont's rate for overhead traffic over the TRRA, but applied that rate to the 1.8 million loaded and empty overhead cars that the DRR would actually move over these segments. In addition, NS accounted for the required intermediate switch fees that accrue to the approximately 23,000 cars interchanged with foreign carriers within the St. Louis Terminal District. *See* NS Reply WP "Trackage Rights Costs NS Reply.xlsx," Tab, "May Street." As such, the DRR would incur trackage rights expenses amounting to $19 million—four times more than DuPont's Opening Evidence accounts for. *Id.* The DRR also must pay 14.29% of the capital costs for construction of the TRRA segments over which it operates due to NS's 14.29% ownership interest in TRRA.[492]

Second, DuPont improperly calculated trackage rights charges for all of the Conrail trackage rights segments along the DRR. DuPont selected an NS-CSX agreement for trackage rights in downtown Philadelphia as the basis for its per car mile trackage rights fee calculations for each Conrail segment. *See* DuPont Opening WP "JFA Payables 13.pdf" at 10. The NS-CSX agreement has nothing to do with NS's trackage rights agreements with Conrail. While NS and CSX both have an ownership interest in Conrail, NS's trackage rights agreements over Conrail Shared Asset Areas are agreements with Conrail itself, not with CSX. Accordingly, NS has corrected DuPont's calculation of usage fees to reflect the DRR's usage on a car-based allocation method derived from the 2010 railroad operations fees Conrail charged to NS. *See* NS Reply Ex. III-C-6 (Segments 6, 8, and 29). NS's corrected trackage rights charges demonstrate that the DRR trackage rights expenses amount to $29.5 million. *See* NS Reply WP "Trackage Rights

[492] The requirement that DRR pay these capital costs is fully discussed in Section III-F-13.

Costs NS Reply.xlsx," tab "Conrail." The DRR also must pay 58% of the capital costs for construction of the Conrail segments over which it operates due to NS's 58% ownership interest in Conrail. *See* NS Reply Section III-F-13.

Third, while NS substantially corrects DuPont's use of trackage rights through Chicago (see part B, below and III-C-150 to III-C-152), DuPont also inappropriately applied costs to Chicago routes. Most egregiously, DuPont inappropriately valued the trackage rights segments over the BRC. The BRC operates 28 miles of mainline tracks and 300 miles of switching tracks in and around the Chicago area. *See* http://www2.beltrailway.com/. In determining the DRR's trackage rights costs over the BRC, DuPont identified NS's total BRC payments based upon 2009 invoice payments. Rather than applying those invoice payments to the actual BRC mileage used by NS, DuPont spread those payments over all BRC miles to identify an alleged "cost per mile." DuPont then applied that artificial "cost per mile" to the segment miles over which the DRR would operate. DuPont's analysis is wholly inappropriate. The DRR replaces NS in Chicago and runs over the same amount of track as NS does in the real world. The 2009 invoice payments identified by DuPont amount to the total cost for that segment utilized by NS—and thus the DRR—not for the 328 miles of the entire BRC. As such, the DRR must account for full amount of NS's invoice payments. The DRR's trackage rights expenses over the BRC amount to $1,798,890 million, the same amount that NS paid BRC in 2009. In addition, the DRR also must pay 25% of the capital costs for construction of the BRC segments over which it operates due to NS's 25% ownership interest in the BRC. *See* NS Reply Section III-F-13.

DuPont's numerous and significant errors in calculating trackage rights costs that the DRR would have to incur further illustrates the unreliability of its SAC analysis.

b. DuPont Improperly Routed Traffic Over Certain Trackage Rights Segments.

The trackage rights agreements that NS maintains with other carriers provide very specific points of ingress and egress along the trackage rights areas, as well as specific restrictions on interchange with other carriers at either end of the trackage rights area. Carriers do not permit the trackage rights user—or guest carrier—to elect when and where it will enter and exit the line. Rather, the points are specifically identified and agreed to in advance. DuPont repeatedly fails to acknowledge these restrictions in the agreements, and assumes that the DRR can enter or exit trackage rights areas at points not provided for in the agreements. DuPont also assumes that the DRR can interchange with third party carriers at the end points of various trackage rights section where not permitted by agreement. These assumptions not only ignore the agreements themselves, but are clearly contrary to the event data produced to DuPont in discovery. The specific trackage rights routing errors in DuPont's evidence are itemized *supra* in Section III-C-B-7.

c. DuPont Relied Heavily on Trackage Rights Rather than Building Necessary Track in the Chicago Area, Resulting in a Failure of Service.

DuPont routed traffic in Chicago heading north and west for interchange with the UP and BNSF on trackage rights over the BRC and the IHB instead of routing traffic over it's own lines. While the trackage rights that DuPont posits the DRR would use may be available, DuPont's failure to build NS track resulted in a failure of service for BNSF and UP interline traffic that runs through on NS lines. By failing to build the Ashland Avenue to Ogden Junction line, DuPont has not accounted for the actual route that BNSF and UP use to deliver the trains to NS,

and by connection, that would be used to deliver trains to DRR.[493] Moreover, for DuPont to avoid the NS line actually used in the real-world would represent an improper re-route of the traffic interchanged with BNSF and UP. DuPont's failure to abide by the agreements and step into NS's shoes is yet another example of DuPont's failure to posit a feasible operating plan.

As explained *supra* at III-C-147 to III-C-150, DuPont cannot assume that UP or the BNSF will modify their routing to account for DuPont's change of the route for this traffic. DuPont can "assume that the SARR would have the benefit of the same opportunities under the same terms" as the incumbent carrier. *See AEPCO 2002*, 6 S.T.B. at 328 (emphasis added). However, it may not assume that a non-defendant railroad would change its terms and routing to be more favorable to DRR. *See id.* at 328-29. As such, DuPont may not "hypothesize non-existent revenue or cost-sharing arrangements" or assume that the SARR could secure operating rights that it "could not [otherwise] unilaterally create". *Id.* Thus, DuPont cannot assume that either carrier would agree to interchange traffic destined for points on the DRR or beyond at any interchange other than that established by mutual agreement. DuPont must build the line between Ashland Avenue and Ogden Junction as that line is used to serve DuPont selected traffic that originates on the UP and the BNSF.

Because NS's model includes the Ashland Avenue to Ogden Junction line, NS has routed the vast majority of DRR traffic destined for UP over that line, as opposed to the BRC/IHB connection posited by DuPont. Running over the DRR's own lines is more efficient and will

[493] It would be disingenuous for DuPont to suggest that BNSF and UP could still use NS lines to interchange with DRR, as DuPont has claimed for DRR all of the NS revenue for traffic interchanged in Chicago.

relieve some of the cost of the trackage fees that would be incurred over the IHB and the BRC.[494] *See* NS Reply III-C-B-7; NS Reply Exhibit III-C-6.

d. Conclusion

In sum, DuPont has misused various NS trackage rights agreements. DuPont assumed rights over a large number of trackage rights agreements that NS maintains with other Class I and interline carriers. In doing so, DuPont incorrectly applied trackage rights charges to numerous routes, resulting in a conclusion of trackage rights expenses that vastly under-estimates actual costs. DuPont routed traffic in ways that is not permissible—in particular in the Chicago area. *See supra* III-C-B-7. DuPont also failed to build sufficient NS track in the Chicago area, instead relying on trackage rights that NS does not use in the regular course of business. *Id.* While these trackage rights are available for use, DuPont's failure to build NS track resulted in a failure of service for traffic originating on both the UP and BNSF that needs to be delivered to the DRR on the DRR's own lines. By failing to build the Ashland Avenue to Ogden Junction line, DuPont has not accounted for the service of this traffic. DuPont's failure to properly abide by the agreements and step into NS's shoes is yet another example of DuPont's failure to posit a feasible operating plan.

Comparatively, NS has adjusted the erroneous calculations relied upon by DuPont, resulting in total trackage rights charges of $74 million. In addition, NS has designed its operating plan to properly account for the use of trackage rights agreements and has built necessary track in Chicago to serve the DRR's selected traffic. NS's costs and operating plan are

[494] The costs actually incurred over these segments are still higher than those posited by DuPont, for many of the reasons explained above including DuPont's utter failure to properly calculate trackage rights expenses, and failure to develop an Operating Plan that serves all of its traffic.

consistent with NS's trackage rights agreements with other rail carriers and with NS's real-world operations.

6. Loss & Damage

NS accepts DuPont's methodology for calculating the DRR's annual loss and damage cost. As discussed above in Part III-A, DuPont miscalculated the off-SARR miles used to allocate revenues between the DRR and the residual NS. As loss and damage are also allocated on the basis of miles, NS corrects DuPont's inputs and calculates annual loss and damage for the DRR of $12.8 million.[495]

7. Insurance

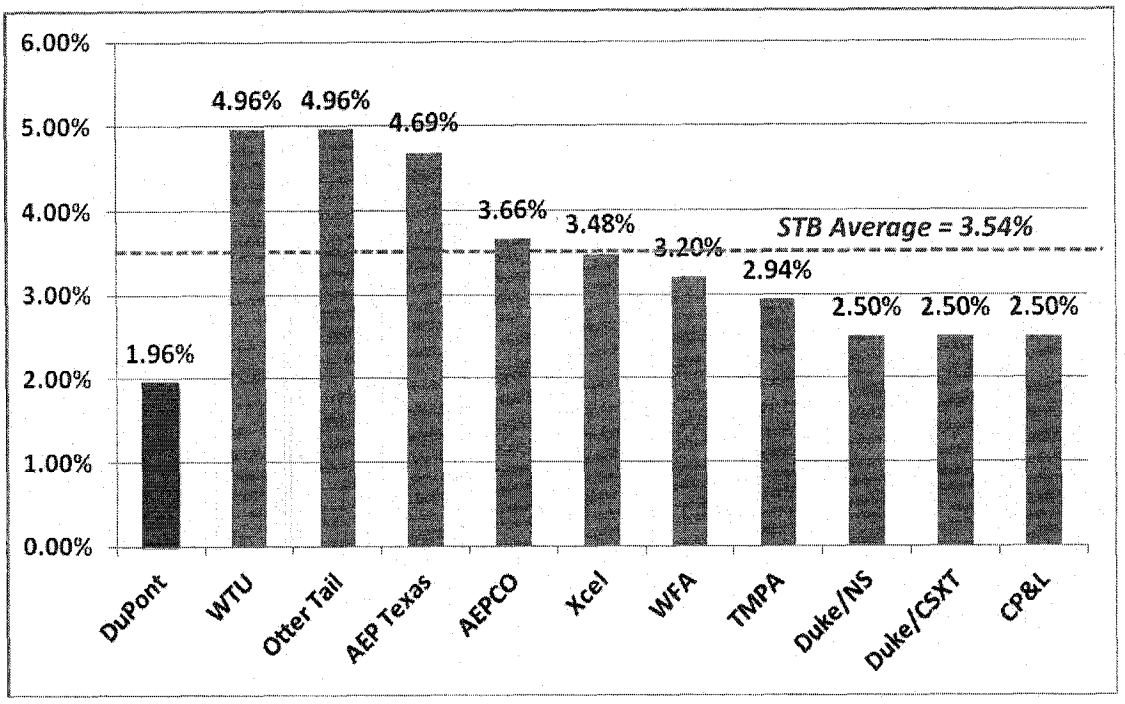
DuPont again pushes the boundaries of Board precedent by proposing unprecedentedly low insurance expenses. Indeed, it admits as much. DuPont's Opening Evidence argues that the Board has "accepted a very narrow range for the cost of insurance for the SARR," and cites cases finding insurance ratios[496] of 3.66% and 3.2%. DuPont Opening at I-55. DuPont then proceeds to propose an insurance ratio for the DRR of 1.96%—far below the "narrow range" that its evidence recognizes and lower than any insurance ratio that the Board has ever accepted. *See* DuPont Opening III-D-24. Table III-D-63 illustrates how far DuPont is departing from the "narrow range" of typical insurance expenses.

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[495] *See* NS Reply WP "DRR Loss and Damage Reply.xlsx."

[496] The Board has typically calculated SARR insurance expenses as a percentage of operating expenses. For ease of discussion, this insurance-as-a-percentage-of-operating-expense ratio is referred to as the "insurance ratio."

TABLE III-D-63
Insurance Ratios From Recent SAC Decisions[497]



DuPont achieves its unprecedentedly low 1.96% figure by (1) proposing that the DRR's insurance ratio can be based on NS's ratio; and (2) proposing that the NS ratio should be based on the single year of 2009. NS accepts the first proposal for purposes of this case. While in most SAC cases it is not reasonable to think that the SARR could achieve the same economies of scale as the incumbent, in this unique case the DRR is large enough for NS to be a reasonable benchmark of insurance expenses.

NS does not accept DuPont's proposal to use the single year 2009 as a proxy of NS's insurance ratio, for that single year is not the best evidence of the insurance ratios that the DRR could expect over the SAC analysis period. Indeed, NS's insurance ratio in 2009 was the lowest ratio that NS has seen in a decade, as Table III-D-64 illustrates.

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[497] *See West Texas*, 1 S.T.B. at 685; *TMPA I*, 6 S.T.B. at 690; *Duke/NS*, 7 S.T.B. at 166; *Duke/CSXT*, 7 S.T.B. at 471; *CP&L*, 7 S.T.B. at 305; *Xcel*, 7 S.T.B. at 665; *Otter Tail*, STB Docket No. 42071, at C-29; *WFA I*, STB Docket No. 42088, at 76; *AEP Texas*, STB Docket No. 41191, (Sub-No. 1), at 73; *AEPCO 2011*, STB Docket No. 42113, at 79.

TABLE III-D-64
NS Insurance Ratios 2002-2011[498]

Year	NS Insurance Percent of Operating Expenses
2002	3.03%
2003	3.18%
2004	2.55%
2005	3.62%
2006	2.93%
2007	2.53%
2008	2.24%
2009	1.96%
2010	2.24%
2011	2.90%

Rather than rely on the single, lowest year to select an insurance ratio for the DRR, the best evidence would be to take an average of NS's insurance costs over three years, 2009-2011. A multi-year average better reflects actual costs rail carriers pay because it avoids overstating any variables that may have affected an individual year's numbers. The Board has expressed a preference for multi-year averages over cherry-picked, single year numbers.[499] Using the three year average from 2009 to 2011 of NS's insurance costs provides a ratio of 2.36% of operating expenses. The 2.36% ratio, a more accurate reflection of real-world costs, is still an extremely

[498] *See* NS Reply WP "NS Insurance Costs.xls."

[499] *See, e.g., West Texas*, 1 S.T.B. at 713 ("Using data for a single year increases the risk that the single period is aberrational.") (calculating cost of equity); *WFA I*, STB Docket No. 42088 at 55 ("[U]se of a multi-year average is superior to using just a single year of data") (calculating Loss and Damage); *AEP Texas*, STB Docket No. 41191, (Sub-No. 1) at 107 ("[U]sing data for a single year increases the risk that the single year is an aberration.") (calculating cost of equity).

conservative number and presumes that the DRR is more efficient than any SARR in the past ten Board cases. Applying this ratio, the DRR's annual insurance cost would be $69.6 million.

8. Ad Valorem Tax

DuPont substantially understates the amount of ad valorem taxes that the DRR would be required to pay. DuPont does so by using a methodology that completely ignores how most of the states through which the DRR operates actually calculate ad valorem taxes for railroads. Instead, DuPont uses NS's 2009 taxes and route-miles to calculate a "per-route-mile" ad valorem tax expense for NS that it extrapolates to the DRR. *See* DuPont Opening III-D-24. DuPont's analysis thus rests on the assumption that the DRR will be taxed at the same level as NS (on a pro rata mileage basis). That assumption is plainly untrue. Most states tax railroad property as a function of a railroad's overall profitability as an enterprise—its "unit value"—and a SARR that is more profitable than the incumbent railroad will pay more taxes as a result. DuPont is well aware of this fact—it asked for and received in discovery thousands of pages of ad valorem tax workpapers detailing how states calculated NS's taxes—but it nonetheless chose to ignore that real-world evidence in favor of a fantasy world where the DRR does not have to pay higher taxes for being more profitable. NS's Reply Evidence adjusts DuPont's ad valorem tax calculations to account for the higher ad valorem taxes that the DRR would incur in "unit value" states by virtue of being a least-cost, most-efficient SARR with a high income value.[500]

DuPont's evidence is utterly devoid of any factual justification for its ad valorem taxation methodology. Instead, DuPont relies entirely on the fact that the method it used is similar to

[500] NS's Reply Evidence on ad valorem taxation is sponsored by NS witnesses Rick Brown and Mike Quinn. Mr. Quinn's sponsorship is limited to the factual assertions related to the ad valorem tax process at NS and how ad valorem taxes are calculated at the state level. Mr. Brown's and Mr. Quinn's statements of qualifications are located in Section IV.

methods used by parties to previous SAC cases, including *AEPCO 2011*. *See* DuPont Opening at I-71 (citing *AEPCO 2011*). But the Board's decision in *AEPCO 2011* was predicated on the specific evidence presented by the parties to that case, and in particular upon the Board's conclusion that defendants had not supported their position with anything but "unsubstantiated testimony." *AEPCO 2011*, STB Docket No. 42113, at 79. That is not the case here, where NS's evidence is supported by thorough documentation that (1) fifteen of the DRR States assess ad valorem taxation via a "unit method" that considers the value of the taxed railroad as a whole; and (2) each of these states primarily relies on an income valuation of the railroad when determining unit value for tax purposes.[501] More broadly, the fact that DuPont's evidence is similar to evidence submitted in some prior SAC cases is irrelevant to the question here, which is what the best evidence of ad valorem tax is in this case.[502] Here, the DuPont method of simply assigning the DRR a pro rata share of NS's ad valorem taxes significantly understates the ad valorem taxes that would be assessed upon an optimally efficient SARR with a high income valuation. The Board should correct this error by adopting the NS approach.

Subsection a describes how unit valuation works and demonstrates that fifteen of the DRR States use a unit valuation method for assessing ad valorem taxes against railroads. Subsection b shows that each of the DRR States that uses unit valuation primarily relies on railroad income valuations to determine a unit value. Subsection c describes the distortions that

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[501] NS accepts DuPont's ad valorem taxation calculations for the remaining five states. *See infra* III-D-282, n. 505.

[502] The Board has made clear that its determinations in SAC cases are based on the parties' evidence in each individual case—not on how the issue was decided in past cases. *Cf. AEPCO 2011*, STB Docket No. 42113, at 57-58 ("We note that our acceptance of certain G&A staffing levels in the past does not mean we will not entertain arguments that higher levels are warranted.").

would occur from using DuPont's unadjusted method and describes a simple and conservative adjustment to DuPont's ad valorem tax calculations that accounts for this unit valuation issue.

a. Unit Valuation Is the Basis for Ad Valorem Taxation In Fifteen of the DRR States.

States generally determine the market value of railroad property for tax assessment in one of two ways. The "summation method" individually values each tract of property in a state and then adds the values to derive a total value for the taxing jurisdiction. The "unit method," on the other hand, seeks to derive a single system-wide value for the railroad and then to assign a portion of that system-wide value to the particular state. *See, e.g., Norfolk & W. Ry. v. Mo. State Tax Comm'n*, 390 U.S. 317, 324 (1968). The allocation of value generally is proportional to the percentage of a railroad's property located within a state, often measured by track mileage. In unit value states, railroad property typically is centrally assessed and valued for taxation by an office of the state government, which (1) determines a unit value for the system as a whole, (2) allocates a portion of that value to the state, and (3) transmits tax assessments to the local taxing jurisdiction.

The unit method is the most common method for states to determine the market value of railroad property for tax assessment. *See Rail Abandonments – Avoidability of Property Tax Expense Under the Unit Method of Assessment*, ICC Ex Parte No. 274 (Sub-No. 20), 1989 WL 238764, at *8 n.5 (served June 5, 1989) ("at least 36 States use some form of unit method").[503] Most importantly here, fifteen of the twenty states in which the DRR operates use a unit valuation methodology to determine railroads' ad valorem taxes. Specifically, Alabama, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maryland, Michigan, Mississippi, Missouri,

[503] *See* N.Y. State Office of Real Prop. Servs., *Survey of Railroad and Utility Taxation Practices Among the States*, Table 1 http://www.tax.ny.gov/research/property/reports/rr/index.htm (demonstrating that majority of states use unit method to assess railroad property).

North Carolina, Ohio, South Carolina, Tennessee, and West Virginia are all "unit value" states.[504] Collectively, these states are referred to herein as the "DRR Unit Value States."[505] NS Reply Workpaper "Ad Valorem Tax Procedures in the DRR States.pdf" describes the unit method of ad valorem taxation in more detail and explains some of the nuances of the ad valorem taxation process in each DRR state.

In general, States applying the unit method use one or more of three approaches to estimate a railroad's unit value: the income approach, the cost approach, and the stock-and-debt approach. *See* Appraisal Institute, *The Appraisal of Real Estate* at 140-143 (12th ed. 2001); National Conference of Unit Value States, *Unit Valuation Standards* at § I.A. (available in NS Reply Workpapers) (hereafter "Unit Valuation Standards").

Income approach. The income approach assumes that a property's value is equivalent to its earnings potential. An income value for a railroad is therefore the present value of the railroad's future earnings. Appraisers using this approach typically use discounted cash flow models to estimate the current value of an income stream. *See* Unit Valuation Standards at § III. Nearly every unit value state considers some version of going-concern value when determining a railroad's unit value.[506] As discussed below, each of the DRR Unit Value States uses the income

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[504] *See id.*; *see also* NS Reply WP Folder "Ad Valorem Taxes" (tax workpapers demonstrating unit value assessment for each SARR state using unit value for appraisals).

[505] The remaining DRR states—Delaware, New Jersey, New York, Pennsylvania, and Virginia—all use variations of a summation methodology in which tax assessments are driven by the across-the-fence value of the railroad's real property and not the railroad's value as a whole. For these states, DuPont's methodology reasonably approximates the DRR's ad valorem tax liability, and NS accepts DuPont's ad valorem taxation calculations for these states. *See* NS Reply WP "Ad Valorem Tax Procedures in DRR States.pdf."

[506] *See* NS Reply WP "Survey of Railroad and Utility Taxation Practices Among the States" ("The income approach is a primary approach to valuing railroads in much of the nation").

approach. Indeed, most of the DRR Unit Value States place far more weight on income valuations than on other value indicators.

Cost approach. The cost approach is premised on the assumption that a property's value is related to its cost. Under a typical cost approach, the estimated value of the land is added to the estimated cost of reproducing all buildings and improvements on the land, minus depreciation and obsolescence. *See* Unit Valuation Standards at § II. The cost approach is considered by most of the DRR Unit Value States, although as demonstrated below states typically give more weight to the income approach in determining a railroad's unit value.

Stock-and-debt approach. Ordinary non-railroad property is often appraised using a sales comparison approach, in which the appraiser identifies similar properties that were sold in the subject property's market and uses those sales to derive a value for the subject property. *See* Appraisal Institute, *The Appraisal of Real Estate* at 297-314 (13th ed. 2008). Because the sales comparison approach is predicated on actual transactions in the marketplace, it is a persuasive indicator of value where sufficient sales data exists. But the sales comparison approach is only useful for properties that are regularly sold on the open market, and thus cannot be applied to estimate a railroad's value. A variant of the sales comparison approach, known as the stock-and-debt approach, has emerged for publicly traded corporations like railroads or utilities. Because there is "seldom available objective market evidence as to the price that railroads or public utilities would command if offered for sale, the next best alternative is the market price of the stocks and bonds of the enterprise owning the property."[507] States that use the stock-and-debt approach use the total value of a railroad's outstanding stock and debt as a means to estimate a market value. *See* Unit Valuation Standards at § IV. The stock-and-debt approach has come

[507] *See* NS Reply WP "Alfred A. Ring & James H. Boykin, The Valuation of Real Estate.pdf" at 3.

under significant criticism,[508] and several of the DRR Unit Value States do not consider this approach at all. Those that do tend to give it significantly less weight than the income approach, as demonstrated below.

b. Railroad Income Value Is the Primary Factor Considered By the DRR Unit Value States.

While the DRR Unit Value States each assess unit value in different ways, the common thread among all the DRR Unit Value States is that their unit valuations are primarily driven by the state's determination of a railroad's income value. To be sure, each DRR Unit Value State uses a combination of more than one approach to assess a railroad's unit value.[509] But an examination of the state tax workpapers demonstrates that far more emphasis is placed on the income approach.[510] For example, several states assign formal percentage weights to the competing approaches in a way that puts substantially more weight on income value. One such state is {{

}} While the weighting in most states is not so dramatically skewed toward the income approach, the income approach is typically given

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[508] *See, e.g., id.* (noting that stock-and-debt approach often yields "dubious and unreliable evidence" of value, for "[t]here is no reliable relationship between the constantly fluctuating market of stocks and bonds and tangible and intangible assets reflected by such securities.").

[509] A good example of a unit valuation assessment considering all three approaches is available in {{ }}

[510] As mentioned above, NS produced to DuPont all ad valorem tax workpapers in its possession for the DRR states for tax years 2008, 2009, and 2010. These tax workpapers—which DuPont requested in discovery but ignored when compiling its opening evidence—are included in NS Reply WP Folder "Ad Valorem Workpapers."

substantially more weight than other approaches—90% in {{ }}; 80% in {{ }}; and 70% in {{ }}

TABLE III-D-65

RELATIVE WEIGHTS TO VALUATION APPROACHES FROM STATES THAT FORMALLY WEIGH APPROACHES

	Income	Cost	Stock and Debt
{{ }}[511]	99%	1%	Not considered
{{ }}[512]	80%	20%	Not considered
{{ }}[513]	90%	5%	5%
{{ }}[514]	70%	30%	Not considered
{{ }}[515]	65%	35%	Not considered

In addition, some states that do not formally assign percentage weights to the values of the approaches give disproportionate consideration to the income value. {{

}}

[511] {{ }}
[512] {{ }}
[513] {{ }}
[514] {{ }}
[515] {{ }}
[516] {{ }}
[517] *See id.*

Moreover, it should be noted that as a general rule the income approach produces an approximation of value that is less than the results shown by other approaches. Because values derived from the income approach typically are lower than values derived from other approaches, a unit value approximation that solely relies on income value tends to understate the final unit value determination (and thus understate total tax liability).

c. A NROI Adjustment Should Be Made to Account for the DRR's Relative Income Value.

Because railroad ad valorem taxation in the unit value states is based on the state's assessment of a railroad's unit value, and because those unit value assessments are primarily driven by the state's income valuations of the railroad, there is no merit to DuPont's assumption that the DRR would be more profitable than NS and yet pay ad valorem taxes at a similar level. On the contrary, a hypothetical least-cost, most-efficient SARR operating in one of these unit value states would be required to pay ad valorem taxes at a level commensurate with its income stream.

In this case, the DRR as posited in DuPont's opening evidence has substantially higher net railway operating income on a route-mile basis than NS does. This higher income would translate into a higher income valuation and higher ad valorem taxes on a route-mile basis in the DRR Unit Value States. By assuming that the DRR would pay taxes at the same level as NS (prorated for the DRR's relative mileage in each state), DuPont effectively assumes that the DRR could operate more profitably than NS without having a higher tax burden on those increased profits. That assumption is plainly not consistent with "real-world railroading." *AEPCO 2011*, STB Docket No. 42113, at 16 ("all assumptions used in the SAC analysis must be realistic, *i.e.*, consistent with the underlying realities of real-world railroading"). In real-world railroading, as

in other commercial pursuits, part of the price one pays for higher profits is the need to pay taxes on those profits.

To account for the higher taxes the DRR would pay as a result of its increased profitability, NS's ad valorem tax experts calculated a "Unit Value Modifier" that measures the relative profitability of DRR vis-à-vis NS. This "Unit Value Modifier" is calculated by comparing the relative net railway operating income ("NROI") per route mile of NS with the NROI of the DRR per route mile. The Unit Value Modifier thus measures the extent to which the income value of the DRR would exceed the income value of NS on a per-route-mile basis. This approach is both reasonable—for income valuation is the primary driver of unit values—and conservative—for the income approach tends to produce the lowest value of the three approaches.

Using this Unit Value Modifier to adjust actual taxes paid by NS is also conservative because it ensures that the DRR is able to take advantage of all the tax exemptions and benefits that NS enjoys. Railroad ad valorem taxation is a complex field that requires substantial time from expert railroad staff who work with the various state assessors to ensure that NS receives fair treatment and that it only pays the tax owed—no more and no less. *See supra* III-D-3-C-(ii)-(d)-(6). NS's approach ensures that the DRR receives the benefit of both all applicable exemptions and tax benefits and of all the negotiations and efforts of NS's ad valorem taxation professionals, while properly incorporating the effect of the DRR's higher profitability.

NS's workpapers contain an income valuation spreadsheet that the Board may use as a model to apply the unit valuation methodology to the DRR after the Board resolves all the parties' disputes as to DRR revenue and operating expenses.

With these corrections, total ad valorem taxes for the DRR are $84,217,794.

9. Other

a. Intermodal Lift and Ramp Cost

DuPont calculated $91 million in lift and ramp costs for handling DRR intermodal shipments.[518] DuPont posited that the DRR would handle virtually all of the intermodal shipments on the NS system, yet its lift and ramp costs represent only one-half of NS's system-wide expense of $183 million for loading and unloading at intermodal terminals.[519] Although DuPont used information that NS produced in discovery, DuPont made a number of errors in estimating costs for which the DRR would be responsible. As discussed in more detail below, DuPont (1) excluded the costs of clerical staff and utilities; (2) improperly applied the cost at one facility with lower costs to another terminal where NS incurs higher costs; (3) ignored the costs for cross-town drays in Chicago; and (4) failed to include any costs for management or supervisory functions required to ensure successful operation of the facilities and coordination with the broader transportation network.

DuPont improperly excluded the costs of clerical support and utilities. NS produced materials to DuPont in discovery that demonstrate that NS clerks perform gate, billing, and computer functions at many intermodal facilities.[520] For example, those materials indicate that NS has 22 "Intermodal/TOFC Clerk" positions in Chicago. These persons handle general clerical, gate inspection, and terminal operations. Although the compensation costs for those clerks were identified in the discovery data, DuPont did not include all of the costs that NS

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[518] *See* DuPont Opening III-D-25.

[519] *See* NS 2009 R-1 Annual Report, Schedule 417.

[520] *See* NS Reply WP "Documents Produced in Discovery-III-D," document "Terminal Operations (NS-DP-HC-24879 to 24896).pdf."

incurs at each facility when calculating the lift and ramp costs.[521] By excluding the cost of clerks, and not accounting elsewhere for the services that they provide, DuPont has failed to provide for functions that are essential to support the DRR's intermodal operations. The exclusion of these activities would not only jeopardize the DRR's ability to maintain the high level of service that NS does today, but their absence would also place the DRR in violation of FRA and TSA safety and reporting rules because the clerks are responsible, among other things, for the reporting of hazardous materials and customs information. In addition to excluding the cost for the clerks that NS has at these locations, DuPont also inexplicably excluded cost codes associated with the cost of utilities for which NS is responsible.[522] To correct these errors, NS adjusts the unit cost per lift at each DRR intermodal terminal to include these clerical and utility costs.

DuPont improperly substituted the costs that NS incurs at the Erail terminal for the lift and ramp costs at the Elizabeth Marine Terminal. NS produced materials to DuPont that identify that a similar number of lifts are performed at the Erail and Elizabeth Marine Terminal ("EMT") facilities.[523] NS also produced—and DuPont included in its workpapers—the total expenses that NS incurs at each facility. For 2009, NS's costs at EMT were ${ } million, more than three

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[521] DuPont WP "DRR Intermodal Terminal and Lift Cost.xlsx" indicates that DuPont treated the ${ } million in NS expense reported to cost code "047 - WAGES CLERKS-TCU" as "not included in SARR."

[522] DuPont WP "DRR Intermodal Terminal and Lift Cost.xlsx" indicates that DuPont also excluded from its "SARR" category the ${ } million in NS expense reported to cost code "442 – ELECTRICITY."

[523] DuPont included in its workpapers NS discovery file "Intermodal Lifts.xls," that was produced at DVD-014 and identifies total lift counts for the two facilities that are within 15% of one another.

times the ${ } million at Erail.[524] However, rather than using the EMT cost figures to develop the DRR's cost for intermodal shipments at EMT, DuPont applied the lower NS costs for Erail to estimate the DRR's costs at EMT. EMT is a private facility, which results in higher contract operating expenses. NS corrects this error by applying NS's cost per lift at EMT as the basis for DRR's costs at that facility. The DRR simply cannot reduce by two-thirds NS's actual contract costs at a private facility that is beyond the DRR's control.

DuPont incorrectly assumed that the DRR would not incur costs for crosstown drays in Chicago for which NS is responsible in the real world. DuPont identified and included the costs for the "very few" DRR shipments for which the railroad would provide the dray to or from a customer's location.[525] In addition to those customer drays, there are many instances in which railroads dray containers and trailers to connecting carriers at busy interchange points like Chicago. Such "crosstown" drays occur in the middle of an interline move, in order to complete the interchange between railroads as quickly as possible to meet the service requirements of time-sensitive intermodal shipments. DuPont's workpapers include NS discovery materials showing that, in 2009, NS incurred more than ${ } million in expense for crosstown drays at four Chicago intermodal terminals on the DRR—47th Street, 63rd Street, Calumet, and Landers.[526] DuPont eliminated this "interchange & crosstown dray" expense from its lift cost calculations, and also did not include that expense when calculating the DRR's dray costs, (which included only drays to or from customers). Because the DRR fully replaces the service that NS provides in Chicago for intermodal shipments delivered to other railroads, the DRR

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[524] DuPont WP "Other Intermodal Costs.xlsx," worksheet "EMT-72525" and "DRR Intermodal Terminal and Lift Cost.xlsx," worksheet "72570-E-Rail."

[525] DuPont Opening at III-D-25.

[526] *See* DuPont WP "DRR Intermodal Terminal and Lift Cost.xlsx," reportings to cost code "684 - PS-INTM INTCHG&XTOWN DRAY."

would be responsible for providing crosstown dray services as NS does. To correct DuPont's omission, NS analyzed the 2010 waybill file that was produced to DuPont in discovery, and identified the intermodal shipments that NS forwarded to other railroads in Chicago.[527] NS determined that DuPont selected 97% of those shipments for the DRR traffic group. Accordingly, NS assigns to the DRR 97% of NS's crosstown dray expense reported for the four DRR Chicago intermodal terminals.

DuPont did not include any management or supervisory positions to oversee the operations and railroad employees and contractors. DuPont included an estimate of the payments that NS makes to intermodal facility contractors, but failed to recognize that DRR management functions would need to be performed, too. NS produced materials to DuPont in discovery that identified the management positions that NS maintains at intermodal terminals along the DRR network.[528] For example, at Atlanta's Inman facility, there is an NS Operations Manager and two NS Assistant Managers, Intermodal; at Memphis there is an NS Division Manager, who also covers Birmingham and New Orleans (all of which were included on DRR). In total, the discovery materials identified 19 Manager-level positions and 8 Assistant Managers that NS provides at intermodal terminals and yards selected for the DRR. *Id.* These managers provide on-site supervision of the contracted terminal and lift operations and ensure that NS policies and procedures are followed. In addition, they serve as a liaison between contract terminal operators and railroad transportation personnel, ensuring that the operating plan is followed and customer service commitments are met. These positions are particularly critical at intermodal terminals with high volumes, such as those in the Chicago area, that the DRR

[527] Crosstown dray services are typically the responsibility of the delivering/forwarding railroad.

[528] *See* NS Reply WP "Documents Produced in Discovery-III-D" document "Terminal Operations (NS-DP-HC-24879 to 24896).pdf."

replicates. DuPont does not explain how these supervisory functions would be covered--it neither included personnel on the DRR staff nor increased the lift and ramp cost for contractors (which would be required if DRR does not perform these functions itself). As shown in Exhibit III-D-1, NS includes 24 Manager/Assistant Manager positions at DRR terminals in the DRR's Transportation Department.[529]

When DuPont's numerous omissions and errors are corrected, the DRR's total intermodal lift and ramp cost increases to $110 million,[530] and 24 additional management and supervisory positions are included in the DRR's Transportation Department, as summarized in Exhibit III-D-1.

b. Automotive Handling Cost

Following a similar approach as it did for intermodal terminals, DuPont calculates costs of ${ } million for loading and unloading at DRR's automotive facilities.[531] NS accepts DuPont's use of the NS discovery data for the loading and unloading costs, and makes one correction. As it did for DRR's intermodal terminals, DuPont included no costs for management or supervisory functions that would be required to ensure successful operation of its automotive facilities and coordination with the broader transportation network. As DuPont has not addressed how these functions would be covered, NS adds three managers, one at each of

[529] Witness Johnson determined that, given the smaller DRR volumes at Front Royal, Huntsville, and Morrisville, the management responsibilities would not require a dedicated manager at those locations.

[530] *See* NS Reply WP "Intermodal Lift Analysis.xlsx."

[531] DuPont Opening at III-D-25.

Atlanta, Chicago, and Shelbyville, to supervise DRR's network of automotive facilities and maintain the level of service required by NS's automotive customers.[532]

c. Costs Incurred By Residual NS For New DRR-NS Interchanges

DuPont's selected traffic and network configuration combine to create dozens of new interchanges with the residual NS, including many at locations that are not existing NS crew change points. NS road crews will go on or off duty at these new interchanges when delivering trains to, or picking-up trains from, the DRR. Because these interchange locations are not existing NS crew bases or terminals, the crews will have to be taxied to/from the closest NS crew location. For example, DuPont proposes that the DRR will interchange trains with the residual NS at Secoast (near Petersburg), VA. NS's nearest crew base is in Crewe, VA, nearly 40 miles away. The STB has previously found that costs imposed on the residual incumbent by the SARR's proposed operations are the responsibility of the SARR.[533] NS identified the distance from new DRR-residual NS interchanges to the closest NS crew change location, applied the taxi cost per mile that DuPont used for DRR crews, and calculated total new NS taxi expenses of $3.2 million to include in DRR's annual operating expenses.

d. Calculation of Annual Operating Expenses

NS followed a similar process as DuPont to calculate the operating statistics for the SARR. However, rather than use DuPont's Base Year—which was premised on the first 12 months of the SARR's operations, June 2009 through May 2010— NS analyzed the full calendar year 2010 data. The DRR's full year 2010 traffic group represents the first full calendar year,

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[532] As with the DRR's managers at intermodal facilities, the three managers of automotive facilities are included in DRR's Transportation Department, summarized in Exhibit III-D-1.

[533] *See Duke/NS Reconsideration*, 7 S.T.B. at 865 ("we include in the SAC analyses the cost to retrofit locomotives of the "residual" defendant carrier . . .").

and also provides the basis for the nine subsequent years of the SARR analysis, as the 2010 figures are projected forward. In order to incorporate the results in the STB's standard operating expense format in the DCF model workpapers, NS backcasted the 2010 results to DuPont's 2009 Base Year based on the DRR's car-miles.[534] As explained in Part III-H, DRR car-miles provide a more accurate metric than ton-miles for adjusting operating expenses for changes in volume for a SARR with a diverse traffic base that has very different forecasted volume growth. DuPont's use of ton-miles overweights changes to coal traffic volumes—which NS (and others) forecast to decrease—and underweights intermodal—the lightest traffic—for which the highest volume growth is projected. In using car-miles, NS relies upon the flat-car miles for intermodal shipments, which tempers their impact more than if individual containers were used. NS applies changes in car-miles prospectively, and also applies the change between 2010 and 2009 to determine the DRR Base Year operating statistics.

[534] *See* NS Reply WP "DRR Operating Statistics Reply.xlsx."