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BEFORE THE
SURFACE TRANSPORTATION BOARD

AEP TEXAS NORTH COMPANY Complainant, v. THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY Defendant.	)	Docket No. 41191 (Sub-No. 1)

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OPENING EVIDENCE OF COMPLAINANT AEP TEXAS NORTH COMPANY

NARRATIVE
VOLUME 1 OF 2

AEP TEXAS NORTH COMPANY
1 Riverside Plaza
Columbus, Ohio 43215

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By: Timothy P. Stanley, Director,
Transportation and Marketing
David Cohen, Senior Counsel
AEP Texas North Company
155 West Nationwide Boulevard
Suite 500
Columbus, Ohio 43215

William L. Slover
Kelvin J. Dowd
Christopher A. Mills
Frank J. Pergolizzi
Daniel M. Jaffe
Karen H. Herren
Kendra A. Ericson
Slover & Loftus
1224 Seventeenth Street, N.W.
Washington, D.C. 20036

Attorneys and Practitioners

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OF COUNSEL:

Slover & Loftus
1224 Seventeenth St., N.W.
Washington, D.C. 20036

Dated: March 1, 2004

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I Counsel's Argument and Summary of Evidence

BEFORE THE
SURFACE TRANSPORTATION BOARD

AEP TEXAS NORTH COMPANY Complainant, v. THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY Defendant.	)	Docket No. 41191 (Sub-No. 1)

PART I

COUNSEL'S ARGUMENT AND SUMMARY OF EVIDENCE

In this proceeding, Complainant AEP Texas North Company ("AEP Texas") challenges the reasonableness of common carrier rates established by Defendant, The Burlington Northern and Santa Fe Railway Company ("BNSF"), applicable to the transportation of coal in unit trains of BNSF-supplied railcars from mines in the Powder River Basin of Wyoming ("PRB") to the Oklaunion Generating Station operated by AEP Texas near Vernon, Texas. The Oklaunion Station is captive to BNSF.

The challenged rates were established in a series of Pricing Letters sent by BNSF to AEP Texas and its predecessors in interest, West Texas Utilities Company and Central and South West Services Corporation ("CSW"), between June 16, 2000 and December 10, 2003, copies of which appear as Exhibits I-2 through I-4. The June 16,

2000 letter (Exhibit I-2) set a rate of $15.78 per ton for coal shipments to Oklaunion.[1] The most recent letter (Exhibit I-4) established a rate of $18.83 per ton, effective January 1, 2004.[2] All of the challenged rates were and continue to be unreasonably high and therefore unlawful, in violation of 49 U.S.C. § 10701(d)(1).

Herein, AEP Texas presents its Opening Evidence in support of the following relief: (1) a ruling by the Board that BNSF possesses market dominance over the transportation of coal from the PRB to Oklaunion, within the meaning of 49 U.S.C. § 10707; a (2) a Board determination that for all relevant time periods, the challenged BNSF rates have exceeded and presently exceed a reasonable level, and therefore violate 49 U.S.C. § 10701(d)(1); (3) the prescription by the Board of lawful maximum rates for coal transportation to Oklaunion from the origins covered by the BNSF Pricing Letters, pursuant to 49 U.S.C. §§ 10704 (a)(1) and 11701 (a); and (4) an award by the Board of reparations payable by BNSF to AEP Texas for all charges collected by BNSF pursuant to the Pricing Letters since June 16, 2000 in excess of the rates prescribed by the Board, together with appropriate interest and filing fee reimbursement.

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[1] This notice increased the previously-effective rate of $13.68 per ton, which was established on December 6, 1996. *See* Exhibit I-1.

[2] The progression of common carrier rates established by BNSF that are the subjects of AEP Texas' Complaint in this matter are set out in Tables II-A-1 and II-A-2, *infra.*

By way of example, the maximum rates which AEP Texas requests the Board to prescribe – and which plainly demonstrate the unreasonable monopoly pricing that BNSF has and continues to impose on AEP Texas – include those set forth below.

Table I-1
Maximum Rate Calculations
for Oklaunion Coal Traffic[3]

Origin	BNSF Rate Per Ton	Variable Cost	Jurisdictional Threshold	Stand-Alone Cost	Maximum Rate
Buckskin	$18.04	$6.88	$12.38	$ 9.70	$12.38
Eagle Butte	$18.83	$6.61	$11.90	$ 9.68	$11.90
Jacobs Ranch	$17.25	$6.83	$12.29	$10.23	$12.29
Black Thunder	$18.83	$6.69	$12.04	$ 9.68	$12.04
Caballo Rojo	$18.04	$7.37	$13.27	$ 9.70	$13.27
North Antelope	$18.04	$6.71	$12.08	$ 9.70	$12.08
Caballo	$18.04	$6.94	$12.49	$ 9.70	$12.49
Cordero	$18.04	$6.58	$11.84	$ 9.70	$11.84
North Rochelle	$18.04	$6.67	$12.01	$ 9.70	$12.01
Antelope	$18.83	$5.98	$10.76	$ 9.68	$10.76
Rawhide	$18.04[1/]	$6.95	$12.51	$ 9.70	$12.51

Note: [1/] Rate from Rawhide Mine in 2Q03 was $18.05 according to the Pricing Letters. Rate actually paid by AEP Texas was $13.68.

[3] Maximum rate calculations in this table are for the most recent quarter in which Oklaunion traffic moved from each origin listed. Maximum rate calculations for all origins covered by the Pricing Letters and the challenged rates are shown on Table III-H-1in Part III-H, *infra*. These include origins such as Rochelle, Coal Creek and Belle Ayr, which are covered by the letters but from which no coal was shipped to Oklaunion in 2003, the last full calendar year for which variable costs are calculated.

A. BACKGROUND FACTS

1. The Oklaunion Station

Salient background facts concerning coal transportation to Oklaunion from construction of the facility in the mid-1970s through mid-1996 are recounted in the Board's *West Texas Utilities*[4] decision, and need not be repeated here. AEP Texas is successor in interest to the original operator of the station, West Texas Utilities Company ("WTU"), and today manages and controls the ownership interest formerly held by WTU. The remaining ownership shares continue to be controlled by the Oklahoma Municipal Power Authority; the Public Utilities Board of Brownsville, TX; Public Service Company of Oklahoma; and AEP Texas Central Company (formerly Central Power & Light Company).[5] The latter two entities, like AEP Texas, are operating subsidiaries of American Electric Power Company, Inc.

2. The Oklaunion Coal Rates

In *West Texas Utilities*, the Board prescribed a maximum rate (as of 1996) of $13.68 per ton for BNSF shipments to Oklaunion from the Rawhide Mine, which at the time was virtually the sole source of coal relied upon by WTU. After BNSF complied

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[4] *West Texas Utilities Company v. Burlington Northern Railroad Co.*, 1 S.T.B. 638 (1996), *aff'd. sub nom., Burlington Northern R.R. v. S.T.B.*, 114 R.3d 206 (D.C. Cir. 1997).

[5] *See West Texas Utilities*, 1 S.T.B. at 646.

with the prescription order and at WTU's request, BNSF agreed to apply the $13.68 rate to all shipments from the PRB to Oklaunion.[6]

In 2000, WTU shifted coal sources to mines other than Rawhide. In its June 16, 2000 Pricing Letter (Exhibit I-2), BNSF established a new common carrier rate of $15.78 per ton for shipments from these non-Rawhide origins. Over WTU's protest, the Board allowed the increased rate to go into effect.[7] However, the Board also reopened the *West Texas Utilities* proceeding to hear evidence as to the reasonableness of the $15.78 rate, and directed the parties to submit a new procedural schedule to govern the reopening.[8]

Shortly thereafter, BNSF and CSW began negotiations on a global transportation arrangement that would encompass all of the BNSF-served CSW coal-fired destinations, including Oklaunion Station. In connection with these negotiations, the parties agreed not to proceed with the rate challenge for the non-Rawhide origins, and continued to apply the $13.68 per ton rate to all coal shipped from non-Rawhide PRB origins to Oklaunion.

On August 21, 2002, BNSF informed AEP Texas of its intent to increase the non-Rawhide rate from $15.78 per ton to $17.25 per ton. Consistent with the earlier

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[6] *See* Exhibit I-1.

[7] Docket No. 41191, *West Texas Utilities Company v. Burlington Northern Railroad Company,* Decision served November 7, 2000.

[8] *Id.* at 5.

agreement between the parties, AEP Texas continued to pay $13.68 for all tons pending the conclusion of the negotiations and/or the rate challenge.

This practice continued from July 2000 through the first quarter of 2003. In March of 2003, negotiations between BNSF and AEP Texas' parent (American Electric Power Company) terminated without an agreement being reached. BNSF promptly retaliated by filing a Complaint in the United States District Court of the Northern District of Texas, Fort Worth Division, seeking the collection of "underpayments" on the non-Rawhide movements for tons transported since July 2000. On April 23, 2003, BNSF also increased the rates on the non-Rawhide movements from $17.25 per ton to $18.04 per ton (Exhibit I-3). This rate, as well as the rate on Rawhide origin shipments, was increased again on December 10, 2003, from $18.04 per ton to $18.83 per ton (Exhibit I-4).

On August 1, 2003, the District Court stayed BNSF's collection action pending and in deference to the Board's resolution of AEP Texas' rate reasonableness challenge. That ruling subsequently was affirmed by the U.S. Court of Appeals for the Fifth Circuit.[9] Consistent with the District Court's order, AEP Texas has continued to pay $13.68 per ton for all tons moved from non-Rawhide origins, pending the Board's resolution of AEP Texas' challenge to the reasonableness of BNSF's rates.

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[9] *See* Exhibit A to AEP Texas' September 22, 2003 Reply In Opposition to Motion to Dismiss.

3. This Proceeding

Following the termination of negotiations between BNSF and AEP Texas' parent and the initiation of BNSF's collection suit in the District Court, AEP Texas petitioned the Board to establish a procedural schedule for the submission of evidence in the reopened *West Texas Utilities* proceeding, to consider the reasonableness of the non-Rawhide rates. AEP Texas took this action pursuant to the Board's November 7, 2000 order in *Docket No. 41191*, and sought a schedule that would allow for the discovery and presentation of evidence in a full hearing context under current interpretations and applications of the *Coal Rate Guidelines.*[10]

BNSF opposed AEP Texas' request for a new schedule in *West Texas Utilities,* arguing, *inter alia,* that the scope of reopening contemplated by the November 7, 2000 order was very narrow and did not permit AEP Texas to submit evidence materially broader than or different from that relied upon in *West Texas Utilities,* intervening changes in key circumstances notwithstanding. In its decision served July 23, 2003, the Board directed AEP Texas to choose whether to proceed with its challenge to the non-Rawhide rates in a reopened *West Texas Utilities* -- in which case the scope of reopening

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[10] *Coal Rate Guidelines -- Nationwide,* 1 I.C.C.2d 520 (1985), *aff'd. sub nom., Consolidated Rail Corp. v. U.S.* 812 F. 2d 1444 (3d Cir. 1987). *See Petition To Establish Procedural Schedule,* May 14, 2003 at 9-11.

would be limited in the manner sought by BNSF -- or in a separate complaint action, in which case a full hearing under the *Coal Rate Guidelines* would be available.[11]

On August 11, 2003, AEP Texas notified the Board that "[t]o secure its right to challenge the lawfulness of BNSF's unreasonably high common carrier rates on coal shipments to Oklaunion based on a fully-developed record considering current cost and other factual data and current interpretations of the *Coal Rate Guidelines,* AEP Texas is continuing its challenge to BNSF's rates through the filing this date of a separate Complaint under 49 U.S.C.§§ 10701(d) and 10704, as suggested by the Board."[12] AEP Texas' Complaint in this docket was filed the same day. By decision served September 11, 2003, the Board adopted a procedural schedule for the submission of evidence, which schedule subsequently was modified by Board order served January 13, 2004.

AEP Texas' Opening Evidence hereby is submitted in accordance with the January 13 scheduling order.

B. THE BOARD HAS JURISDICTION OVER THE CHALLENGED RATES

The law mandates that "[i]f the Board determines, under section 10707 of this title, that a rail carrier has market dominance over the transportation to which a particular rate applies, the rate established by such carrier for such transportation must be

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[11] *See Docket No. 41191,* Decision served July 23, 2003 at 2-3.

[12] *Docket No. 41191, Notification In Compliance With Decision Served July 23, 2003,* August 11, 2003 at 4.

reasonable." 49 U.S.C. § 10701(d)(1). Section 10707, in turn, defines market dominance as "an absence of effective competition from other rail carriers or modes of transportation for the transportation to which a rate applies." 49 U.S.C. § 10707(a). This "qualitative" standard also is subject to a "quantitative" threshold: the Board cannot find market dominance if the challenged rate does not exceed 180% of the variable cost of providing the subject service. 49 U.S.C. § 10707(d)(1)(A).

The evidence presented herein by AEP Texas conclusively demonstrates that both the quantitative and qualitative elements of the market dominance test are met.

1. During All Relevant Time Periods, the Challenged Rates Far Exceed the Jurisdictional Threshold

AEP Texas' Opening Evidence on the issue of variable costs is sponsored by witnesses Joseph Plaistow and Roger Prescott of L.E. Peabody & Associates. As shown in Part II-A, in every quarter from the Second Quarter of 2000 through the First Quarter of 2004, the rates at issue in this proceeding have exceeded 180% of BNSF's variable cost of providing service from each of the mine origins covered by the BNSF Pricing Letters. Throughout this period, the revenue-to-variable cost ratios produced by the BNSF rates from origins other than Rawhide ranged from a low of 225% to a high of 315%.

AEP Texas' approach to the calculation of variable costs follows that adopted by the Board in *TMPA*,[13] the most recent Western unit train coal rate decision which treated the matter of variable costs in detail, as well as the Board's prior rulings in *West Texas Utilities, FMC,*[14] and *Wisconsin,*[15] among others.

BNSF's variable costs of handling the Oklaunion coal movements were developed utilizing the carrier's final 2002 Uniform Rail Costing System ("URCS") unit costs, as applied to the specific traffic and operating conditions of the Oklaunion trains, and the indexing procedures used and approved by the Board. Consistent with the Board's oft-stated preference for costs tailored to the specific service in question,[16] AEP Texas' variable cost calculations include several special studies and procedures that adjust or are alternatives to BNSF's system average costs, and more closely reflect the actual parameters of the unit train movements at issue. These include:

1. Development of variable maintenance-of-way costs using transportation characteristics specific to the Oklaunion movement, the route traversed by the AEP Texas trains, and the Speed-Factored Gross Ton-Mile ("SFGT") formula. In

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[13]Docket No. 42056, *Texas Municipal Power Agency v. The Burlington Northern and Santa Fe Railway Company,* Decision served March 24, 2003.

[14]Docket No. 42022, *FMC Wyoming Corp. v. Union Pacific Railroad Company,* Decision served May 12, 2000.

[15]Docket No. 42051, *Wisconsin Power & Light Company v. Union Pacific Railroad Company,* Decision served September 13, 2001.

[16]*FMC* at 48; *West Texas Utilities*, 1 S.T.B. at 721-22.

response to the Board's surprising rejection of the use of the SFGT formula in *TMPA*,[17] AEP Texas' witnesses re-benchmarked the SFGT formula to actual BNSF maintenance-of-way expenses for the AEP Texas route in 2001 -- the most recent year for which BNSF produced complete maintenance data in discovery. *See* Table II-A-18. This exercise re-confirmed what had been historically accepted by the Board and its predecessor: that the SFGT formula accurately measures the maintenance-of-way costs attributable to high volume unit train coal movements.

2. Return and depreciation on road property investment have been developed using actual investment data produced by BNSF in discovery. The procedure followed by AEP Texas here is consistent with that approved by the Board in *TMPA*,[18] which involved BNSF unit coal train operations over essentially the same route as is used by the Oklaunion trains.

3. Locomotive capital costs were developed based on a study of the actual power units used by BNSF in service to Oklaunion and records of their actual hours of use, which were produced by BNSF in discovery. Locomotive maintenance costs were derived from full service contract maintenance rates actually paid by BNSF with respect to the locomotives used in the AEP Texas service.

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[17]*See TMPA* at 576-58. Prior to *TMPA*, the use of SFGT had been repeatedly endorsed by the Board in maximum coal rate cases, and was considered a settled issue. *See, e.g., Wisconsin* at 49-53; *FMC; San Antonio, Texas v. Burlington Northern R.R.*, 1I.C.C. 2d 561, 572 (1986).

[18]*TMPA* at 56-57.

4. BNSF crew wages were calculated based on the specific wage payments to crews operating the trains between the PRB and Oklaunion, with appropriate adjustments in response to errors in BNSF's data reporting.

5. Car inspection costs were calculated based on BNSF car inspection information collected by AEP Texas' experts during discovery field trips.

6. Loss and damage costs attributable to the PRB - Oklaunion trains were developed based on actual, reported BNSF loss and damage payments during the 2000-2002 time period.

The foregoing and all other procedures followed by AEP Texas in calculating BNSF's variable costs are described in detail in Part II-A. However, two (2) additional points are worthy of note here.

First, despite the comprehensive discovery requests propounded by AEP Texas, conscientious follow-up inquiries, and the Board staff-supervised discovery conference conducted on November 10, 2003, BNSF still has failed or refused to produce complete sets of data requested by AEP Texas that are relevant to the calculation of movement specific variable costs in several important subject areas, including road property return, locomotive maintenance, freight car maintenance, and car ownership costs. *See* Part II-A at pp. III-A-31 to 46, *infra*.

The Board repeatedly has emphasized the importance of open and complete discovery in maximum rate cases, and it would be fundamentally unfair to AEP Texas if

higher system average costs were to prevail over admittedly superior movement-specific variable costs solely because of BNSF's failure to produce all of the required data. AEP Texas' movement-specific calculations are supported by such data as has been made available in discovery, both as to type and time periods covered. In these instances, where the only reason why incomplete data is presented is that BNSF failed to produce it, AEP Texas' proffer should be deemed sufficient.

Second, as shown in Part II-A, AEP Texas' variable cost presentation includes costs for movements from the Rawhide mine, which presently remain subject to the Board's modified 1996 rate prescription order in *West Texas Utilities*. Rawhide shipments are taken into account in the determination of traffic and operating characteristics for the AEP Texas trains, because Rawhide was the principal single coal source relied upon by AEP Texas in 2002. *See* pp. III-A-9 to 10, *infra*. Additionally, at the Board's suggestion,[19] AEP Texas petitioned on September 2, 2003 to vacate the Rawhide prescription, so that new maximum rates could be set in this proceeding that reflect current costs, traffic conditions, and modern interpretations of the *Coal Rate Guidelines*. The Board has yet to grant AEP Texas' petition. When it does so, however (as it clearly should for the reasons stated in the petition), the interests of administrative efficiency and adjudicatory economy will be served best if the record in this proceeding already includes the evidence needed to allow the Board to make a proper determination

[19] *See Docket No. 41191,* Decision served July 23, 2003 at 3.

as to a reasonable maximum rate for future shipments from the Rawhide mine.[20] AEP Texas therefore has included evidence respecting both the variable and stand-alone costs of service from Rawhide in this opening presentation.

2. There Is An Absence of Effective Intermodal or Intramodal Competition for BNSF Service to Oklaunion

In *West Texas Utilities,* the Board concluded that there was no intramodal or intermodal competition that effectively constrained BNSF's rates for service from the Rawhide mine to the Oklaunion Station. *Id.,* 1 S.T.B. at 648-654. In particular, the Board rejected the existence of any effective intramodal competition based on BNSF's bottleneck control over the Oklaunion destination. *Id.* at 651, n.24, *citing Consolidated Papers Inc. v. CNW Transp. Co.,* 7 I.C.C.2d 330, 339 (1991)(*"Consolidated Papers"*); *Burlington Northern et al. – Merger – Santa Fe Pacific et al.,* 10 I.C.C.2d 66, 754 C. The Board also concluded that a feasible build-out threat from Oklaunion was not "realistic because of its high cost and limited benefit." *West Texas Utilities,* 1 S.T.B. at 651. Finally, the Board concluded that trucking was not an effective form of intermodal competition because "environmental concerns, noise, community opposition, increased

[20] AEP Texas acknowledges that in such event, and in contrast to the case with movements from mines other than Rawhide, AEP Texas would not be entitled to reparations on Rawhide shipments made at rates higher than the new maximum for periods prior to the date fixed by the Board in its vacation order. *See, e.g. Arizona Grocery Co. v. Atchison, Topeka & Santa Fe Railway Company*, 284 U.S. 370 (1932).

inefficiencies associated with loading and unloading, etc., make this option infeasible for any of [AEP Texas'] coal movements." *Id.* at 652.

AEP Texas demonstrates in Part II-B that BNSF possesses qualitative market dominance with respect to the issue traffic. The Board's 1996 findings concerning qualitative market dominance are equally applicable to the non-Rawhide movements at issue here. BNSF remains the only carrier that can serve the Oklaunion Station at destination. As such, the same bottleneck concerns that rendered intramodal competition ineffective as to the Rawhide movements apply to the non-Rawhide movements. In addition, there is no evidence that a spur would be any more "realistic" today than the Board determined in 1996. The same is true with the lack of a trucking option – all of the factors that rendered this option infeasible as to Rawhide apply to the consideration of non-Rawhide traffic.

Finally, the magnitude of BNSF's rate increases as to the issue traffic precludes any suggestion that BNSF perceives its service to be subject to effective competition. On the contrary, BNSF has priced its services in a manner that reflects complete confidence that AEP Texas will not be able to utilize a different transportation service provider for its PRB coal shipments.

The evidence clearly establishes that the Board has jurisdiction over BNSF's common carrier coal rates from the PRB to Oklaunion.

C. THE CHALLENGED RATES ARE UNREASONABLY HIGH AND UNLAWFUL

In *Coal Rate Guidelines,* the Board's predecessor adopted Constrained Market Pricing ("CMP") as the methodology for determining maximum reasonable rate levels for market dominant coal traffic such as the AEP Texas traffic at issue. "CMP is designed to permit maximum reliance on market conditions, while providing four safeguards against the possibility of excessive charges." *Bituminous Coal-Hiawatha, Utah to Moapa, Nevada,* 6 I.C.C. 2d at 1, 5 (1989) ("*Nevada Power I*"); *see also Bituminous Coal – Hiawatha, Utah to Moapa, Nevada,* 10 I.C.C. 2d 259, 260 n.4 (1994) ("*Nevada Power II*"). The three primary constraints are: (1) revenue adequacy; (2) management efficiency; and (3) stand-alone cost.

The evidence demonstrates that the common carrier rates established by BNSF for application to AEP Texas' coal movements exceed those permitted under the stand-alone cost ("SAC") constraint. The SAC constraint embodies the principle that a captive shipper's rates should not exceed the level that would be charged by a least-cost, most-efficient carrier in a "contestable," competitive transportation market unaffected by barriers to entry or exit. As the Board explained in *TMPA:*

> A SAC analysis seeks to determine the lowest cost at which a hypothetical, optimally efficient carrier could provide the service at issue free from any costs associated with inefficiencies or cross-subsidization ....To begin the analysis, the complainant hypothesizes a stand-alone railroad (SARR) that could serve a

> selected traffic group if the rail industry were free of barriers to entry or exit.

Id. at 13. Under the SAC constraint, the complainant is entitled to identify the traffic group (not limited to the issue traffic) and design the transportation system that will service that group at the optimum efficiency and lowest cost. *FMC* at 23; *Coal Rate Guidelines,* 1 I.C.C. 2d at 544.

Through proper application of the Board's discounted cash flow (DCF") model, AEP Texas has calculated the SAC for the movement of coal from the PRB mines to the Oklaunion Station. The results of that analysis are explained in Part III-H, *infra.* As shown therein, the rates established under the BNSF Pricing Letters at issue greatly exceed the rates that would be charged by a least-cost, most efficient competitor, which AEP Texas has designated the Texas & Northern Railroad ("TNR").

The four (4) basic steps involved in the determination of SAC vis-a-vis a particular coal movement are: (1) identifying the traffic group to be served by the stand-alone railroad; (2) designing the configuration of the stand-alone railroad; (3) determining the construction and operating costs for the stand-alone system; and (4) selecting the appropriate economic forecasting and depreciation methodologies for use in the DCF model. Each of these is treated in detail in Part III.

1. Stand-Alone Traffic Group

The TNR traffic group as selected by AEP Texas is consistent with the parameters delineated in *Coal Rate Guidelines,* 1 I.C.C. 2d at 543-44; *West Texas*

Utilities, 1 S.T.B. at 657, and following cases. The TNR principally will be a coal carrier providing unit train service to electric utilities from the same PRB mines to which the BNSF rates at issue apply. The TNR also will handle modest volumes of general freight traffic in limited overhead service between Amarillo and Oklaunion, TX. Traffic volumes for the base period (2000-2001) and for 2002 are determined by reference to BNSF's actual, historic records produced in discovery. *See* Part III-A at 13-15. Approximately 189.9 million tons of coal and 8.8 million tons of general freight were identified for inclusion in the TNR 2001[21] traffic group, including shipments terminated at on-line destinations (*e.g.*, Pawnee, CO; Denver, CO; Minnequa, CO; Harrington, TX; and Oklaunion), as well as shipments that would be interchanged by the TNR at points such as Alliance, NE; Northport, NE; Sterling, CO; Las Animas Junction, CO; Amarillo, TX; and Oklaunion for ultimate delivery by other carriers (principally BNSF) beyond the limits of the TNR system. *See* Exhibit III-A-2.

Future coal traffic volumes for the TNR were projected using the most reliable data available. For the years 2003 through 2008, coal volumes for the TNR are projected based upon internal forecasts maintained by BNSF in the ordinary course of business, and provided to AEP Texas in discovery. *See* Docket No. 42069, *Duke Energy Corporation v. Norfolk Southern Railway Company,* Decision served November 6, 2003 ("*Duke/NS*") at 59-60; *TMPA* at 25; *West Texas Utilities,* 1 S.T.B. at 660-64.

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[21] 2001 is the first full calendar year of the TNR's operation.

Commencing in 2008, when the BNSF forecasts are exhausted, TNR volume growth forecasts are based upon published U.S. Government projections previously relied upon by the Board. *See, e.g., Duke/NS* at 60; *TMPA* at 25; *Wisconsin* at 17-20; Part III-A at 17-24, *infra.*[22] Consistent with prior precedent, AEP Texas projects that future traffic growth for individual members of the TNR traffic group after 2008 will cap at the point that the member's consumption equates to an 85% utility capacity factor. *See TMPA* at 25; *Wisconsin* at 20; *West Texas Utilities* 1 S.T.B. at 663-64. The resulting growth rates are corroborated by the results of a plant-specific coal demand forecast prepared by Pace Global Energy Services.

General freight volumes handled by the TNR in 2000-2002 are determined by reference to BNSF's own historic records. AEP Texas assumes no growth in non-coal traffic in the years after 2002.

The "peak year" volumes for the TNR are shown in Table III-A-3.

2. Stand-Alone Revenues

Base period revenues for the TNR are calculated in accordance with governing precedent for each of the three (3) types of traffic handled: single-line (local) traffic; joint line movements with carriers other than BNSF; and so-called "cross-over"

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[22] The forecasts used are those for Powder River Basin origins as prepared by the U.S. Department of Energy's Energy Information Administration, and released in public form as the *Annual Energy Outlook 2003 With Projections to 2025.*

traffic, *i.e.,* traffic that currently moves over a longer segment of the BNSF system than its length of haul over the TNR would be.

TNR revenues attributable to AEP Texas' traffic are calculated based on the rates established in the Pricing Letters (Exhibits I-1 through I-4). TNR revenues for other single-line shippers are derived from BNSF traffic tape data produced in discovery. *See* Part III-A-3. For interline traffic where the TNR would replace BNSF for the entire length of BNSF's current haul, it is assumed that the revenues earned by the TNR are the same as BNSF's actual revenues from the same traffic. *See FMC* at 27. These, too, are derived from BNSF traffic tapes produced in discovery.

The calculation of TNR revenues for cross-over traffic requires that revenue which today accrues exclusively to BNSF be divided between the TNR and BNSF. To accomplish this, AEP Texas has applied the "modified straight - mileage prorate" approach adopted and used by the Board in its most recent maximum coal rate decisions. *See* Docket No. 42072, *Carolina Power & Light Company v. Norfolk Southern Railway Company,* Decision served December 23, 2003 ("*Carolina*") at 21; *Duke/NS* at 24-25.

Future revenues for the TNR likewise are projected using techniques consistent with those previously approved by the Board. *See Carolina* at 19; *TMPA* at 27; *Wisconsin* at 26-27. Revenues for the Oklaunion movement and other common carrier movements whose pricing documents do not contain rate adjustment provisions are held constant at current levels (adjusted only for changes in volume) throughout the DCF

period. Revenues on TMPA's Gibbons Creek traffic are projected based on the Board's prescription order in *TMPA*. Revenue projections for contract coal traffic and common carrier traffic subject to rate adjustment terms were developed through a special study conducted by Pace Global of the BNSF contracts and rate adjustment mechanisms that currently apply to actual coal movements for the accounts of the utilities in the TNR traffic group. For time periods following the expiration of current contracts, TNR coal revenues are projected based on the EIA regional coal transportation cost forecasts previously approved by the Board. *See Carolina* at 19; *Duke/NS* at 64 n. 78; *TMPA* at 29.

Projected revenues attributable to general freight traffic are based on actual revenues derived from the BNSF traffic tapes as adjusted by the carrier's 2004-2008 Long Range Plan for non-coal traffic and non-coal contracts, which were produced in discovery. *See* Part III-A-3-e.

3. The TNR System

The TNR system configuration and operating plan are described in detail in Parts III-A, III-B and III-C, *infra*. As shown, the route of the TNR basically replicates BNSF's Frontier Range Route from the PRB to Oklaunion, TX via Campbell, WY; Edgemont, SD; Alliance and Northport, NE; Denver, Pueblo and Las Animas Junction, CO; and Amarillo, TX. A schematic of the route is shown on Exhibit III-A-1.

The TNR track configuration contemplates the "internal rerouting" of certain traffic in two places along the system. At the north end, the TNR would handle all

southbound PRB coal trains via Edgemont and Alliance, instead of employing the two routes (Edgemont-Alliance and Bridger Jct.-Guernsey) that BNSF uses for that traffic today. Near the southern end, the TNR would maintain only one line between Pueblo, CO and Amarillo (via Las Animas Junction and Boise City, OK), whereas BNSF also uses a line that runs via Trinidad, CO and Dalhart, TX, at least for returning empty trains. *See* Part III-A at 9-10 and Exhibit III-A-4.

Consistent with the rerouting principles recently enunciated by the Board in *Duke/NS* and *Carolina*, AEP Texas' evidentiary presentation includes a showing that "the combined operations of the SARR and the residual carrier would be at least as efficient as the existing operations." *Duke/NS* at 26. *See also Carolina* at 21. For all the rerouted traffic, overall shipper transit times would be superior to those achieved by BNSF, and the quality of service offered to the shipper would be equal or superior to that offered today by BNSF. *See* Part III-A at 11-13. Equally, important, the TNR's internal reroutes have no effect whatsoever on the residual BNSF; the carrier will receive interline traffic from the TNR at points along the same route that BNSF currently uses to serve the same shippers. There will be no "ramifications of requiring the residual carrier to alter its handling of the traffic...." *Duke/NS* at 26. *See also Coal Rate Guidelines,* 1 I.C.C. 2d at 543-44.

4. Operating Costs

The operating plan and associated base year costs for the TNR are described in detail in Parts III-C and III-D. AEP Texas' proposed methodology for indexing stand-alone operating expenses forward over the DCF period is described in Part III-G-2 and discussed below.

The TNR operating plan reflects the efficiencies that are available to a system with 198.7 million tons of base year traffic and a 236.9 million ton peak year volume. All trains operate as units between terminals and power plants/interchanges or (in the case of general freight) between interchange points. There is no need for freight classifications or intermediate switching anywhere other than Alliance, NE, the site of the TNR's headquarters and major yard, and Las Animas Jct., CO, where a small yard is maintained to handle 1000-mile FRA inspections and occasional bad orders. Railcar supply and storage needs are limited to capacity sufficient to supply coal cars for regular service to the shippers in the stand-alone group (including AEP Texas) that currently use BNSF-supplied railcars, and store spares and substitute cars for use in the event of loss of or damage to private cars supplied by the rest of the TNR's customers or by other railroads. *See* Parts III-B at 25-27 and III-C at 20-22, *infra.*

Because the TNR is designed to serve a limited traffic group consisting entirely of unit trains, its configuration, speeds and cycle times, and staffing requirements are substantially different from BNSF's current requirements. Consistent with previous

cases under CMP and the *Coal Rate Guidelines,* the principal differences are: (a) a track configuration that (except for the Amarillo-Oklaunion segment) has been designed to handle only coal, and not the myriad other traffic that BNSF currently handles; (b) yards that only have to accommodate coal trains, thereby reducing the need for switching and car storage; and (c) staffing levels, particularly as regards general and administrative personnel, that are set to reflect unit train operations for a relatively small customer group by a railroad that will not be soliciting traffic from any new customers. *See e.g., TMPA* at 31-32; *Wisconsin* at 72, n. 135; Part III-D at 43-46, *infra.*

The TNR operating plan and operating cost estimates were developed by AEP Texas' witness Paul Reistrup, former President of Amtrak and the Monongahela Railway, and former CSXT Vice President, with assistance from Walter Schuchmann of R.L. Banks & Associates. While the TNR operating plan contemplates more efficient operations than BNSF currently experiences, there are no changes in the manner in which individual shippers are served vis-a-vis the present day. *See* Part III-C at 12-13, *infra*; *compare Duke/NS* at 32-33. The viability of the TNR plan was tested and verified through use of the Rail Traffic Controller ("RTC") Model developed by Berkeley Simulation Software, Inc. The RTC Model is widely used by railroads (including BNSF) and public rail authorities to model and confirm the feasibility of train operations plans. *See* Parts III-B at 11-20, III-C at 38-39, and III-D at 23-29, *infra.*

Base period operating costs for the TNR have been developed using actual costs incurred by BNSF and other railroads for comparable functions and services, along with fully-sourced and documented data accumulated by AEP Texas' expert in this area, witness Paul Reistrup. The costs and related functions are detailed in Parts III-D and III-E, and in the workpapers supporting those Parts.

In Part III-G-2, AEP Texas explains and resolves the problem inherent in the disconnect between the index used by the Board in previous cases to adjust stand-alone operating expenses, on the one hand, and the methodology used to forecast stand-alone revenues, on the other. Specifically, the Board has employed the RCAF *unadjusted* for productivity gains to index operating costs, while relying on the EIA coal transportation price forecast – which assumes a *pass-through* of productivity gains – to forecast revenues. *See, e.g., Carolina* at 19, 28. The Board has admitted that reliance on the RCAF-U "may somewhat overstate" a SARR's operating costs over the DCF period. *Carolina* at 28. However, the Board thus far has not addressed a far more serious consequence of its inconsistent approach: by adjusting costs using an index that ignores productivity gains while adjusting revenues with a formula that assumes both that those gains are realized *and* that they are reflected in the SARR's rates, the Board's prior approach inevitably has costs rising faster than revenues, no matter what the SARR configuration or operating plan. In this scenario, the ultimate financial demise of the

SARR at some point over the DCF period is assured,[23] and the prospect of meaningful captive shipper rate relief under the *Coal Rate Guidelines* is severely (albeit unintentionally) compromised.[24]

Complainants in prior cases have advocated use of the RCAF *adjusted* for productivity in lieu of the RCAF-U, but those proposals have been rejected by the Board, ostensibly for two (2) separate reasons. First, the Board has opined that as a measure of productivity gains across the national spectrum of railroads and railroad services, the productivity factor used in the RCAF-A cannot be presumed to reflect productivity gains that would be experienced by a railroad dedicated solely or predominantly to coal traffic, such as the TNR. *See TMPA* at 161. Second, the Board has accepted the theory offered by the defendant in *Duke/NS* and *Carolina* that the "newness" of a SARR's assets and technologies leave less room for productivity changes than is true of its incumbent counterparts, "which make such changes incrementally as their older technology assets wear out." *Id.* at 37.

AEP Texas' proposed indexing methodology cures the fatal circularity inherent in the Board's prior approach while directly satisfying the Board's first stated concern over the use of the RCAF-A. Through its witness William Whitehurst, AEP

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[23] This approach also implicitly assumes that the SARR – a presumptively efficient, "best practices" carrier – would act in an economically irrational manner by setting future rates at levels too low to recover future operating costs.

[24] *See Duke/NS* at 39. *See also* Docket No. 42070, *Duke Energy Corporation v. CSX Transportation, Inc.*, Decision served February 4, 2004 at 32 ("*Duke/CSX*").

Texas isolated the productivity factor incorporated in the EIA coal transportation price forecast favored by the Board as an index of SARR revenues, a factor which by definition reflects productivity gains specific to coal transportation. The trend line of EIA coal productivity factors over the 20-year period ending in 2002 was then compared to the Board's industry factor over the same period. The result – a coal productivity factor that grew at approximately 57% of the rate of growth in the general industry factor – is consistent with the Board's expectation that greater relative efficiencies in coal transportation service would moderate the productivity gains in that sector as compared to the rail industry generally. *See* Part III-G at 10-14; Exhibit III-G-1. Table 4 of Exhibit III-G-1 shows the results of adjusting the RCAF to reflect only those productivity gains that EIA's analysis attributes to coal service. AEP Texas uses this EIA-adjusted RCAF to index operating costs for the TNR, and urges its adoption by the Board for general application in coal rate cases. *See* Exhibit III-H-1.

Respectfully, AEP Texas submits that the Board's "age of assets" concern is misplaced. First, as shown in Exhibit III-G-1, the difference in average age of assets between a SARR and a Class I railroad is not nearly so pronounced as would justify ignoring productivity for the former while fully reflecting it for the latter. More important, however, as explained in Part III-G-2 and attested by AEP Texas' witnesses Drs. Douglas Caves, Kelly Eakin and Mark Meitzen, railroads do not look principally at the age of an asset in determining whether to replace it with a more efficient asset. A

railroad's decision to take advantage of an available productivity improvement is based on the net economic gain to be realized from the improvement, not whether the asset or practice[25] being replaced is "worn out" or has reached the end of its accounting life. *See* Part III-G at 14-16.

The operating expense indexing formula used by AEP Texas solves the circularity problem inherent in the RCAF-U based approach used in prior cases and restores a proper balance between predicted paths of revenues and costs, while answering the Board's concern (as stated in *TMPA*) over the need to focus more closely on coal-related productivity gains.

5. Construction Costs

Part III-F describes and documents in detail how the TNR is designed and will be constructed in accordance with governing standards of the American Railway Engineering and Maintenance-of-Way Association for track, roadbed, bridge, culvert and other requirements. *See, e.g., TMPA* at 123-139; *Wisconsin* at 87-91; *West Texas Utilities*, 1 S.T.B. at 700-710. Specific grading and other design characteristics have been derived from BNSF records for existing lines produced in discovery, as well as a review of general conditions for the TNR route. Design parameters for such elements as roadbed

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[25] A further flaw in the "age of assets" theory is the implicit suggestion that railroads only realize productivity gains when they buy new or replacement assets. The theory ignores other sources of productivity gains, such as labor-related improvements or innovative management practices.

width, side slope measurements and other, similar features are based upon parameters approved by the Board in previous coal rate cases. *See, e.g., TMPA* at 115-122; *Wisconsin* at 81-91; *FMC* at 112; *West Texas Utilities,*1 S.T.B. at 700-707.

The evidence submitted in Part III-F and accompanying Exhibits and workpapers extensively documents AEP Texas' estimates of material and construction costs, including engineering, design and contingencies. Total construction costs for the 1192 constructed route miles that comprise the TNR system are $2.46 billion, or approximately $2.1 million per route mile. *See* Part III-F at 1.

Consistent with Board precedent, AEP Texas projects a 30-month time period for design and construction of the TNR. *Cf. TMPA* at 122. This estimate is reasonable in light of the CMP principles of unconstrained resources and simultaneous construction that derive from the barrier-free entry presumption that is at the heart of the SAC constraint. *See Carolina* at 11; *Coal Trading Corp. v. The Baltimore & Ohio Railroad Company, et al.,* 6 I.C.C. 2d 361, 413 (1990).

The same principles apply with respect to the inclusion of costs for highway crossings, grade separations, and other features in place on the current BNSF lines paralleled by the TNR. Where records or data produced in discovery do not show expenditures by BNSF or its predecessors when these facilities first were installed, the related costs have been excluded from construction costs for the TNR as well. *West Texas Utilities,* 1 S.T.B. at 669-73. However, where there is any evidence that BNSF or

its predecessors incurred the expense, or the age of the line segment suggests it is likely that the expense was incurred, AEP Texas includes the appropriate costs in its analysis. *See, e.g.,* Part III-F at 97-98.

As detailed in Part III-F at 4 the TNR will require a total of 13,111 acres of land based upon an average right-of-way width of 100 feet in rural areas and 75 feet in cities and large towns, and the real estate requirements for the TNR yards, buildings, service roads, and other ancillary facilities described in Parts III-C and III-D. Real estate costs are based upon direct appraisals prepared by AEP Texas' expert, Oakleigh J. Thorne, using the appraisal methodology described in Part III-F at 5-8. Consistent with the principle of barrier-free entry referenced *supra*, there are no assemblage factors incorporated in the TNR's real estate costs (except for the Orin Line in Wyoming), as there is no evidence that BNSF was burdened by assemblage when it acquired the rights-of-way and contiguous land for its other parallel line segments. *See West Texas Utilities,* 1 S.T.B. at 670-71.

6. Application of the DCF Model

Part III-G outlines the DCF methodology applied by AEP Texas to calculate SAC, which is consistent with that adopted in *Coal Rate Guidelines* and applied by the Board, *inter alia,* in *TMPA, Wisconsin* and *West Texas Utilities.* The theoretical soundness of AEP Texas' approach is verified by Drs. Caves, Eakin and Meitzen.

AEP Texas' execution of the DCF Model includes the following elements:

a. Initial debt and equity costs for the TNR over its construction period (1998-2000) are based on the Board's annual cost of capital determination, followed by a "best practices" refinancing to take advantage of the lower, 9.8% industry average composite cost of capital experienced over the 2000-2002 time period. *See* Part III-G at 3-4.

b. The use of inflation indices compiled by the Association of American Railroads appropriate to various road property components of the TNR (Part III-G at 5-6), and the EIA coal productivity-adjusted RCAF discussed *supra* for the TNR's operating expenses. *See* Part III-G at 6-20.

c. A determination of federal and state tax liability consistent with the Board's approaches in prior western coal rate cases. *See* Part III-G at 20-21; *West Texas Utilities,* 1 S.T.B at 714.

d. The use of economic depreciation to determine the value of TNR assets at the end of the DCF period (Exhibit III-H-1).

e. The use of a "time-based" capital recovery approach adopted in *FMC* and more recently utilized in *TMPA, Duke/NS* and *Carolina. See* Part III-G at 21-22.

The calculation of SAC for the AEP Texas movement and those of the other coal shippers in the TNR traffic group is described in Part III-H and accompanying

Exhibit III-H-1. This evidence conclusively demonstrates that stand-alone revenues substantially exceed stand-alone costs in each year of the 20.5 year DCF period; *i.e.,* that the challenged BNSF rates are unreasonable. To determine the measure of the maximum reasonable Oklaunion rate, therefore, it is necessary to allocate the excess of revenues over costs among the members of the TNR traffic group in each year.

As the Board noted in *TMPA,* "[a]bsent better evidence, we assume that any annual over-recovery should be distributed among the traffic in the group using an identical percentage reduction to all rates." *TMPA* at 14. The Board has continued to apply this equal percentage reduction rule in rate proceedings concluded after *TMPA.* In *Carolina*, however, the Board acknowledged that the equal percentage reduction methodology "is susceptible to manipulation" by a railroad defendant that could seek to "game" the outcome of an anticipated rate case by "setting a challenged rate at an artificially high level to limit the impact of a SARR over-recovery...." *Carolina* at 32. The Board therein affirmed its receptivity to another approach for allocating rate relief in SAC cases, even through it found in that case that it "has not been presented here with an alternative to the percentage reduction approach that would remove the flaws while still conforming with the statute and the *Guidelines.*" *Id.*

In this case, AEP Texas has developed and presents an alternative to the equal percentage reduction rule which *does* cure that formula's flaws while conforming to the Ramsey pricing principles that infuse the *Coal Rate Guidelines.* Designated by AEP

Texas as the "generalized percentage reduction" rule, it is described in Part III-G at 29-32 and Exhibit III-G-12. The results of its application are reflected in Exhibit III-H-1.

As explained in Part III-G-5, the equal percentage reduction rule used in prior cases is inconsistent with true Ramsey principles because it keys on the relationships between absolute prices among members of the shipper group, which in and of themselves are not barometers of relative elasticities of demand. Ramsey principles, in contrast, call for a focus on relative *markups over marginal costs;* that is, the degree to which a particular customer's price deviates from optimum (*i.e.* marginal cost) pricing to facilitate the recovery of fixed costs. *See* Part III-G at 26-29 and Exhibit III-G-11. By allocating stand-alone revenue reductions according to these Ramsey markups, the Board at once would eliminate (or neutralize) the "gaming" incentive acknowledged in *Carolina,* while guaranteeing that regulatory price retractions among the members of the stand-alone group track the pattern of prior price increases (and, thus, demand elasticities), an essential element of Ramsey principles. *See* Part III-G at 30-31.

Part III-G-5 and Exhibit III-G-12 set out and explain AEP Texas' practicable methodology for determining marginal cost markups among the members of the TNR traffic group, and allocating the annual SAC "overpayments" accordingly. Exhibit III-H-1[26] and the workpapers that support it describe the mechanics of the

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[26] Exhibit III-H-1 also shows the results of overpayment allocations based on the Board's equal percentage reduction approach.

application of the generalized percentage reduction rule, and the resulting maximum stand-alone rates for BNSF coal service to Oklaunion. AEP Texas' generalized percentage reduction methodology solves the problem acknowledged in *Carolina* while also meeting the Board's solution criteria. The formula and results of its application should be adopted in this case.

D. CONCLUSION AND PRAYER FOR RELIEF

Based upon the evidence presented herein, the Board should find that BNSF possesses market dominance over the transportation of coal in unit trains from the PRB to the Oklaunion Station, in accordance with 49 U.S.C. § 10707. The Board further should find that the rates set forth in the BNSF Pricing Letters that are at issue in this proceeding exceed a reasonable level as determined under the SAC constraint of the *Coal Rate Guidelines,* and therefore are unlawful under 49 U.S.C. § 10701(d).

In light of the foregoing and in accordance with the provisions of 49 U.S.C. § 10704 (a), AEP Texas is entitled to a Board order prescribing the maximum rates that lawfully may be charged by BNSF to transport coal to Oklaunion. Inasmuch as the SAC rates for the movements at issue are lower than 180% of BNSF's variable costs of service[27] for all studied time periods, the rates must be prescribed at that 180% jurisdictional threshold level. *See* 49 U.S.C. § 10707 (d)(1)(A). At wage and price levels

[27] *See* Table III-H-1.

for the most recent quarter in which Oklaunion traffic moved, the maximum rates that should be prescribed by the Board are as follows:

Origin	Quarter	Rate per Ton
Buckskin	4Q03	$12.38
Eagle Butte	1Q04	$11.90
Jacobs Ranch	4Q02	$12.29
Black Thunder	1Q04	$12.04
Caballo Rojo	2Q03	$13.27
North Antelope	3Q03	$12.08
Caballo	2Q03	$12.49
Cordero	2Q03	$11.84
North Rochelle	4Q03	$12.01
Antelope	1Q04	$10.76
Rawhide	2Q03	$12.51

Because AEP Texas has paid charges for common carrier coal transportation service in excess of the lawful maxima as shown above, pursuant to 49 U.S.C. § 11704 BNSF should be ordered to pay reparations to AEP Texas based on the difference between all charges paid by AEP Texas and the charges that AEP Texas would have paid had the maxima shown above been in effect and applicable.[28] In calculating the amount of principal reparations due, two (2) additional actions should be taken by the Board.

First, the "charges paid" by AEP Texas for purposes of comparison to the maximum reasonable rate levels should be those based on the $13.68 per ton rate that

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[28] Interest also should be awarded, calculated in accordance with 49 C.F.R. Part 1141.

AEP Texas actually paid, pursuant to the parties' 2000 agreement and the order of the District Court described *supra.* While variable costs and SAC properly are calculated based on the rates that are under challenge and that BNSF seeks to collect,[29] the Board's regulations clearly call for reparations to be based on charges actually paid. *See* 49 C.F.R. Part 1133.

Second, the Board should rule that for purposes of the application of 49 U.S.C. § 11705 (c), the complaint in this action is deemed to have been perfected on November 7, 2000, when the Board formally reopened *Docket No. 41191* to consider the reasonableness of the rates here in issue. In the alternative, the Board should exercise its authority pursuant to 49 U.S.C. § 10502 and exempt this matter from the application of Section 11705 (c) to the extent necessary to provide complete relief to AEP Texas.

Principles of equity clearly support any necessary tolling of the limitations period in this case. AEP Texas' predecessor first objected to the rates at issue in June of 2000, when BNSF first sought to increase them above the $13.68 level.[30] While the Board allowed the increased rates to go into effect, it also formally reopened *Docket No. 41191* "to determine the reasonableness of the $15.78 per ton rate from other PRB origins."[31] At that time, it was clear to AEP Texas' predecessor in interest that a

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[29] *Cf. Duke/CSX* at 47-48.

[30] *See* Docket No. 41191, *Reply to Notice and Justification for Increased Rates,* June 29, 2000.

[31] *Docket No. 41191,* Decision served November 7, 2000 at 5.

proceeding had been initiated to adjudicate the reasonableness of the non-Rawhide rates under 49 U.S.C. § 10701 (d), and that no further action (other than the setting of a procedural schedule) was necessary for the rate challenge to go forward.[32]

By mutual agreement, the parties deferred consideration of the non-Rawhide rate dispute while they negotiated over a possible private resolution. Only after those negotiations failed in the Spring of 2003, and AEP Texas returned to the Board seeking a procedural schedule, did BNSF change its position regarding the scope of the original *West Texas Utilities* decision and propose extension of the Rawhide rate prescription to the non-Rawhide movements. In response to that filing, the Board deferred ruling on AEP Texas' request for a schedule and for the first time held that AEP Texas would not be entitled to a full hearing on the reasonableness of the non-Rawhide rates in a reopened *Docket No. 41191. See* Decision served July 23, 2003 at 3. AEP Texas' August 11, 2003 Complaint in this sub-docket was occasioned solely by the Board's July 2003 directive.

Where, as here, a litigant has been led by a tribunal's actions reasonably to believe it has done everything necessary to perfect a claim, the doctrine of equitable tolling supports waiver of a non-jurisdictional statute of limitations.[33] *See Baldwin*

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[32] At that time, of course, there was no issue under Section 11705 (c), as the Board's order came only five (5) months after BNSF first sought to charge the challenged rates.

[33] Section 11705 (c) does not confer jurisdiction on the Board to hear rate reasonableness complaints. That authority derives from 49 U.S.C.§§ 10701 and 11704.

County Welcome Center v. Brown, 466 U.S. 147,151 (1984); *Carlile v. South Routt School District* RE 3-J, 652 F. 2d 981, 986 (10th Cir. 1981). *See also N.E. Alliance for Transp. Reform, Inc. et al v. U.S. Dep't. of Transp. et al,* 104 F. Supp.2d 599, 605-606 (D.C. N.C. 2000). AEP Texas reasonably relied on Board decisions and directions which led it to believe that it had done everything necessary to pursue its challenge to the reasonableness of the non-Rawhide rates (which had never been the subject of agency adjudication) in a full hearing under the *Coal Rate Guidelines.* The only reason that AEP Texas waited until August 2003 to file its Complaint in this sub-docket was that it did not know that it was necessary until the Board so stated just one month earlier. Under these circumstances, to the extent that it otherwise could limit AEP Texas' reparations relief, the 2-year limitations period prescribed by Section 11705 (c) should be tolled to permit the calculation and collection of damages from the initiation of the challenged rates in June, 2000.

Finally, AEP Texas submits that the evidence presented herein conclusively demonstrates that the current Rawhide rate prescription no longer is valid, and that AEP Texas' September 2, 2003 Petition to Vacate Rate Prescription in *Docket No. 41191,* which remains pending, should be granted forthwith. The Board should vacate the *West Texas Utilities* prescription, as modified, and on the basis of the record in this

proceeding[34] establish a new maximum reasonable rate for Rawhide shipments in accordance with the evidence presented here.

Respectfully submitted,

AEP TEXAS NORTH COMPANY
1 Riverside Plaza
Columbus, Ohio 43215

By: Timothy P. Stanley, Director,
Transportation and Marketing
David Cohen, Senior Counsel
AEP Texas North Company
155 West Nationwide Boulevard
Suite 500
Columbus, Ohio 43215

William L. Slover
Kelvin J. Dowd
Christopher A. Mills
Frank J. Pergolizzi
Daniel M. Jaffe
Karen H. Herren
Kendra A. Ericson
Slover & Loftus
1224 Seventeenth Street, N.W.
Washington, D.C. 20036

Attorneys and Practitioners

OF COUNSEL:

Slover & Loftus
1224 Seventeenth St., N.W.
Washington, D.C. 20036

Dated: March 1, 2004

[34] The December 10, 2003 Pricing Letter (Exhibit I-4) by its terms applies to shipments from the Rawhide mine. Upon vacation of the *West Texas Utilities* prescription, this letter would become the governing rate publication.

CERTIFICATE OF SERVICE

I hereby certify that on this 1st day of March, 2004, I served a copy of the foregoing Opening Evidence of Complainant AEP Texas North Company by hand upon counsel for Defendant, as follows:

Samuel M. Sipe, Jr., Esq.
Anthony J. LaRocca, Esq.
Brooke L. Gaede, Esq.
Steptoe & Johnson
1330 Connecticut Avenue, N.W.
Washington, D.C. 20003

Daniel M. Jaffe

II-A Quantitative Market Dominance

BEFORE THE
SURFACE TRANSPORTATION BOARD

AEP TEXAS NORTH COMPANY, Complainant, v. THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY, Defendant.	)	Docket No. 41191 (Sub-No. 1)

Part II
MARKET DOMINANCE

II.A. MARKET DOMINANCE-QUANTITATIVE EVIDENCE

49 U.S.C. § 10707(d)(1) defines the quantitative element of the market dominance analysis as a showing that the revenues produced by the movement at issue are at least 180% of the variable cost of providing the related transportation service. In this Part, AEP Texas demonstrates that the quantitative threshold is clearly met in this proceeding.

1. Overview of Variable Costs Presentation

This part presents BNSF's variable costs of transporting coal from the PRB to the Oklaunion Generating Station near Vernon, Texas, calculated using the STB's final 2000,

2001, and 2002 BNSF Uniform Railroad Accounting System ("URCS") unit costs.[1] A schematic of the route of movement generally used by BNSF from the PRB mines to the Oklaunion Station is shown in Exhibit II-A-1. As explained in more detail below, the BNSF system-average costs from the URCS model have been adjusted in a number of respects to reflect AEP Texas' movement-specific transportation characteristics as well as the economies of moving coal in unit train service.[2]

The December 9, 1996 and June 16, 2000 letters from BNSF's Mr. Sami Shalah to Ms. Marguerite Mills of Central and South West Services Inc. and the April 23, 2003 and December 10, 2003 letters from BNSF's Mr. Larry C. Meyne to Timothy P. Stanley of American Electric Power Service Corporation (hereinafter, the "Pricing Letters") cover rates and service terms for 17 BNSF-served PRB mines. AEP Texas has limited its complete variable cost calculation in this proceeding to the movement of coal in BNSF-supplied

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[1] Since the common carrier movements that are the subject of AEP Texas' Complaint began, the Oklaunion Station has received coal from ten PRB mines. Coal from the 3 mines on the Campbell branch (that is, Buckskin, Eagle Butte, and Rawhide) constituted 61% of Oklaunion's coal. The other 39% came from mines on the Orin Line, that is, Black Thunder, Caballo, Caballo Rojo, Cordero, Jacobs Ranch, North Rochelle, North Antelope, and Antelope (*see* computer file "AEP-Tex Open To 1Q04.123" that appears in the electronic workpapers for Part II-A). Included in AEP Texas' Complaint are the other mines to which the challenged rates apply, namely, Belle Ayr, Dry Fork, Fort Union, Clovis Point, Coal Creek, and Rochelle. The variable costs presented here are calculated separately for each mine and quarter, June 16, 2000 through 1Q04. *See* Exhibits II-A-26 through II-A-80 and computer file "vc AEPTEX Open 2000.123", "vc AEPTEX Open 2001.123", "vc AEPTEX Open 2002.123" and "vc AEPTEX Open 2003.123" in the electronic workpapers for Part II-A.

[2] Many of AEP Texas' movement-specific cost adjustments are based upon discovery information furnished by BNSF. To the extent BNSF relies upon data that is more recent than that which BNSF furnished to AEP Texas, AEP Texas expects that all such data will be provided to AEP Texas without prejudice to AEP Texas addressing such data in the Reply and Rebuttal stages of this proceeding.

aluminum railcars only for those time periods and from those mines that coal actually was transported to Oklaunion. Eleven different mines provided coal to AEP Texas for one or more quarters during the 2Q00 to 1Q04 time period. Complete variable cost calculations are provided for all 17 mines for the 2Q03 time period,[3] a quarter for which BNSF provided all the data needed to assemble a complete presentation. However, the lack of complete variable cost information for some of the mines and time periods should not prevent a finding that quantitative market dominance is present for all of the mines covered in the Pricing Letters. As demonstrated below, the average ratio of revenue to variable costs calculated for all 17 mines for 2Q03 is 255%, far in excess of the 180% statutory level.[4] The ratio of revenue to variable costs for transportation from the 17 PRB mines ranged from 196% to 316% during the 2Q00 through 1Q04 time periods.[5] Thus, AEP Texas' evidence supports a finding by the Board that the quantitative threshold is met for all of the 17 mines.

a. Summary of Variable Cost Analysis and Resulting Revenue to Variable Cost Ratios

In general, AEP Texas' calculation of BNSF's variable cost of transporting AEP Texas' coal traffic from the PRB mines to the Oklaunion Station is based on the following:

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3 For 2Q03, 5 mines (Caballo, Caballo Rojo, Cordero, Eagle Butte, and Rawhide Mines) actually provided coal to AEP Texas' Oklaunion Station, and the associated variable costs are presented in Exhibits II-A-65 through II-A-69. For 2Q03, variable costs for the other 12 mines (Buckskin, Jacobs Ranch, Black Thunder, North Antelope, North Rochelle, Belle Ayr, Dry Fork, Fort Union, Clovis Point, Coal Creek, Antelope, and Rochelle Mines) included in the Complaint are presented in Exhibit II-A-70. For those 12 mines, the traffic and operating characteristics are extrapolated based upon the traffic and operating characteristics of movements from the mines that actually provided coal to Oklaunion. *See* footnotes of Exhibit II-A-2.

4 *See* Exhibit II-A-81.

5 Excluding the Board-approved $13.68 per ton rate, the range was 225% to 316%.

a. A detailed analysis of the transportation characteristics of BNSF's rail service when handling AEP Texas' coal traffic to the Oklaunion Station;

b. Base year 2000, 2001, and 2002 BNSF URCS variable unit costs indexed to each of the quarters of 2000, 2001, 2002, 2003 and the first quarter 2004 ("2Q00 through 1Q04") wage and price levels; and

c. Specific adjustments to BNSF's system average unit costs to reflect the characteristics and efficiencies of Oklaunion Station unit coal train service (including the use of the Speed Factored Gross Ton ("SFGT") formula in calculating variable maintenance-of-way costs).[6]

The Pricing Letters establish rates from the PRB origins to Oklaunion Station in BNSF-provided aluminum cars of $13.68 per net ton for the period July 2, 1996 through July 5, 2000; $15.78 per net ton for the period July 6, 2000 through May 11, 2003; $18.04 per net ton for the period May 12, 2003 through December 31, 2003; and $18.83 per net ton from January 1, 2004 until the present.[7] By agreement between the parties during the pendency of negotiations following the Board's November 7, 2000 decision permitting the $15.68 rate to go into effect, and consistent with the decisions of the U.S. District Court for the Northern

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[6] These adjustments are consistent with those made or approved by the Board in several recent rail maximum rate cases involving the calculation of the variable costs of handling unit train coal traffic. *West Texas Utilities; Wisconsin*; *Arizona Public Service;*, *FMC*; and *TMPA*. AEP Texas has paid particular attention to the Board's directives in "General Procedures for Presenting Evidence in Stand-Alone Cost Rate Cases," *Ex Parte No. 347 (Sub-No. 3)*, served March 12, 2001, at 3. There the Board urged the parties presenting evidence in maximum rate proceedings to document their findings thoroughly. The Board stressed the importance of supporting assumptions and figures. It cautioned parties to establish a clear audit trail between evidence submitted and workpapers (both hardcopy and electronic) relied upon. AEP Texas' presentation complies with those instructions.

[7] The April 23, 2003 letter from BNSF's Larry Meyne to AEP Texas' Mr. Timothy P. Stanley increased the rate to $18.04 per net ton from $17.25 per net ton. The December 10, 2003 letter from Mr. Meyne to Mr. Stanley increased the rate further to $18.83 per net ton. *See* Complaint and Workpapers Vol. 1, pages 00005 - 00010.

District of Texas and the Fifth Circuit discussed *supra*, "...AEP Texas continued to pay $13.68 per ton for coal transportation from all Powder River Basin origins to Oklaunion."[8]

The results of AEP Texas' study of BNSF's variable costs for transporting coal from the PRB to the Oklaunion Station in BNSF railcars for 2Q00 through 1Q04 are summarized in Tables II-A-1 through II-A-4 below:

[8] *See* Complaint, page 6.

Table II-A-1

Summary of BNSF's Rate, Variable Cost and Ratio of Revenue to Variable Cost - Campbell Branch Mines - 2Q00 through 1Q04

Time Period (1)	Amount Per Ton: Rate/Ton [1] (2)	Amount Per Ton: BNSF Variable Cost [2] (3)	Ratio of BNSF Revenue to Variable Cost [3] (4)
A. Buckskin Mine Originations			
1. 2Q00	$13.68	$6.70	204%
2. 3Q00 [4]	15.78	6.77	233%
3. 4Q00	15.78	6.91	228%
4. 1Q01	15.78	6.75	234%
5. 2Q01	15.78	6.95	227%
6. 3Q01	15.78	7.01	225%
7. 4Q01	15.78	6.90	229%
8. 2Q03 [4 5]	18.04	6.96	259%
9. 4Q03	18.04	6.88	262%
B. Rawhide Mine Originations			
10. 1Q02	$15.78	$6.36	248%
11. 2Q02	15.78	6.55	241%
12. 3Q02 [4]	13.68	6.78	202%
13. 4Q02	13.68	6.79	201%
14. 1Q03	13.68	6.97	196%
15. 2Q03	13.68	6.95	197%
C. Eagle Butte Mine Originations			
16. 1Q03	$17.25	$6.97	247%
17. 2Q03 [4]	18.04	6.59	274%
18. 3Q03	18.04	6.67	270%
19. 4Q03	18.04	6.68	270%
20. 1Q04	18.83	6.61	285%

[1] Source: The Pricing Letters.

[2] Exhibits II-A-81 and electronic files "VC AEPTEX OPEN 2000.123", "VC AEPTEX OPEN 2001.123", "VC AEPTEX OPEN 2002.123", and "VC AEPTEX OPEN 2003.123".

[3] Column (2) ÷ Column (3).

[4] The rate changed during this time period.

[5] No traffic moved from this mine to Oklaunion during this time period.

Table II-A-2
Summary of BNSF's Rate, Variable Cost and Ratio of
Revenue to Variable Cost - Orin Line Mines - 2Q00 through 1Q04

Time Period (1)	Amount Per Ton: Rate/Ton [1] (2)	Amount Per Ton: BNSF Variable Cost [2] (3)	Ratio of BNSF Revenue to Variable Cost [3] (4)
A. Jacobs Ranch Mine Originations			
1. 2Q00	$13.68	$6.10	224%
2. 3Q00	15.78	6.53	242%
3. 1Q01	15.78	6.52	242%
4. 2Q01	15.78	6.74	234%
5. 3Q01	15.78	6.77	233%
6. 4Q01	15.78	6.84	231%
7. 1Q02	15.78	6.14	257%
8. 3Q02 [5]	17.25	6.38	270%
9. 4Q02	17.25	6.83	253%
10. 2Q03 [4 5]	18.04	7.12	253%
B. Black Thunder Mine Originations			
11. 1Q01	$15.78	$6.20	255%
12. 3Q01	15.78	7.01	225%
13. 4Q01	15.78	6.72	235%
14. 2Q02	15.78	6.39	247%
15. 3Q02 [5]	17.25	6.38	270%
16. 4Q02	17.25	6.84	252%
17. 2Q03 [4]	18.04	6.81	265%
18. 4Q03	18.04	6.70	269%
19. 1Q04	18.83	6.69	281%
C. Caballo Rojo Mine Originations			
20. 2Q00	$13.68	$6.74	203%
21. 3Q00 [5]	15.78	6.71	235%
22. 4Q00	15.78	6.88	229%
23. 1Q01	15.78	6.65	237%
24. 2Q01	15.78	6.96	227%
25. 3Q01	15.78	6.87	230%
26. 4Q01	15.78	6.77	233%
27. 2Q03 [5]	18.04	7.37	245%

[1] Source: The Pricing Letters.

[2] Exhibits II-A-81 and electronic files "VC AEPTEX OPEN 2000.123", "VC AEPTEX OPEN 2001.123", "VC AEPTEX OPEN 2002.123", and "VC AEPTEX OPEN 2003.123".

[3] Column (2) ÷ Column (3).

[4] The rate changed during this time period.

[5] No traffic moved from this mine to Oklaunion during this time period.

Table II-A-3
Summary of BNSF's Rate, Variable Cost and Ratio of
Revenue to Variable Cost - Orin Line Mines - 2Q00 through 1Q04

Time Period (1)	Amount Per Ton: Rate/Ton [1] (2)	Amount Per Ton: BNSF Variable Cost [2] (3)	Ratio of BNSF Revenue to Variable Cost [3] (4)
A. North Antelope Mine Originations			
1. 2Q03 [4 5]	$18.04	$6.71	269%
2. 3Q03	18.04	6.71	269%
B. Caballo Mine Originations			
3. 2Q02	$15.78	$6.81	232%
4. 3Q02	17.25	6.24	276%
5. 4Q02	17.25	6.95	248%
6. 2Q03 [4]	18.04	6.94	260%
C. Cordero Mine Originations			
7. 2Q03 [4]	$18.04	$6.58	274%
D. North Rochelle Mine Originations			
8. 3Q02	$17.25	$6.85	276%
9. 2Q03 [4 5]	18.04	6.75	267%
10. 4Q03	18.04	6.67	270%
E. Antelope Mine Originations			
11. 2Q03 [4 5]	$18.04	$6.72	268%
12. 4Q03	18.04	5.71	316%
13. 1Q04	18.83	6.62	284%

[1] Source: The Pricing Letters.
[2] Exhibits II-A-81 and electronic files "VC AEPTEX OPEN 2002.123" and "VC AEPTEX OPEN 2003.123".
[3] Column (2) ÷ Column (3).
[4] The rate changed during this time period.
[5] No traffic moved from this mine to Oklaunion during this time period.

Table II-A-4
Summary of BNSF's Rate, Variable Cost and Ratio of Revenue to Variable Cost Other PRB Mines from Which no Traffic Moved During 2Q03

Time Period (1)	Amount Per Ton: Rate/Ton [1] (2)	Amount Per Ton: BNSF Variable Cost [2] (3)	Ratio of BNSF Revenue to Variable Cost [3] (4)
A. Belle Ayr Mine Originations			
1. 2Q03 [4] [5]	$18.04	$7.18	251%
B. Dry Fork Mine Originations			
2. 2Q03 [4] [5]	$18.04	$7.04	256%
C. Fort Union Mine Originations			
3. 2Q03 [4] [5]	$18.04	$7.05	256%
D. Clovis Point Mine Originations			
4. 2Q03 [4] [5]	$18.04	$7.06	256%
E. Coal Creek Mine Originations			
5. 2Q03 [4] [5]	$18.04	$7.33	246%
F. Rochelle Mine Originations			
6. 2Q03 [4] [5]	$18.04	$7.42	243%

[1] Source: The Pricing Letters.
[2] Exhibits II-A-81 and electronic file "VC AEPTEX OPEN 2003.12".
[3] Column (2) ÷ Column (3).
[4] The rate changed during this time period.
[5] No traffic moved from this mine to Oklaunion during this time period.

Exhibits II-A-26 through II-A-80 each report BNSF's variable costs of service.

AEP Texas' development of the traffic and operating characteristics of the Oklaunion trains, as well as its calculation of variable costs, include shipments from the Rawhide Mine, which are covered by the first (December 9, 1996), second (June 16, 2000) and most recent (December 10, 2003) BNSF Pricing Letters and represented the principal single source of coal for Oklaunion in 2002. As discussed in Part I, shipments from the Rawhide Mine presently are subject to the Board's rate prescription order in *West Texas*

Utilities, as subsequently modified. However, AEP Texas has petitioned the Board to vacate that prescription and set a new maximum rate consistent with current regulatory standards and the current facts and economic data relevant to BNSF's service from that origin, a petition which remains pending. In the interests of a full evidentiary record, and to facilitate a proper Board ruling while avoiding piecemeal litigation, AEP Texas includes movements from the Rawhide Mine both in this Part II-A and in the stand-alone cost analysis summarized in Part III.

b. Traffic and Operating Characteristics[9]

Prior to developing the variable cost of service, it is first necessary to specify the traffic and operating characteristics of the PRB coal movements to the Oklaunion Station. The Appendix to the Interstate Commerce Commission's ("ICC") order in its 1982 *PEPCO* decision[10] "... outlines the cost-related evidentiary requirements we believe are necessary for complete records in these proceedings."[11] The Appendix further provides that the operating characteristics for coal movements should be quantified in a tabular form followed by a narrative description of each item.

(1) Tabular Form

Tables II-A-5, II-A-6, II-A-7, and II-A-8 below identify the Traffic & Operating ("T&O") parameters for coal movements to Oklaunion Station in BNSF-provided rail cars

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9 The details for the traffic and operating characteristics for each quarter 2Q00 through 1Q04 are set forth in Exhibit II-A-2 and computer file "T&O AEP-Tex Open.123" in the electronic workpapers accompanying Part II-A.

10 ICC Docket No. 36114 (Sub-No. 1), *Potomac Electric Power Co. v. Consolidated Rail Corp.*, Decision served April 7, 1982 ("*PEPCO*").

11 Id. at 4.

originating at the Rawhide, Buckskin, Jacobs Ranch and Black Thunder Mines, respectively.[12] The "item" columns in these tables summarize the operating parameters requested in the ICC's *PEPCO* order. The AEP Texas-Oklaunion operating parameters are quantified in Column (2) or in the narrative description following the tables.

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[12] AEP Texas has elected to use the Rawhide 2Q03, Buckskin 4Q01, Jacobs Ranch 4Q02, and Black Thunder 4Q02 T&O characteristics for purposes of this Narrative because those mines originated 79% of the coal delivered to Oklaunion during the 2Q00 through 1Q04 time periods studied. The quarter selected in each case was the latest quarter during which coal moved and for which BNSF provided relatively complete electronic and hard copy data in discovery.

Table II-A-5

Required Operating Parameters for AEP Texas Coal Trains from Rawhide Mine-2Q03

Item (1)	Amount (2)
1. Name of mine or origin, and power plant or destination	See Description Below
2. Milepost at origin; milepost at destination	See Description Below
3. Annual tons (tariff minimum, actual and projected)	See Description Below
4. Date of first shipment (if new movement)	See Description Below
5. Alpha-numeric car type	J311
6. Weight of lading per car (in pounds)	{ }
7. Tare weight of car (in tons to one decimal)	{ }
8. Identity of car owner	BNSF
9. Identity of locomotive owner	BNSF
10. Car lease rental (railroad supplied cars)	See Description Below
11. Locomotive lease rental (if any)	See Description Below
12. Present rate (2Q03) in low-capacity cars	$13.68
13. Proposed rate	Not Applicable
14. Initial rate and effective date	See Description Below
15. Amounts (or percent) of rate escalation and dates (if any)	See Description Below
16. Cars per train or per shipment	{ }
17. Loaded miles (identify any way miles included in loaded miles)	1114.2
18. Empty miles, if applicable. If not applicable, indicate empty factor	1115.0
19. Length of origin loop track (if any). Indicate whether included in lines 17 or 18	4.90 Not Included in 17 and 18
20. Length of destination loop track (if any)	7.5
21. Number of locomotive units (by segment)	See Description Below
22. Loading hours and basis of calculation	See Description Below
23. Unloading hours and basis of calculation	See Description Below
24. Cycle hours	{ }
25. Number of train sets required for movement (unit trains only)	See Description Below
26. Trips per year per train set (unit train only)	{ }
27. Crew districts, loaded direction	See Description Below
28. Crew districts, empty direction	See Description Below
29. Turnaround crews (specify)	See Description Below
30. Locomotive units required (by type and horsepower for each railroad)	See Description Below
31. Cars required (railroad-owned for each railroad)	See Description Below
32. Cabooses (for each railroad)	See Description Below
33. Spare margin for locomotives	{ }
34. Spare margin for cars (railroad supplied)	{ }
35. Spare margin for cabooses	Not Applicable
36. Switching by road haul locomotives (specify)	See Description Below
37. Switching by yard locomotives (specify)	See Description Below
38. Helper service (location, miles, time)	See Description Below
39. Helper crew (hours for crew cycle on this movement)	See Description Below
40. Location of interchanges (indicate which are non-through)	Not Applicable
41. Location of inter-intra train switches	Not Applicable
42. Joint facility payments (indicate basis for computation)	See Description Below

Table II-A-6

Required Operating Parameters for AEP Texas Coal Trains from Buckskin Mine-4Q01

Item (1)	Amount (2)
1. Name of mine or origin, and power plant or destination	See Description Below
2. Milepost at origin; milepost at destination	See Description Below
3. Annual tons (tariff minimum, actual and projected)	See Description Below
4. Date of first shipment (if new movement)	See Description Below
5. Alpha-numeric car type	J311
6. Weight of lading per car (in pounds)	{ }
7. Tare weight of car (in tons to one decimal)	{ }
8. Identity of car owner	BNSF
9. Identity of locomotive owner	BNSF
10. Car lease rental (railroad supplied cars)	See Description Below
11. Locomotive lease rental (if any)	See Description Below
12. Present rate (2Q03) in low-capacity cars	$15.78
13. Proposed rate	Not Applicable
14. Initial rate and effective date	See Description Below
15. Amounts (or percent) of rate escalation and dates (if any)	See Description Below
16. Cars per train or per shipment	{ }
17. Loaded miles (identify any way miles included in loaded miles)	1113.9
18. Empty miles, if applicable. If not applicable, indicate empty factor	1115.3
19. Length of origin loop track (if any). Indicate whether included in lines 17 or 18	14.65 Not Included in 17 and 18
20. Length of destination loop track (if any)	7.5
21. Number of locomotive units (by segment)	See Description Below
22. Loading hours and basis of calculation	See Description Below
23. Unloading hours and basis of calculation	See Description Below
24. Cycle hours	{ }
25. Number of train sets required for movement (unit trains only)	See Description Below
26. Trips per year per train set (unit train only)	{ }
27. Crew districts, loaded direction	See Description Below
28. Crew districts, empty direction	See Description Below
29. Turnaround crews (specify)	See Description Below
30. Locomotive units required (by type and horsepower for each railroad)	See Description Below
31. Cars required (railroad-owned for each railroad)	See Description Below
32. Cabooses (for each railroad)	See Description Below
33. Spare margin for locomotives	{ }
34. Spare margin for cars (railroad supplied)	{ }
35. Spare margin for cabooses	Not Applicable
36. Switching by road haul locomotives (specify)	See Description Below
37. Switching by yard locomotives (specify)	See Description Below
38. Helper service (location, miles, time)	See Description Below
39. Helper crew (hours for crew cycle on this movement)	See Description Below
40. Location of interchanges (indicate which are non-through)	Not Applicable
41. Location of inter-intratrain switches	Not Applicable
42. Joint facility payments (indicate basis for computation)	See Description Below

Table II-A-7

Required Operating Parameters for AEP Texas Coal Trains from Jacobs Ranch Mine-4Q02

Item (1)	Amount (2)
1. Name of mine or origin, and power plant or destination	See Description Below
2. Milepost at origin; milepost at destination	See Description Below
3. Annual tons (tariff minimum, actual and projected)	See Description Below
4. Date of first shipment (if new movement)	See Description Below
5. Alpha-numeric car type	J311
6. Weight of lading per car (in pounds)	{ }
7. Tare weight of car (in tons to one decimal)	{ }
8. Identity of car owner	BNSF
9. Identity of locomotive owner	BNSF
10. Car lease rental (railroad supplied cars)	See Description Below
11. Locomotive lease rental (if any)	See Description Below
12. Present rate (2Q03) in low-capacity cars	$17.25
13. Proposed rate	Not Applicable
14. Initial rate and effective date	See Description Below
15. Amounts (or percent) of rate escalation and dates (if any)	See Description Below
16. Cars per train or per shipment	{ }
17. Loaded miles (identify any way miles included in loaded miles)	1078.7
18. Empty miles, if applicable. If not applicable, indicate empty factor	1091.4
19. Length of origin loop track (if any). Indicate whether included in lines 17 or 18	10.50 Not Included in 17 and 18
20. Length of destination loop track (if any)	7.5
21. Number of locomotive units (by segment)	See Description Below
22. Loading hours and basis of calculation	See Description Below
23. Unloading hours and basis of calculation	See Description Below
24. Cycle hours	{ }
25. Number of train sets required for movement (unit trains only)	See Description Below
26. Trips per year per train set (unit train only)	{ }
27. Crew districts, loaded direction	See Description Below
28. Crew districts, empty direction	See Description Below
29. Turnaround crews (specify)	See Description Below
30. Locomotive units required (by type and horsepower for each railroad)	See Description Below
31. Cars required (railroad-owned for each railroad)	See Description Below
32. Cabooses (for each railroad)	See Description Below
33. Spare margin for locomotives	{ }
34. Spare margin for cars (railroad supplied)	{ }
35. Spare margin for cabooses	Not Applicable
36. Switching by road haul locomotives (specify)	See Description Below
37. Switching by yard locomotives (specify)	See Description Below
38. Helper service (location, miles, time)	See Description Below
39. Helper crew (hours for crew cycle on this movement)	See Description Below
40. Location of interchanges (indicate which are non-through)	Not Applicable
41. Location of inter-intratrain switches	Not Applicable
42. Joint facility payments (indicate basis for computation)	See Description Below

Table II-A-8

Required Operating Parameters for AEP Texas Coal Trains from Black Thunder Mine-4Q02

Item (1)	Amount (2)
1. Name of mine or origin, and power plant or destination	See Description Below
2. Milepost at origin; milepost at destination	See Description Below
3. Annual tons (tariff minimum, actual and projected)	See Description Below
4. Date of first shipment (if new movement)	See Description Below
5. Alpha-numeric car type	J311
6. Weight of lading per car (in pounds)	{ }
7. Tare weight of car (in tons to one decimal)	{ }
8. Identity of car owner	BNSF
9. Identity of locomotive owner	BNSF
10. Car lease rental (railroad supplied cars)	See Description Below
11. Locomotive lease rental (if any)	See Description Below
12. Present rate (2Q03) in low-capacity cars	$17.25
13. Proposed rate	Not Applicable
14. Initial rate and effective date	See Description Below
15. Amounts (or percent) of rate escalation and dates (if any)	See Description Below
16. Cars per train or per shipment	{ }
17. Loaded miles (identify any way miles included in loaded miles)	1076.2
18. Empty miles, if applicable. If not applicable, indicate empty factor	1090.6
19. Length of origin loop track (if any). Indicate whether included in lines 17 or 18	4.13 Not Included in 17 and 18
20. Length of destination loop track (if any)	7.5
21. Number of locomotive units (by segment)	See Description Below
22. Loading hours and basis of calculation	See Description Below
23. Unloading hours and basis of calculation	See Description Below
24. Cycle hours	{ }
25. Number of train sets required for movement (unit trains only)	See Description Below
26. Trips per year per train set (unit train only)	{ }
27. Crew districts, loaded direction	See Description Below
28. Crew districts, empty direction	See Description Below
29. Turnaround crews (specify)	See Description Below
30. Locomotive units required (by type and horsepower for each railroad)	See Description Below
31. Cars required (railroad-owned for each railroad)	See Description Below
32. Cabooses (for each railroad)	See Description Below
33. Spare margin for locomotives	{ }
34. Spare margin for cars (railroad supplied)	{ }
35. Spare margin for cabooses	Not Applicable
36. Switching by road haul locomotives (specify)	See Description Below
37. Switching by yard locomotives (specify)	See Description Below
38. Helper service (location, miles, time)	See Description Below
39. Helper crew (hours for crew cycle on this movement)	See Description Below
40. Location of interchanges (indicate which are non-through)	Not Applicable
41. Location of inter-intratrain switches	Not Applicable
42. Joint facility payments (indicate basis for computation)	See Description Below

(2) Narrative Description[13]

1. **Name of Mine or Origin, and Power Plant or Destination**

   Mines – Rawhide Mine, Buckskin Mine, Jacobs Ranch Mine, and Black Thunder Mine.

   Power Plant – Oklaunion Generating Station (located near Vernon, Texas).

2. **Milepost at Origin; Milepost at Destination**

   Milepost at Origin – Rawhide - MP 9.5, Buckskin - MP 9.5, Jacobs Ranch - MP 2.5, and Black Thunder - MP 2.5.

   Milepost at Destination – Oklaunion Station – MP 155.5.

3. **Annual Tons** – Tonnage shipped during the 2Q00 - 1Q04 period from the PRB mines to Oklaunion are listed in Exhibit II-A-2.[14] Rawhide, Buckskin, Jacobs Ranch, and Black Thunder Mine tons shipped to Oklaunion during the period are listed below in Table II-A-9.

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[13] In this narrative, AEP Texas describes the movements to Oklaunion from the four mines from which the largest tonnages were shipped during the time period 2Q00 through 1Q04. These movements from Rawhide, Buckskin, Jacobs Ranch and Black Thunder were described above in Tables II-A-5 through II-A-8, respectively. Many of the T&O characteristics from the other 13 origin mines are the same as those described in this narrative section. Exhibit II-A-2 lists the T&O characteristics for all 17 mine origins covered by the Complaint.

[14] Source for tonnages: AEP Texas freight bills. *See* Workpapers Vol. 7, p. 03091 through Vol. 8, p. 03945 and electronic file "T&O AEP-Tex Open.123."

Table II-A-9
Tons Shipped From Rawhide,
Buckskin, Jacobs Ranch, and Black Thunder
(2Q00 - 1Q04)

Quarter (1)	Rawhide (2)	Buckskin (3)	Jacobs Ranch (4)	Black Thunder (5)
2Q00	—	{ }	{ }	—
3Q00	—	{ }	{ }	—
4Q00	—	{ }	—	—
1Q01	—	{ }	{ }	{ }
2Q01	—	{ }	{ }	—
3Q01	—	{ }	{ }	{ }
4Q01	—	{ }	{ }	{ }
1Q02	{ }	—	{ }	—
2Q02	{ }	—	—	{ }
3Q02	{ }	—	{ }	{ }
4Q02	{ }	—	{ }	{ }
1Q03	{ }	—	—	—
2Q03	{ }	—	—	—
3Q03	—	—	—	—
4Q03	—	{ }	—	{ }
1Q04	—	—	—	{ }
Total	{ }	{ }	{ }	{ }

Source: AEP Texas Exhibit II-A-2.

4. **Date of First Shipment (If New Movement)** – The first shipment under the Pricing Letters occurred on or about June 16, 2000.

5. **Alpha-Numeric Car Type** – BNSF high-capacity gondola cars are used to move AEP Texas' coal between the PRB Origin mines and the Oklaunion Station. Most BNSF cars have reporting marks BNSF and are predominantly Association of American Railroads ("AAR") car type code J311. The "J" represents Gondola Car - GT. The "3" designation (first numeric) represents 185,000 lbs. load limit and over; the first "1" designation (second numeric) represents GT Depressed Bottom cars; and the second "1" designation (third numeric) indicates an inside length of between 52' and 61'. The car type information was identified from *The Official Railway Equipment Register*, Volume 117, No. 2, issued October, 2001, page UMLER 153.

6. **Weight of Lading Per Car (In Pounds)** – The average lading weights per car for coal moving from each PRB Origin Mine to the Oklaunion Station were obtained from freight bills from June 16, 2000 through February 12, 2004. *See* Exhibit II-A-2 and computer file "T&O AEP-Tex Open.123" in the electronic workpapers for Part II-A. Lading weights for Rawhide, Buckskin,, Jacobs Ranch and Black Thunder Mines are listed on Line 6 of Tables II-A-5, II-A-6, II-A-7, and II-A-8 and in Table II-A-10 below.

Table II-A-10
Pounds of Lading Per Car From Rawhide, Buckskin, Jacobs Ranch and Black Thunder
(2Q00 - 1Q04)

Quarter (1)	Rawhide (2)	Buckskin (3)	Jacobs Ranch (4)	Black Thunder (5)
2Q00	—	{ }	{ }	—
3Q00	—	{ }	{ }	—
4Q00	—	{ }	—	—
1Q01	—	{ }	{ }	{ }
2Q01	—	{ }	{ }	—
3Q01	—	{ }	{ }	{ }
4Q01	—	{ }	{ }	{ }
1Q02	{ }	—	{ }	—
2Q02	{ }	—	—	{ }
3Q02	{ }	—	{ }	{ }
4Q02	{ }	—	{ }	{ }
1Q03	{ }	—	—	—
2Q03	{ }	{ }	{ }	{ }
3Q03	—	—	—	—
4Q03	—	{ }	—	{ }
1Q04	—	—	—	{ }

Source: AEP Texas Exhibit II-A-2.

7. **Tare Weight of Car (In Tons to One Decimal)** – The average tare weights per car for coal moving from each PRB Origin Mine to the Oklaunion Station were obtained from freight bills from June 16, 2000 through February 12, 2004. *See* Exhibit II-A-2 and computer file "T&O AEP-Tex Open.123" in the electronic workpapers for Part II-A. Tare weights for Rawhide, Buckskin, Jacobs Ranch, and

Black Thunder Mines are listed on Line 7 of Tables II-A-5, II-A-6, II-A-7, and II-A-8 and in Table II-A-11 below.

Table II-A-11
Tare Weight Per Car From Rawhide,
Buckskin, Jacobs Ranch, and Black Thunder
(2Q00 - 1Q04)(Tons)

Quarter (1)	Rawhide (2)	Buckskin (3)	Jacobs Ranch (4)	Black Thunder (5)
2Q00	—	{ }	{ }	—
3Q00	—	{ }	{ }	—
4Q00	—	{ }	—	—
1Q01	—	{ }	{ }	{ }
2Q01	—	{ }	{ }	—
3Q01	—	{ }	{ }	{ }
4Q01	—	{ }	{ }	{ }
1Q02	{ }	—	{ }	—
2Q02	{ }	—	—	{ }
3Q02	{ }	—	{ }	{ }
4Q02	{ }	—	{ }	{ }
1Q03	{ }	—	—	—
2Q03	{ }	{ }	{ }	{ }
3Q03	—	—	—	—
4Q03	—	{ }	—	{ }
1Q04	—	—	—	{ }

Source: AEP Texas Exhibit II-A-2.

8. **Identity of Car Owner** – BNSF owns or leases the freight cars used for transportation at the carrier car rate specified in the Pricing Letters.

9. **Identity of Locomotive Owner** – The motive power for the coal trains destined to the Oklaunion Station from the PRB Origins is supplied by BNSF.

10. **Car Lease Rental (Railroad Supplied Cars)** – Railcars for this movement are provided by BNSF. Freight car capital costs were based upon the system average costs of the specific car types used by BNSF in the Oklaunion service.

11. **Locomotive Lease Rental** – Locomotive capital costs were based upon the system average cost of unit train locomotives used by BNSF.[15]

12. **Present Rate (1Q04)** – $18.83 per ton in BNSF-provided, high-capacity cars from the PRB Origin Mines.

13. **Proposed Rate** – Not applicable.

14. **Initial Rate and Effective Date** – The June 16, 2000 Pricing Letter set a rate of $15.78 per net ton that was to have become effective July 7, 2000.

15. **Amounts (Or Percent) of Rate Escalation and Dates (If Any)** – The Pricing Letters make no mention of any mechanism to adjust the rate.

16. **Cars Per Train or Per Shipment** – The average number of cars per train was developed from AEP Texas freight bills. The average cars per train from each PRB Origin Mine to the Oklaunion Station are listed in Exhibit II-A-2. For Rawhide, Buckskin, Jacobs Ranch, and Black Thunder Mines, Table II-A-12, below, lists Cars Per Train for each time period. *See* Exhibit II-A-2 and computer file "T&O AEP-Tex Open.123" in the electronic workpapers accompanying Part II-A.

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[15] AEP Texas Request for Production No. 13 requested locomotive leases for all locomotives used by BNSF to provide AEP Texas Oklaunion service between 2000 and the present. BNSF provided only those leases that were dated between 2000 and the present.

Table II-A-12

Cars Per Train From Rawhide,

Buckskin, Jacobs Ranch, and Black Thunder

(2Q00 - 1Q04)

Quarter (1)	Rawhide (2)	Buckskin (3)	Jacobs Ranch (4)	Black Thunder (5)
2Q00	—	{ }	{ }	—
3Q00	—	{ }	{ }	—
4Q00	—	{ }	—	—
1Q01	—	{ }	{ }	{ }
2Q01	—	{ }	{ }	—
3Q01	—	{ }	{ }	{ }
4Q01	—	{ }	{ }	{ }
1Q02	{ }	—	{ }	—
2Q02	{ }	—	—	{ }
3Q02	{ }	—	{ }	{ }
4Q02	{ }	—	{ }	{ }
1Q03	{ }	—	—	—
2Q03	{ }	{ }	{ }	{ }
3Q03	—	—	—	—
4Q03	—	{ }	—	{ }
1Q04	—	—	—	{ }

Source: AEP Texas Exhibit II-A-2.

17. **Loaded Miles (Identify any Way Miles Included in Loaded Miles)** – In the loaded direction, the miles traveled from the PRB Origin mines to Oklaunion Station are based on BNSF's timetables produced during discovery. There are no miles in way train service. The Loaded Miles from each PRB Origin Mine to the Oklaunion Station are listed in Table II-A-13, below, and Exhibit II-A-2. Loaded Miles for Rawhide, Buckskin, Jacobs Ranch, and Black Thunder Mines, are listed on Line 17 of Tables II-A-5, II-A-6, II-A-7, and II-A-8, respectively. *See* Exhibit II-A-2, Workpapers Vol. 1, pp. 00011 - 00096 and electronic file "AEP-Tex Miles Open.123" in the electronic workpapers accompanying Part II-A.

Table II-A-13
Loaded Miles From 17 PRB
Origin Mines to Oklaunion 2Q03

Mine (1)	Loaded Miles (2)
Rawhide	1114.1
Buckskin	1114.1
Jacobs Ranch	1085.2
Black Thunder	1074.6
Caballo Rojo	1101.5
North Antelope	1052.4
Eagle Butte	1114.4
Caballo	1099.5
Cordero	1090.6
North Rochelle	1064.7
Belle Ayr	1098.9
Dry Fork	1122.5
Fort Union	1120.7
Clovis Point	1117.7
Coal Creek	1087.9
Antelope	1048.8
Rochelle	1052.4

Source: AEP Texas Exhibit II-A-2.

18. **Empty Miles, if Applicable. If not Applicable, Indicate Empty Factor** – The empty miles from the Oklaunion Station to each PRB Origin mine are based on BNSF's timetables. Empty Miles for all 17 mines are listed in Table II-A-14, below. Also *see* Exhibit II-A-2, Workpapers Vol. 1, pp. 00011 - 00096 and electronic file "AEP-Tex Miles Open.123" in the electronic workpapers accompanying Part II-A.

Table II-A-14
Empty Miles From 17 PRB
Origin Mines to Oklaunion - 2Q03

Mine (1)	Empty Miles (2)
Rawhide	1114.9
Buckskin	1114.6
Jacobs Ranch	1099.3
Black Thunder	1089.7
Caballo Rojo	1109.2
North Antelope	1052.4
Eagle Butte	1114.0
Caballo	1112.1
Cordero	1090.6
North Rochelle	1064.7
Belle Ayr	1098.9
Dry Fork	1122.5
Fort Union	1120.7
Clovis Point	1117.7
Coal Creek	1087.9
Antelope	1048.8
Rochelle	1052.4

Source: AEP Texas Exhibit II-A-2.

19. **Length of Origin Loop Track (if any). Indicate Whether Included in Lines 17 or 18** – The origin loop track at the Rawhide Mine is 4.90 miles long starting at the end of the BNSF property. The empty movement on the loop track is 2.64 miles and the loaded movement is 2.26 miles. The Buckskin Mine loop track miles are 7.37 empty and 7.28 loaded. The Jacobs Ranch Mine loop track miles are 5.32 empty and 5.18 loaded. The Black Thunder Mine loop track miles are 2.48 empty and 1.65 loaded. Loop track miles for the Origin mines are listed in Exhibit II-A-2 and Table II-A-15, below. This data was derived from the BNSF track charts showing the mine facilities. *See* Workpapers Vol. 1, pp. 00011 - 00096 and electronic file "AEP-Tex Miles Open.123". These miles are not included in Nos. 17 and 18 above.

Table II-A-15
Origin Loop Track Miles From
17 PRB Origin Mines to Oklaunion

Mine (1)	Origin Lopp Track Miles (2)
Rawhide	4.90
Buckskin	14.65
Jacobs Ranch	10.50
Black Thunder	4.13
Caballo Rojo	4.18
North Antelope	12.66
Eagle Butte	7.60
Caballo	3.46
Cordero	5.56
North Rochelle	3.00
Belle Ayr	1.70
Dry Fork	3.45
Fort Union	3.22
Clovis Point	4.74
Coal Creek	7.10
Antelope	4.88
Rochelle	12.76

Source: AEP Texas Exhibit II-A-2.

20. **Length of Destination Loop Track (if any). Indicate Whether Included in Lines 17 or 18** – The destination loop track at the Oklaunion Station is 7.5 miles in length, starting at the end of the BNSF property. The empty movement on the loop track is 4.0 miles and the loaded movement is 3.5 miles. These miles are not included in Nos. 17 and 18 above. *See* Workpapers Vol. 1, pp. 00011 - 00096 and electronic file "AEP-Tex Miles Open.123".

21. **Number of Locomotive Units (by Segment)** – The typical number of locomotive units for the movement is 3 from the PRB Origin mines to the Oklaunion Station. In the empty return direction from the Oklaunion Station to the PRB Origin mines, 3 locomotives are required for the AEP Texas service. When an extra locomotive

accompanies the empty train, { }.

22. **Loading Hours and Basis of Calculation** – The Pricing Letters permit 3 hours free time for loading.

23. **Unloading Hours and Basis of Calculation** – The Pricing Letters permit 6 hours free time for unloading.

24. **Cycle Hours** – Average round-trip cycle hours between Oklaunion and the PRB Origin Mines are listed in Exhibit II-A-2. Cycle Hours for Rawhide, Buckskin, Jacobs Ranch and Black Thunder Mines for 2Q00 - 1Q04 are shown below in Table II-A-16. The cycle hours include loading and unloading time. *See* electronic files "T&O AEP-Tex Open.123" and "AEP-Tex Train Dispatch Summary.123".

Table II-A-16
Cycle Hours From Rawhide, Buckskin, Jacobs Ranch and Black Thunder - (2Q00 - 1Q04)

Quarter	Rawhide	Buckskin	Jacobs Ranch	Black Thunder
(1)	(2)	(3)	(4)	(5)
2Q00	—	{ }	{ }	—
3Q00	—	{ }	{ }	—
4Q00	—	{ }	—	—
1Q01	—	{ }	{ }	{ }
2Q01	—	{ }	{ }	—
3Q01	—	{ }	{ }	{ }
4Q01	—	{ }	{ }	{ }
1Q02	{ }	—	{ }	—
2Q02	{ }	—	—	{ }
3Q02	{ }	—	{ }	{ }
4Q02	{ }	—	{ }	{ }
1Q03	{ }	—	—	—
2Q03	{ }	{ }	{ }	{ }
3Q03	—	—	—	—
4Q03	—	{ }	—	{ }
1Q04	—	—	—	{ }

Source: AEP Texas Exhibit II-A-2.

25. **Number of Train Sets Required for Movement (Unit Trains Only)** – There are currently { } train sets used in this movement.

26. **Trips Per Year Per Train Set (Unit Train Only)** – Average trips per year between Oklaunion and Rawhide Mine equaled { } for 2Q03 shipments. Average trips per year between Oklaunion and Buckskin Mine equaled { } for 4Q01 shipments. Average trips per year between Oklaunion and Jacobs Ranch Mine equaled { } for 4Q02 shipments. Average trips per year between Oklaunion and Black Thunder Mine equaled { } for 4Q02 shipments.

27. **Crew Districts, Loaded Direction** – Based upon actual BNSF wage data, crew districts used by Oklaunion trains from Campbell branch mines are as follows:

{ }
{ }
{ }
{ }
{ }
{ }
{ }
{ }
{ }

The alternative crew districts used by Oklaunion trains from Orin Line mines are as follows:

{

}

28. **Crew Districts, Empty Direction** – Based upon actual BNSF wage data, crew districts used by Oklaunion trains to Campbell branch mines are as follows:

{

}

The alternative crew districts used by trains from Oklaunion to Orin Line mines are as follows:

{

}

29. **Turnaround Crews (specify)** – { } *See* electronic files "Open-Avg Road Crew Wages, 2002.xls" and "Open-Avg Road Crew Wages, 2003.xls" included in the electronic workpapers for Part II-A.

30. **Locomotive Units Required (By Type and Horsepower for Each Railroad)** – Three six axle locomotive units per train are utilized for the loaded movements from the PRB Origin mines to the Oklaunion Station. Three six axle units per train are required for the return movements from the Oklaunion Station to the PRB Origin mines.

31. **Cars Required (Railroad-Owned for Each Railroad)** – BNSF supplies primarily J311 gondola cars for the AEP Texas service to Oklaunion specified in the Pricing Letters. The associated costs are included in AEP Texas' calculation of BNSF's variable costs for that service, shown in Exhibits II-A-26 through II-A-80.

32. **Cabooses (for Each Railroad)** – Cabooses are not used on the AEP Texas Oklaunion trains. Cabooses have been replaced by End-of-Train Devices ("EOTD").

33. **Spare Margin for Locomotives** – A spare margin of { } has been used in the development of locomotive capital costs for 2002. *See* electronic file "2002 Loco Maint AEPTEX.123".

34. **Spare Margin for Cars (Railroad-Supplied)** – A { } spare margin for the railroad-supplied cars has been used.

35. **Spare Margin for Cabooses** – As noted in Item 32 above, cabooses are not used in the AEP Texas service. However, a spare margin of { } has been used in developing EOTD capital costs for 2002.

36. **Switching by Road Haul Locomotives (Specify)** – The BNSF Train Dispatcher Reports and Train Activity Reports for AEP Texas trains show that { }. *See* Workpapers Vol. 8, p. 03946 through Vol. 12, p. 06402 and electronic file "AEP-Tex Train Dispatch Summary.123".

37. **Switching by Yard Locomotives (Specify)** – Intermediate yard switching { }. The BNSF Train Dispatcher Reports and Train Activity Reports for the AEP Texas trains show that { }. *See* the BNSF Train Dispatcher Reports for AEP Texas trains, Workpapers Vol. 10, p. 04872 through Vol. 12, p. 06402 and electronic file "AEP-Tex Train Dispatch Summary.123".

38. **Helper Service (Location, Miles, Time)** – The PRB Origin AEP Texas trains to the Oklaunion Station sometime require helper assistance. Traffic from mines {

}

The percent of time that the helpers are actually used is listed in Exhibit II-A-26 through II-A-80, page 9 of 14.

39. **Helper Crew (Hours for Crew Cycle on This Movement)** – *See* item 38.

40. **Location of Interchanges (Indicate Which are Non-Through)** – Not applicable.

41. **Location of Inter-Intratrain Switches** – No inter/intra-train switching is applicable to the AEP Texas trains to the Oklaunion Station.

42. **Joint Facility Payments (Indicate Basis for Computation)** – The AEP Texas trains utilize joint facilities on the Orin Line and between Sterling and Union, CO, Denver and Pueblo, CO and Southern Junction and Walsenberg, CO. AEP Texas based these payments upon the actual joint facilities bills provided by BNSF in discovery.[16]

The foregoing traffic and operating characteristics were used to develop the variable cost of handling the AEP Texas coal trains between the PRB Origins and the Oklaunion Station.

c. Components of Variable Cost

Variable costs are costs that vary with changes in output. They change in direct proportion to an increase or decrease in traffic. The variable costs included in AEP Texas' analysis are developed following the STB's URCS procedures. This cost level includes

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[16] *See* Workpapers Vol. 1-5, pp. 00192 - 02444.

variable expenses and return on investment in both road and equipment property. For variable costs, return is calculated at the current cost of capital using the Board's 2002 railroad cost of capital determination (*e.g.*, 9.8 percent after taxes in 2002).[17]

The detailed traffic and operating characteristics of the Oklaunion Station movements described above were applied to the unit costs developed in URCS.[18] BNSF's variable cost of handling the Oklaunion Station coal movements were developed utilizing final BNSF URCS unit costs and the indexing procedures approved by the Board.[19]

To more closely approximate the actual costs of providing a particular service, costs are tailored to the transportation characteristics and costs per unit of a particular movement. Where available, the Board prefers costs tailored to the specific service involved over system average costs.[20] With that in mind, AEP Texas' variable cost calculations reflect the results of the following special studies of several significant variable cost components designed to tailor BNSF's costs of handling the Oklaunion Station coal traffic to the actual movement parameters:

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17 Ex Parte No. 558 (Sub-No. 4), *Railroad Cost of Capital - 2000*, Decision served December 18, 2000. Ex Parte No. 558 (Sub-No. 5), *Railroad Cost of Capital - 2001*, Decision served June 20, 2002. Ex Parte No. 558 (Sub-No. 6), *Railroad Cost of Capital - 2002*, Decision served June 19, 2003.

18 This narrative references variable cost calculations for movements occurring during 2002 or later. For movements occurring during 2000 and 2001, AEP Texas used the Board's BNSF URCS for the years 2000 and 2001, respectively.

19 The unadjusted 2000, 2001, and 2002 BNSF URCS used to develop variable cost of service is in computer files "UBNSF00.UR2", "UBNSF01.UR2" and "UBNSF02.UR2" included in the electronic workpapers accompanying Part II-A. Indexing is shown in computer file "BN00 Index Open.123", "BN01 Index Open.123" and "BN02 Index Open.123".

20 *See, e.g., West Texas Utilities*, 1 S.T.B. at 721-722 and *FMC* at 48 ("Because a carrier's system-wide average costs are not necessarily representative of the costs of providing a particular service, however, movement-specific adjustments are sometimes made to better reflect the costs attributable to providing a particular service.").

- Maintenance-of-way costs have been developed using transportation characteristics specific to the Oklaunion Station service, the route of movement and the SFGT formula. These SFGT-based costs have been verified by comparison with BNSF's actual MOW costs for the line segments used by the AEP Texas trains.

- Return and depreciation on road property investment have been developed for the route of movement using investment information provided by BNSF to AEP Texas during discovery.

- Locomotive maintenance costs have been developed based on specific BNSF-provided locomotive maintenance agreements for the equipment used in coal service between the PRB Origins and the Oklaunion Station.

- Freight car capital and maintenance costs have been developed based on the equipment types used in AEP Texas service and the specific cycle times for that service.

- Crew wage costs have been developed based on the specific wage payments to crews operating the trains between the PRB Origins and the Oklaunion Station.

- Car inspection costs have been developed based on BNSF car inspection information gathered during discovery field trips.

- Loss and damage for the trains operating between the PRB Origins and the Oklaunion Station has been developed based on actual reported loss and damage payments to AEP Texas as reported during the period from 2000 through 2003, inclusive.

Each variable cost component is discussed below. Several cost components reflect system average costs. Other cost components have been refined based on the results of the special studies listed above. As each cost component is discussed, its basis (that is, system average or special study) is specified.

(1) Gross Ton-Mile Related Costs

Costs considered to be a function of gross ton-miles as developed in URCS were applied on a system average basis with the exception of maintenance-of-way, road property

return and depreciation, joint facilities, and locomotive maintenance. AEP Texas' analyses of these costs are discussed in the following sections.

(a) Maintenance-of-Way Costs (GTM)

In calculating BNSF's variable maintenance-of-way costs associated with transporting AEP Texas' coal trains over BNSF's track between the mine facilities in the PRB and the Oklaunion Station, the SFGT formula was used to generate line-specific route of movement running maintenance-of-way costs at 2001 and 2002 levels. This involved a detailed analysis of the track and traffic characteristics of BNSF's service when handling AEP Texas' traffic. For those line segments traversed by BNSF where BNSF is not the owner, the variable joint facility payments paid by BNSF for maintenance-of-way costs were included on a direct basis[21], so the system average URCS counterpart was excluded. The results of AEP Texas' SFGT calculations are shown in Exhibits II-A-4 through II-A-9. The procedures used to make these SFGT calculations are described in Exhibit II-A-10.

AEP Texas also developed BNSF's actual maintenance of way costs using actual maintenance of way data provided by BNSF in discovery. The actual maintenance of way cost results are shown in Exhibit II-A-11, and the procedures used to calculate actual maintenance of way costs are described in Exhibit II-A-12.

The Board has accepted variable maintenance-of-way costs based on the SFGT formula (which uses actual cost, traffic and track data) as more accurate than system average variable maintenance-of-way costs in numerous rate cases, most recently FMC and Wisconsin.[22] The accuracy of maintenance-of-way costs calculated with the SFGT formula

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[21] This includes BNSF direct maintenance payments for the Orin Line between Caballo Jct. and Shawnee Jct., WY.

[22] *See, e.g., Wisconsin* at 49-53.

has been tested against actual line-specific maintenance-of-way costs for several Class I railroads. For example, in San Antonio[23] the ICC accepted the SFGT formula and noted:

> "There is a very close correlation between San Antonio's [SFGT] results and the only evidence of actual maintenance costs BN produced in this case... . The SFGT formula results are very close to the amounts BN showed it spent (only 8 percent higher than actual costs)."

However, in *TMPA*, the Board stated the following:[24]

> "...the rail industry has changed significantly since the SFGT was developed, in the manner of accounting for MOW expenses, in maintenance practices, in traffic densities, and in the types of track materials used. [footnote omitted] But SFGT has not been re-benchmarked to take into account these changes. And we do not have in this record the type of evidence that was presented in the 1986 case, showing that the SFGT model produces MOW expenses that are comparable to current actual MOW costs for any rail line."

Because SFGT had not been re-benchmarked between *San Antonio* and *TMPA*, the Board rejected the shipper's evidence and used the URCS system average MOW unit costs offered by BNSF.

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[23] *San Antonio, Texas, Acting By and Through Its City Public Service Board v. Burlington Northern R.R.*, 1 I.C.C.2d 561, 572 (1986).

[24] *TMPA*, pages 57 and 58.

In this proceeding, AEP Texas has re-benchmarked the SFGT formula to actual BNSF MOW costs for the year 2001.[25] The results of the re-benchmarking are shown below in Table II-A-17.

Table II-A-17
BNSF Maintenance of Way Costs Movements from the PRB Origins to the Oklaunion Station - 2001 SFGT Results Benchmarked Against Actual BNSF MOW

Origin Mine (1)	SFGT [1] (2)	Actual MOW [1] (3)	System Average [1/] (4)	SFGT as % of System Average [2/] (5)	Actual as % of System Average [3/] (6)
1. Buckskin	$246.27	{ }	{ }	{ }	{ }
2. Caballo Rojo	251.49	{ }	{ }	{ }	{ }
3. Jacobs Ranch	250.06	{ }	{ }	{ }	{ }
4. Black Thunder	250.84	{ }	{ }	{ }	{ }

Source: SFGT from Exhibit II-A-8 and Actual MOW from Exhibit II-A-11.
1 Dollars per million gross ton-miles.
2 Column (2) divided by column (4).
3 Column (3) divided by column (4).

These results demonstrate that SFGT accurately measures actual MOW costs for unit coal train traffic. The SFGT formula is robust and accurately expresses the relationship among current maintenance of way costs and current track and traffic statistics.

For the four PRB to Oklaunion Station movements evaluated above, SFGT produced results that were from { }. Actual maintenance of way results were nearly the same, from { }. These results also demonstrate that as a predictor of actual line segment-specific maintenance of way,

[25] While BNSF provided sufficient data to permit the calculation of SFGT for both 2001 and 2002, BNSF did not provide sufficient data to permit the calculation of actual maintenance of way costs for 2002.

SFGT is far superior to a system average estimate. Table II-A-17 shows that for the Buckskin to Oklaunion movement, system average maintenance of way overstates actual maintenance of way by { } per million gross ton-miles or { } per carload.

AEP Texas' variable maintenance of way costs are about {

}.

(b) Joint Facility Costs

As listed above in Item 42 of the "Narrative Description of Traffic and Operating Characteristics," the AEP Texas trains to Oklaunion use jointly owned track on the Orin Line and between Denver and Pueblo, CO, and between Southern Jct. and Walsenburg, CO. These trains also use facilities owned by other carriers between Sterling and Union, CO and at Sterling.

A joint facility consists of yards, tracks, stations or other property used by more than one carrier. For example, if BNSF owns a segment of track which it rents to another carrier, the using carrier would pay a rental fee to BNSF which BNSF would classify in its accounting system as a joint facility credit. If BNSF is the using carrier on a segment of track owned by another carrier (*e.g.*, UP), the payments BNSF makes to UP would be classified by BNSF in its accounting system as a joint facility debit.

From documentation provided by BNSF in discovery,[26] maintenance of way costs associated with these joint facilities were calculated and applied specifically.

As described above, variable maintenance-of-way costs were developed separately by AEP Texas using the SFGT formula for all line segments traversed by the AEP Texas

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[26] *See* Workpapers Vol. 1, pp. 00192 through Vol. 5, p. 02444 and electronic file "JT_Variable joint facility per Car.xls".

trains that are maintained by BNSF. For debit joint facilities (that is, for joint facilities owned by another railroad and used by BNSF), joint facility debits were calculated from the information BNSF provided during discovery and recorded in Exhibit II-A-3. These debits are also shown as "Joint Facility Expenses" at line 18 on page 1 of each of Exhibits II-A-26 through II-A-80. To avoid double counting, the BNSF URCS has been adjusted to exclude joint facility debits.

(c) Road Property Return and Depreciation (GTM)

Consistent with the superiority of and the Board's preference for movement-specific variable costs, AEP Texas has calculated return and depreciation related to road property for the specific BNSF line segments traversed by the AEP Texas trains based on valuation records provided to AEP Texas in discovery.[27] This is the same approach approved by the Board in other recent rate cases, including *TMPA*.[28]

Board precedent requires that BNSF provide the data relevant to the Road Property Investment and Depreciation cost calculations applicable to the AEP Texas coal trains that reflect BNSF's line segment specific investment and depreciation information including

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[27] *See* Exhibits II-A-14 through II-A-18 and electronic file "Rd Inv AEP Texas 2000.123", "Rd Inv AEP Texas 2001.123", "Rd Inv AEP Texas 2002.123" and "Rd Inv AEP Texas 2003.123" included in the electronic workpapers for Part II-A. Exhibit II-A-18 explains AEP Texas' Road Property Return and Depreciation costing procedure.

[28] In *Wisconsin*, the Board declined to accept line-specific road property investment and depreciation costs because UP showed that a portion of its investment was assigned to a general (default) account and not to specific line segments was needed to provide service to the complainant. *See Wisconsin* at 53-54. In the instant proceeding, BNSF has no such general or default investment for which AEP Texas has not taken account. AEP Texas has assigned 100% of the invested capital used in connection with the Oklaunion Station movement based upon the road property investment information provided to AEP Texas by BNSF in discovery. In addition, AEP Texas has reflected the writeup of road property that resulted from the merger of the Burlington Northern and the Atchison Topeka and the Santa Fe ("ATSF"). *See also FMC* at Appendix C.

BNSF's 1) Property In Service Not Unitized ("PISNU"), 2) Unassigned Investment, and 3) the Fixed Asset Database ("FADB") by account for each year. Unfortunately, BNSF did not provide this required information for 2000, despite AEP Texas' discovery requests. BNSF also has not provided the system-wide FADB by account for each year 2000, 2001, and 2002.[29] To the extent permitted by the information BNSF has provided, AEP Texas' Road Property Investment and Depreciation cost calculations comply with Board precedent (including the Board's *Wisconsin* ruling on this issue[30]). AEP Texas reserves the right to reflect the additional PISNU, Unassigned Investment, and FADB by account data when it is provided by BNSF. AEP Texas should not be faulted for BNSF's failure to provide this data on a timely basis.

For the years 2001 and 2002, Unassigned Investment, specifically, road investment in any system-wide facilities (such as dispatching centers) used, in part, for the benefit of the Oklaunion Station movement, was captured using data reporting those investments for 2001 and 2002. Road investments in any BNSF yard facilities used for the benefit of the Oklaunion Station traffic were captured through the switch engine minute unit cost, reflecting a system average allocation of yard investment, and through inclusion of any yard investment provided by BNSF in discovery.

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[29] BNSF system-wide FADB by account data is used to reconcile BNSF's line segment-specific investment to BNSF's R-1.

[30] Id., Decision served May 14, 2002 at Appendix - "Roadway Ownership Variable Cost Evidence." In *Wisconsin*, the Board ruled that unassigned investment costs must be reflected if those costs are shown to be used, in part, for the benefit of the subject movement.

Consistent with the Board's *Wisconsin* decision, AEP Texas apportions line segment road investment costs based on the ratio of Oklaunion Station traffic gross ton-miles versus total gross ton-miles on a line segment-by-line segment basis.

(d) Locomotive Maintenance Costs (GTM)

In rate proceedings involving the Burlington Northern Railroad Company ("BN") prior to its merger with the Atchison, Topeka and Santa Fe Railway Company ("ATSF"), complainant Omaha Public Power District based locomotive maintenance expenses on BN's "BN Service Locomotive Repair Costs" (the so-called SMD510A Reports) and "Locomotive Condition of Power Mileage Summary Report" (the LCP003 reports). These expenses were accepted by the ICC in preference to system-average locomotive maintenance expenses. *See* Docket No. 38783, *Omaha Pub. Pwr. Dist. v. Burlington N. R.R.*, Decision served January 15, 1986, at 27-28 ("*OPPD*").

In response to AEP Texas' discovery requests in this proceeding, BNSF stated "...that for some locomotives it maintains partial information on maintenance and repair expenses by locomotive or locomotive type or series, but it does not maintain total maintenance and repair expenses for these locomotives".[31] BNSF did not provide this partial information. However, BNSF did provide maintenance contract documents related to these locomotives. AEP Texas' calculation of BNSF locomotive maintenance expenses for the Oklaunion Station movements is based on the full service contract maintenance rates for the AEP Texas locomotives.[32]

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[31] *See* BNSF's Responses and Objections to Complainant's First Set of Interrogatories and Requests for Production of Documents (hereinafter, "BNSF's First Discovery Responses"), dated September 30, 2003, page 23 included in Workpapers Vol. 6, p. 02535.

[32] *See* Exhibit II-A-19, Workpaper Vol. 6, pp. 02532 - 02937 and electronic files "2000 Loco Maint AEPTEX.123", "2001 Loco Maint AEPTEX.123", "2002 Loco Maint AEPTEX.123" and

The locomotive maintenance information produced by BNSF indicates that actual BNSF locomotive maintenance expenses related to the PRB Origins to Oklaunion Station service { } for 2003[33] This result is likely closer to BNSF's actual costs of maintaining the locomotives used than system-average costs.[34] Newer locomotives need repairs less frequently than older locomotives.

In addition, consistent with the ICC's finding in *Nevada Power I*, the BNSF locomotives used in PRB coal service experience a much higher level of utilization than the BNSF system average.[35] Locomotives tend to remain with their train throughout its cycle, and do not sit idle for long periods of time or engage in intermediate switching activities. Their high level of dedicated road utilization means they experience far less maintenance per locomotive unit-mile than the system average.

(e) Locomotive Fuel Costs (GTM)

In response to AEP Texas' discovery requests, BNSF stated "...that it has not conducted any studies or analyses of fuel consumption of AEP Texas trains...".[36]

"2003 Loco Maint AEPTEX.123"

33 *See* computer file "2003Loco Maint AEPTEX.123" included in the electronic workpapers for Part II-A.

34 In *Wisconsin*, the complainant used the same locomotive maintenance costs that were accepted in *Nevada Power I*. In *Wisconsin*, however, the Board rejected these costs in favor of system average costs because the locomotives at issue in the two cases were of a different type and there was no evidence to show that maintenance costs for the locomotives used to handle the *Wisconsin* traffic have similar maintenance costs to those used for the *Nevada Power I* traffic. See *Wisconsin* at 55-56. In this case, unlike *Wisconsin*, AEP Texas' movement-specific locomotive maintenance evidence is derived from BNSF records for the same types of locomotives (indeed, it includes most of the same units) actually used in the AEP Texas service.

35 *See Bituminous Coal - Hiawatha, Utah to Moapa, Nevada*, 6 I.C.C.2d 1, 38 (1989) ("*Nevada Power I*").

36 *See* letter from BNSF's counsel Brooke L. Gaede, Esq. to AEP Texas' counsel Christopher A. Mills, Esq., November 24, 2003, page 2.

Absent a source for current actual fuel consumption rates of the locomotives in the Oklaunion Station trains, AEP Texas has calculated its fuel costs based upon BNSF's system average fuel costs for each year. AEP Texas believes that its approach dramatically overstates actual fuel costs, in light of the well-known economies inherent in unit coal train service and the greater fuel efficiency of the more modern, fuel-efficient, newer, AC locomotives used in AEP Texas' service.

AEP Texas' development of locomotive fuel costs is detailed in Exhibits II-A-26 through II-A-80 at lines 3, 4, 5, 6, 7, 10 and 11 of page 1 of 15 and at pages 2, 3, 4, 5, 6, 7, 8, 10 and 11 of 15 and in the electronic files ("vc AEPTEX Open 2000.123", "vc AEPTEX Open 2001.123", "vc AEPTEX Open 2002.123" and "vc AEPTEX Open 2003.123") supporting those exhibits and included in the electronic workpapers for Part II-A. Costs were indexed to the time period covered in each exhibit.

(2) Locomotive Unit-Mile (LUM) Related Costs

(a) LUM Cost Component Development

Expense items considered a function of locomotive unit-miles were developed using system average costs, except for locomotive maintenance. As discussed above, locomotive maintenance costs reflect the actual locomotive maintenance expense experience documented in BNSF's locomotive maintenance contracts and records.

(b) Locomotive Capital (LUM)

Locomotive capital costs (depreciation and return) were developed based on unit train locomotives units[37] and their hours[38] of use. The calculation of locomotive capital costs for the AEP Texas movement for 2Q00 through 1Q04 is reported in Exhibits II-A-26 through II-A-80 on line 11 of Page 1 of 15 and detailed in Page 11 of 15.

(3) Crew Wages

Movement-specific crew wage costs were developed for the BNSF line segments traversed by the Oklaunion trains. The crew districts are listed *supra*, as Traffic and Operating Characteristics Numbers 27 and 28. The crew wage costs per train were calculated based on actual wage payments for the year 2002 and the first six months of 2003, including all constructive allowances paid by BNSF to the crews identified as operating the Oklaunion

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[37] Because BNSF has not provided sufficient documentation of the capital costs of the locomotives used in AEP Texas service, AEP Texas has relied on the BNSF system average capital costs of locomotives used in unit train service.

[38] A summary of locomotive cycle times for Oklaunion Station trains is included in Exhibit II-A-2. The source of these locomotive cycle times is shown in computer files "T&O AEP-Tex Open.123", "cycl3 time 00.xls", "cycl3 time 01.xls","cycl3 time 02.xls" and "cycl3 time 03.xls" in the electronic workpapers for Part II-A.

trains.[39] These crew wage costs are detailed in Exhibit II-A-20 and on line 9 page 1 of 15 and page 9 of 15 of each of Exhibits II-A-26 through II-A-80.[40]

AEP Texas identified wage payment components directly related to the operation of the Oklaunion trains (that is, "train-related" components) and wage payment components not directly related to the operation of Oklaunion trains but, rather, related to train service to all customers generally (that is, "non-train-related" wage components). The ratio of non-train-related wages to train-related wages is generally called the markup ratio. AEP Texas used this markup ratio to apply non-train-related wage payments to the Oklaunion trains.

Because of data errors in BNSF's reporting of crew wages, and in order to eliminate crew wages that should not be charged to the AEP Texas trains, AEP Texas made the following adjustments to the crew wage records provided to AEP Texas by BNSF:[41]

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[39] AEP Texas' Request for Production No. 19 requested crew wage data for each AEP Texas train "for each year or partial year 2000 to the present". BNSF refused to provide 2000 payroll data. The payroll data BNSF provided for 2001 is a small segment of a larger BNSF file, and the data provided is insufficient to calculate the average wages per train (i.e., the crew district on-station and off-station are missing, and the individual wage components do not add up to the amount shown in the total column). Finally, although AEP Texas requested data "for each AEP Texas train", BNSF has not provided complete wage data for AEP Texas trains originating at Rawhide Mine in the AEP train wages file. Although some payroll data for trains originating at Rawhide were available in the "full wages" file (used to develop the non-train related mark-up percent), this data was incomplete. The data could not be used to develop the Rawhide movement crew wages because entire segments were missing from many trains. Follow-up requests for this missing data have been made. *See* letters from Daniel M. Jaffe, Esq. to Brooke L. Gaede, Esq. dated December 31, 2003 and included as Workpapers, Vol. 6, pages 02513 - 02516.

[40] Additional crew wage documentation can be found in electronic files "Open-Avg Road Crew Wages, 2002.xls" and "Open-Avg Road Crew Wages, 2003.xls" in the electronic workpapers for Part II-A.

[41] *See* Opening electronic file "Open-Avg Road Crew Wages, 2002.xls and "Open-Avg Road Crew Wages, 2003.xls".

- Payroll records showing the incorrect route (for example, records showing crew wages for a crew { }, when the train operated { }) were eliminated.

- Payroll records for multiple crew members that did not conform to the train's other associated payroll records, either by on duty date or actual miles, were eliminated. For example, payroll records for train {

  }.

- Payments for Constructive Allowance Codes { } were eliminated, where the Train Movement File showed the train { }.

After the adjustments discussed above, the occupation specific mark-up percents were applied. The resulting average wages per train are summarized in Opening electronic files "Open-Wages Summary-2002.xls" and "Open-Wages Summary-2003.xls".

Crew wage variable costs (including overheads), indexed to 2Q00 through 1Q04, are shown in Exhibits II-A-26 through II-A-80.

(4) Other Line-Haul Costs

In addition to costs related to gross ton-miles, locomotive unit-miles and crews, the following line-haul variable costs were considered:

(a) Train-mile other costs;
(b) Freight car maintenance costs;
(c) Car ownership costs; and
(d) Helper service costs.

(a) Train-Mile Other Costs

Major components of other train-mile expenses in URCS include the costs for dispatching trains, a portion of train supplies and expenses, the costs for car inspectors, signals and interlockers, end-of-train devices, crossing protection, drawbridge operation, clearing wrecks and damage to property. In AEP Texas' analysis, these variable costs were allocated on a system basis except for end-of-train device costs and car inspection costs, each of which was based on a special study.

End-of-Train Device ("EOTD") capital costs were applied on a movement specific basis.[42] Train inspection costs are reported in Exhibit II-A-21 and were applied based on the car inspection data gathered during discovery field trips.[43] Train-Mile Other unit costs were developed based on URCS procedures and were applied to the round-trip train-miles. The resulting per train cost was converted to a per carload basis and included in the variable cost of moving the Oklaunion Station trains at lines 8 and 16 of page 1 of 15 and detailed at pages 9 of 15 and 12 of 15 of Exhibit II-A-26 through II-A-80 and in the electronic files "AEPTEX Train Inspection Summary.123" and "vc AEPTEX Open 2000.123", "vc AEPTEX Open 2001.123", "vc AEPTEX Open 2002.123" and "vc AEPTEX Open 2003.123" supporting those

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[42] *See* line 16 of Page 1 of 15 and Page 12 of 15 of Exhibits II-A-26 through II-A-80. Also *see* the electronic files ("vc AEPTEX Open 2000.123", "vc AEPTEX Open 2001.123", "vc AEPTEX Open 2002.123" and "vc AEPTEX Open 2003.123") supporting these exhibits and electronic file "EOTD 2000.123", "EOTD 2001.123" and "EOTD 2002.123" included in the electronic workpapers for Part II-A.

[43] *See* Page 9 of 15 of each of Exhibits II-A-26 through II-A-80, Workpapers Vol. 13-14, pp. 06403 - 07596 and computer file "AEPTEX Train Inspection Summary.123" in the electronic workpapers for Part II-A.

exhibits and included in the electronic workpapers for Part II-A. Costs were indexed to the time period covered in each exhibit 2Q00 through 1Q04.

(b) Freight Car Maintenance Costs

In response to AEP Texas's discovery requests for "...freight car repair maintenance by car number, car type code, or car type code groupings...," BNSF responded 1) that the information sought "...is not maintained by BNSF in the normal course of business...", 2) that the information sought is "... not maintained by BNSF in the format requested...", or 3) that providing the information sought "...would require a special study to compile or to report in the format requested."[44] In other words, BNSF refused to provide AEP Texas any information, other than system average, upon which AEP Texas can determine the car maintenance costs that BNSF incurs in providing service to AEP Texas.

BNSF's response that it does not maintain sufficiently detailed car maintenance information is curious for the following reasons:

- The importance of coal traffic to BNSF's financial well-being and the significant role that coal car maintenance costs play in the profitability of transporting coal renders it essential that BNSF fully understand and manage in detail its car repair costs;

- BNSF maintains car repair records { } in its extensive computer information systems;

- BNSF's objection that the car repair records are "... not maintained by BNSF in the format requested..." is not valid because AEP Texas requested BNSF's records in the format in which they are kept by BNSF. No specific format was requested; and

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[44] *See* BNSF's Responses to AEP Texas's First Interrogatories, Responses to Request for Production Nos. 31 and 32, page 34.

- BNSF's objection regarding the requirement for a special study is not valid in this age of management information systems and detailed computer records. AEP Texas' need for this car type-specific car repair information must be balanced against the minor cost that BNSF would incur in developing the limited computer inquiries required to select the relevant car repair information from BNSF's car repair databases.[45] Further, if BNSF did not wish to incur the costs necessary to develop this information, AEP Texas offered to develop that information using the BNSF's car repair cost databases supplied to it by BNSF. Not requiring BNSF to undertake either of these limited efforts (that is, developing the data selection itself or providing the databases to AEP Texas) is unfair to AEP Texas.

Lacking a BNSF information source for movement-specific or car type-specific freight car maintenance, AEP Texas had to rely on system average freight car maintenance costs by car type, in spite of the acknowledged efficiencies and lower costs associated with high volume unit train coal train movements such as AEP Texas' Oklaunion traffic.

AEP Texas developed system average car type-specific car maintenance costs for the car types used in AEP Texas's service (primarily J311 Open Top Plain Gondolas). AEP Texas calculated car maintenance costs based on the URCS cost per car-mile and cost per car-day for each car type weighted on the car-type's relative usage in BNSF's AEP Texas service. The cost per car-day calculation included a standard "active to calendar-day" adjustment. The results of these calculations are reported in Exhibit II-A-22.

The results of the car maintenance calculations were reported in the Operating Expense for Carrier Owned Cars cost component at line 14 of page 1 of 15 and detailed at page 14 of 15 of each of Exhibits II-A-26 through II-A-80 or in the electronic files ("vc AEPTEX Open 2000.123", "vc AEPTEX Open 2001.123", "vc AEPTEX Open 2002.123" and "vc

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[45] Car repair costs constitute almost 5% of BNSF's total cost of providing service to AEP Texas' Oklaunion station.

AEPTEX Open 2003.123") supporting those exhibits and included in the electronic workpapers for Part II-A. Costs were indexed to the quarter covered in each exhibit 2Q00 and 1Q04.

(c) Car Ownership Costs

The cost of BNSF car ownership was calculated based on the system average costs of the specific car types used by BNSF in the Oklaunion service. In its discovery responses BNSF provided information concerning the method of acquisition (purchase, capital lease, or operating lease), original costs, lease rental (where applicable) and date of acquisition. However, BNSF provided only those leases that were dated between 2000 and the present rather than all leases related to freight cars used in AEP Texas' service between 2000 and the present.[46]

The calculation of the annual costs for BNSF-supplied freight cars in AEP Texas service is reported in Exhibit II-A-23 and at line 15 on page 1 of 15 and detailed at page 12 of 15 of each of Exhibits II-A-26 through II-A-80. (*See* also Workpapers Vol. 6, pp. 02938 - 02965 and computer file "Car Capital AEP Tex.123" in the electronic workpapers for Part II-A.)

(d) Helper Service

Costs associated with the additional locomotive unit-miles required to provide the helper services were included in the helper service costs, as were the additional wage

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[46] AEP Texas Request for Production No. 30 requested purchase or lease information for "...each rail car BNSF provided to be used in the AEP Texas service for each year 2000 to the present...".

expenses of the crews operating the helper locomotives. Helper Service Costs were determined using the operations description listed in the Traffic & Operating Characteristics Section II.A.2.b.(2) items 38 and 39.

The costing procedures used and the results of the Helper Service Cost calculations were reported at line 10 of page 1 of 15 and detailed in the Helper Service - LUM Expenses and Helper Service - Crew Expenses cost components at page 10 of 15 of each of Exhibits II-A-26 through II-A-80 where overheads were added. Costs were indexed to the time period covered in each exhibit 2Q00 through 1Q04.

(5) Terminal Costs

In addition to costs considered to be a function of line-haul operations, the following terminal costs were considered:

(a) Station Billing

In developing station clerical variable costs, system average clerical costs were adjusted to reflect the economies inherent in unit coal train movements. These unit train economies were measured by applying the Ex Parte No. 399 procedures.[47] There the ICC found that 75% of station clerical costs were train related and the remaining 25% were car related. Costs were indexed to the time period covered in each exhibit.

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[47] ICC Ex Parte No. 399, *Rail Cost Recovery Percentage*, Decision served January 25, 1985, Appendix A, page 3.

(b) Switching

BNSF Train Dispatcher Reports for sample trains {

} switching in handling the PRB Origins to Oklaunion Station trains.[48]

The results of the switching cost calculations are reported at lines 3, 4, and 5 of page 1 of 15 and detailed at pages 2 through 6 of 15 of each of Exhibits II-A-26 through II-A-80 or in the electronic files ("vc AEPTEX Open 2000.123", "vc AEPTEX Open 2001.123", "vc AEPTEX Open 2002.123" and "vc AEPTEX Open 2003.123") supporting those exhibits and included in the electronic workpapers for Part II-A. Costs were indexed to the time period covered in each exhibit 2Q00 through 1Q04.

(c) Loop Track Movements

The costs associated with loop track movements are composed of the gross ton-mile and locomotive unit-mile costs associated with the train movements over the loop tracks. (Loop tracks are usually circular or "loop" tracks over which the train moves during the loading and unloading processes.)

The results of the loop track movement costs are reported as Expenses for Loop Track Movements, line 7 of page 1 of 15 and detailed at page 8 of 15 of each of Exhibits II-A-26 through II-A-80 or in the electronic files ("vc AEPTEX Open 2000.123", "vc AEPTEX Open 2001.123", "vc AEPTEX Open 2002.123" and "vc AEPTEX Open 2003.123") supporting

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[48] The Train Dispatcher Reports are included in Workpapers Vol. 10, p. 04872 through Vol. 12, p. 06402.

those exhibits and included in the electronic workpapers for Part II-A. Costs were indexed to the time period covered in each exhibit 2Q00 through 1Q04.

(d) Claims for Cars Handled and Loss and Damage Costs

The claims for cars handled expense was applied on a per car basis according to URCS procedures. An adjustment factor was applied to the claims for cars handled expense to exclude the costs not applicable to BNSF's handling of cars in unit coal train service, i.e., costs associated with cleaning car interiors, car loading devices and grain doors.[49]

BNSF furnished loss and damage expenses associated with transporting coal from the PRB Origins to the Oklaunion Station "...for the years 2000 through the present".[50] These loss and damage costs are included in AEP Texas' calculation of BNSF variable cost of handling the instant traffic.[51]

The resulting Claims for Cars Handled costs are reported as Carload Handling - Other (CLOR), line 2 of page 1 of 15. The resulting Loss and Damage costs are reported at line 17 of page 1 of 15. These costs are detailed at page 2 of 15 and at page 14 of 15, respectively, of each of Exhibits II-A-26 through II-A-80 or in the electronic files ((“vc

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[49] Neither the BNSF cars in the instant service, nor any other car used in unit coal train service has grain doors or car loading devices, and the railroads do not perform any cleaning of the BNSF AEP Texas cars. This adjustment was accepted by the Board in *FMC* at 73, *Wisconsin* at 49, *TMPA* at 55 and *Carolina Power & Light* at 125. The adjustment calculation is shown in computer file "claimadj 00.123", "claimadj 01.123" and "claimadj 02.123" included in the electronic Workpapers for Section II-A.

[50] *See* Workpaper Vol. 7, pp. 03089 - 03090 or electronic file "L&D.123" included in the electronic Workpapers for Part II-A.

[51] *See* Workpaper Vol. 7, pp. 03089 - 03090 or electronic file "L&D.123" included in the electronic Workpapers for Part II-A.

AEPTEX Open 2000.123", "vc AEPTEX Open 2001.123", "vc AEPTEX Open 2002.123" and "vc AEPTEX Open 2003.123") supporting those exhibits and included in the electronic workpapers for Part II-A. Costs were indexed to the time period covered in each exhibit 2Q00 through 1Q04.

d. Indexing

Detailed data concerning operations and expenses for applying URCS is not available on a quarterly basis. Following the Board's procedures for updating 2000, 2001, and 2002 URCS costs,[52] the base period variable costs were indexed, where appropriate, to reflect 2Q00 through 1Q04 wage and price levels.[53] It is important to recognize that the composite index is a general or price-inflation index, not a cost index. No adjustment for railroad productivity gains is included in the composite index even though the Board, the railroads and the Railroad Accounting Principles Board have recognized the existence and impact of such productivity increases.[54]

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[52] ICC's 1E3-80 indexing procedures supplemented by Ex Parte No. 411, *Complaints Filed Under Section 229 of the Staggers Rail Act of 1980*.

[53] *See* electronic file "BN00 Index Open.123", "BN01 Index Open.123" and "BN02 Index Open.123" in the electronic workpapers for Part II-A.

[54] *Railroad Cost Recovery Procedures-Productivity Adjustment*, served March 24, 1989; *Railroad Accounting Principles, Final Report* by Railroad Accounting Principles Board, September 1, 1987; Ex Parte 290 (Sub-No. 4), *Improving Railroad Productivity*, Final Report of the Task Force on Railroad Productivity, A Report to the National Commission on Productivity and the Council of Economic Advisors, Washington, D.C., November 1973. *See also* ICC, *Proceedings Productivity Measurement Conference*, November 26, 1974.

e. Summary

The detailed separation of BNSF's base period variable costs between expenses, depreciation and return on investment for transporting AEP Texas coal trains from the PRB Origins to the Oklaunion Station for 2Q00 through 1Q04 is shown in Exhibits II-A-26 through II-A-80.[55] BNSF's 2Q03 variable cost calculations for BNSF handling of unit coal trains from the example origins to the Oklaunion Station are summarized in Table II-A-18 below.

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[55] *See* computer files ("vc AEPTEX Open 2000.123", "vc AEPTEX Open 2001.123", "vc AEPTEX Open 2002.123" and "vc AEPTEX Open 2003.123" included in the electronic workpapers for Part II-A.

Table II-A-18

Summary Of BNSF's Variable Costs Of Providing Service For Movement Of Coal From Rawhide Mine - 2Q03, Buckskin Mine - 4Q01, Jacobs Ranch - 4Q02 and Black Thunder Mine - 4Q02 to the Oklaunion Station

Item (1)	Amount Per Carload (2)	Amount Per Ton[5] (3)
A. Rawhide Mine - 2Q03[1]		
1. Variable operating expenses - fuel	{ }	$1.44
2. Variable operating expenses - non-fuel	{ }	3.60
3. Variable depreciation and lease rentals	{ }	0.95
4. Variable return on investment	{ }	0.96
5. Variable cost (L1+L2+L3 + L4)	{ }	$6.95
B. Buckskin Mine - 4Q01[2]		
6. Variable operating expenses - fuel	{ }	$1.21
7. Variable operating expenses - non-fuel	{ }	3.56
8. Variable depreciation and lease rentals	{ }	0.95
9. Variable return on investment	{ }	1.18
10. Variable cost (L6+L7+L8 + L9)	{ }	$6.90
C. Jacobs Ranch Mine - 4Q02[3]		
11. Variable operating expenses - fuel	{ }	$1.27
12. Variable operating expenses - non-fuel	{ }	3.62
13. Variable depreciation and lease rentals	{ }	0.94
14. Variable return on investment	{ }	1.00
15. Variable cost (L11+L12+L13 + L14)	{ }	$6.83
D. Black Thunder Mine - 4Q02[3]		
16. Variable operating expenses - fuel	{ }	$1.25
17. Variable operating expenses - non-fuel	{ }	3.60
18. Variable depreciation and lease rentals	{ }	0.98
19. Variable return on investment	{ }	1.01
20. Variable cost (L11+L12+L13 + L14)	{ }	$6.84

1 Source: Exhibit II-A-65.
2 Source: Exhibit II-A-45.
3 Source: Exhibit II-A-60.
4 Source: Exhibit II-A-61.
5 Column (2) divided by tons per car and multiplied by 0.9934 RFA-URCS linking factor.

BNSF's variable costs of handling unit coal trains from the PRB Origins to the Oklaunion Station range from $5.71 to $7.42 per ton in BNSF-supplied railcars.

2. Rates and Resulting R/VC Ratios

When compared with BNSF's common carrier rate levels, the BNSF variable cost levels produce revenue-to-variable cost ratios that range from 196% to 316% in BNSF-supplied railcars. Summary Exhibit II-A-81 shows the rates, variable costs, and revenue to variable cost ratios for each origin-destination pair for each time period 2Q00 through 1Q04. Revenue-to-variable cost ratios for all movements are substantially greater than 180%, which is the jurisdictional threshold ratio.

II-B Qualitative Market Dominance

II. B. QUALITATIVE MARKET DOMINANCE

In *West Texas Utilities*, the Board concluded that BNSF represented the only practical alternative for the transportation of Powder River Basin coal from the Rawhide Mine to Oklaunion Station. *Id.,* 1 S.T.B. at 648-654. Accordingly, the Board held that BNSF "has market dominance with respect to the coal shipments at issue." *Id.* at 654.

The facts relating to movements of coal from the Rawhide Mine to Oklaunion Station remain the same. Accordingly, the Board's 1996 market dominance findings with respect to that origin should apply to this proceeding. Further, the Board's 1996 conclusions regarding BNSF's market dominance are equally applicable to the non-Rawhide movements that are at issue in this proceeding. BNSF faces no effective, feasible competition from other railroads or from other modes of transportation with respect to these movements. As such, BNSF possesses qualitative market dominance over all of the traffic at issue.

1. The Lack of Intramodal Competition

Intramodal competition does not provide an effective constraint on BNSF's rate-setting practice from any of the complaint origins. While BNSF and UP both have access to some of these origins, BNSF is the only carrier that is capable of providing service at Oklaunion Station. As a consequence, AEP Texas has no intramodal competition available that would not involve the BNSF as the ultimate delivering carrier.

Further, there are no feasible prospects for a build-out from the Oklaunion Station to a competing carrier.

a. Joint-Line Movements

No carrier other than BNSF can deliver coal directly to the Oklaunion Station. While a railroad map may suggest a joint-line alternative involving UP, the Board in 1996 dismissed the possibility of a joint-line movement, concluding that a UP/BNSF joint move was "inherently ineffective, given [BNSF's] position as a bottleneck carrier." *Id.* at 651, n.24, *citing Consolidated Papers,* 7 I.C.C.2d at 339; *Burlington N., Inc. – Control and Merger – Santa Fe Pac. Corp.*, 10 I.C.C.2d at 747-49 (in support of proposition that "[a] bottleneck carrier can usually control the overall rate sufficiently to preclude competition").

Although the ruling in *West Texas Utilities* dealt directly only with movements from the Rawhide Mine, the same situation exists with respect to shipments from non-Rawhide mine origins. AEP Texas has no feasible, effective intramodal option available from these origins. UP has not moved any coal from any origin to Oklaunion via any joint-line move since Oklaunion commenced receiving coal in the 1970s. BNSF still controls the final 41 miles of any joint-line haul. As such, BNSF still can price its portion of the move at unreasonably high levels, thereby assuring that any joint-line move will not provide effective competition to a single-line BNSF move from any PRB origin to Oklaunion Station. *See West Texas Utilities,* 1 S.T.B. at 651.

b. The Lack of a Feasible Build-Out Threat

In the 1996 proceedings, BNSF argued that qualitative market dominance was lacking because of the alleged potential for a build-out from the Oklaunion Station to lines operated by UP. In support of this claim, BNSF relied upon internal cost studies prepared by AEP Texas' predecessor companies. However, the Board disagreed, concluding that it did not "view the build-out threat to be realistic because of its high cost and limited benefit." *Id.* at 651. In reaching this conclusion, the Board noted the scope of the potential build-out and explained:

> A build-out from Oklaunion to Wichita Falls would involve all new construction. A build-out from Oklaunion to Frederick would entail upgrading existing UPRR track, using an 11-mile segment of the Grainbelt Railroad between Frederick and Davidson, OK, and constructing a new 15-mile spur from Davidson to Oklaunion that would include a bridge over the Red River and a highway overpass.

Id., n.19. Given the estimated costs associated with these potential build-outs ($62-79 million in 1990 dollars), the Board properly concluded that they did not represent a credible threat to BNSF's monopoly over the Oklaunion coal traffic. *Id.* at 651.

AEP Texas has not conducted any studies of the feasibility of a build-out from Oklaunion Station since 1990. The feasibility of a build-out to UP in an effort to provide competition for BSNF's service continues to be adversely impacted by a number of practical considerations that existed in 1996, and remain today. For example, pursuit of any of the alternatives considered in the past by AEP Texas' predecessors would entail

construction of one of the longest spurs ever undertaken by an electric utility. Further, the shorter of the two principal routes addressed in *West Texas Utilities* would have been one of the most complicated and expensive rail spurs ever constructed – including both a major river crossing and a highway overpass. This project would have involved substantial environmental and other regulatory requirements that would have greatly complicated and added to the cost of the construction process.

Given the significant number of contingencies and environmental obstacles that relate to possible construction of a build-out from Oklaunion Station, AEP Texas has not re-evaluated whether a build-out would be feasible. As the Board recently confirmed in an analogous circumstance, any such effort would not be worth the cost of the study. *See TMPA*, at 11-12 n.10. A build-out is even less of a threat now than it was in the 1996. If the $62-79 million estimate in 1990 dollars is adjusted for intervening inflation, the cost of the build-out in 2003 dollars would range between $92 million and $117 million. AEP Texas Op. Workpapers Vol. 15, pp. 07616-07621. Such a costly build-out is simply not a realistic, competitive option for any shipper.

In addition, AEP Texas would face more stringent environmental requirements if a new line were to be constructed today. For example, as of March 10, 2003, in order to discharge storm water from a construction site, all projects that disturb one acre or more of land must acquire an additional storm water permit or coverage under one of the state's general permits. *See* 40 C.F.R. § 122.26 (2004). This and other

new environmental requirements could create additional costs and delays that were not even contemplated in *West Texas Utilities* when considering the feasibility of the buildout.

2. **The Lack of Intermodal Competition**

There continue to be no effective, feasible forms of intermodal competition available to AEP Texas for shipments of coal to the Oklaunion Station. In 1996, the Board rejected BNSF's claim that trucking could provide an alternative to a rail build-out to Wichita Falls. *Id.,* 1 S.T.B. at 652. As concluded by the Board at that time, "environmental concerns, noise, community opposition, increased inefficiencies associated with loading and unloading, etc., make this option infeasible for any of [AEP Texas'] coal movements." *Id.* at 652, *citing* WTU Rebuttal, Moran V.S. at 10-11.

While *West Texas Utilities* dealt with shipments that originated at the Rawhide Mine, its conclusions regarding intermodal competition at the destination end are equally valid. AEP Texas has not received any coal in any meaningful volumes via truck at Oklaunion Station before or since the Board's 1996 ruling. The inefficiencies cited by the Board in 1996 relating to loading and unloading remain. Neither the PRB mine origins at issue in this case nor Oklaunion Station are currently equipped to

accommodate the volume of trucks that would be necessary to load/unload 3 million tons of coal per year.

3. Other Evidence of BNSF's Market Power Over AEP Texas

Additional evidence of BNSF's market power over AEP Texas has been the magnitude of the price increases that BNSF has imposed since the Board first entered its Rawhide prescription in 1996. Since that time, BNSF has increased the non-Rawhide rates from $13.68 to $18.83 per ton.[1] This represents a $5.25 per ton, or nearly 37.5% increase in AEP Texas' transportation costs. If allowed, this increase would cost AEP Texas' ratepayers more than $15 million in 2004 alone.

In and of themselves, these rate increases demonstrate BNSF's market dominance. If BNSF actually was concerned that AEP Texas had feasible, effective forms of competition available for the transportation of PRB coal to the Oklaunion Station, it would not have increased its rates in such a dramatic fashion.

Further, BNSF's timing in imposing the increases also reflects its lack of concern that the Oklaunion tonnages are subject to effective competition. Beginning in Fall of 2000, AEP Texas' predecessor's parent and BNSF became involved in

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[1]With respect to non-Rawhide shipments, BNSF increased the rate from $13.68 to $15.78 as of July 2000. On August 21, 2002, BNSF increased the rate from $15.78 to $17.25. On April 23, 2003 BNSF informed AEP Texas that the rate would be increased to $18.04, effective 20 days from April 23rd. Finally, BNSF informed AEP Texas on December 10, 2003 that the $18.04 rate was being increased to $18.83, effective January 1, 2004. *See* Exhibits I-A-2 through 4.

commercial negotiations relating to a potential system-wide transportation agreement that would have covered the Oklaunion Station, as well as transportation services provided to other coal-fired generating stations owned and operated by AEP Texas' parent and predecessor parent companies (first the Central and Southwest Corporation, and more recently American Electric Power).

By early 2003, negotiations with BNSF concerning a system-wide AEP transportation contract for its coal-fired generating stations had terminated. Shortly thereafter, BNSF began an all-out assault on AEP Texas. First, BNSF raised the rates for non-Rawhide movements from $17.25 per ton to $18.04 per ton. Next, BNSF reneged on its agreement to defer payment of the challenged rates and sued AEP Texas in the U.S. District Court in Fort Worth, to retroactively collect the difference between the $13.68 AEP Texas had been paying since the ruling in *West Texas Utilities* and the rates at issue in this case. After failing in its effort to disrupt the status quo,[2] BNSF increased the rates for non-Rawhide and Rawhide movements yet again, to $18.83 per ton.

BNSF's decision and ability to take retaliatory rate actions against AEP Texas upon losing other coal business demonstrates that BNSF knew it was under no risk that it could lose the Oklaunion traffic, under any circumstances.

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[2] *See* Part I at 6, *supra.*

III-A Stand-Alone
Traffic Group

BEFORE THE
SURFACE TRANSPORTATION BOARD

AEP TEXAS NORTH COMPANY	)	
Complainant,	)	
v.	)	Docket No. 41191 (Sub-No. 1)
THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY	)	
Defendant.	)	

PART III

STAND-ALONE COST

III. A. STAND-ALONE TRAFFIC GROUP

AEP Texas has determined the maximum lawful rate for BNSF coal service to Oklaunion under the SAC constraint of the *Coal Rate Guidelines.* As described in detail in Part III-B, *infra*, the TNR is designed to provide service between the coal mines in the Wyoming Powder River Basin and the Oklaunion Station via Campbell/Donkey Creek, WY; Edgemont, SD; Alliance and Northport, NE; Denver, Pueblo and Las Animas Jct., CO; Boise City, OK; and Amarillo, TX, over a total of 1192 route-miles. A schematic of the TNR route appears in Exhibit III-A-1.

1. Stand-Alone Railroad Traffic

The TNR principally is designed to transport coal in unit trains, though it also would handle a limited number of trainloads of general freight traffic in interline service between Amarillo and Oklaunion, TX. The coal that TNR would haul currently originates at BNSF-served mines in the PRB and moves either to destinations located on the BNSF system, or to interchanges with other carriers for further transport and delivery to final destination.

The TNR traffic group was developed utilizing BNSF's traffic tapes and train movement records for the time period beginning June 16, 2000 and ending in December, 2003, and BNSF's internal projections for the 2003-2008 time period, all of which were produced in discovery. From these sources the customers (by origin/destination pair) that would move traffic over the TNR were identified. The methodology employed in the selection of the TNR traffic group comports with the *Coal Rate Guidelines* and *Nevada Power II,* 10 I.C.C. 2d at 262-69, and is consistent with the approaches approved in *TMPA, Duke/NS* and *Carolina.*

A database was compiled from the BNSF revenue traffic data, which was provided for each revenue producing car on the BNSF system for the first six months of 2003, and full calendar years 2000, 2001 and 2002. From this data, records were selected that contained information in a Standard Transportation Commodity Code ("STCC") field indicating that they were coal movements. The data were summarized on a train by train

basis in order to evaluate traffic levels, and the records then were collapsed into a database containing one data record per train.[1]

Next, three manual deletions were made to eliminate traffic that would not be included in the TNR traffic group. First, most movements that did not originate on the TNR were excluded.[2] Second, coal data records that contained fewer than 50 cars (*i.e.,* a train of fewer than 50 cars) were excluded on the assumption that this represented incomplete or erroneous data.[3] Finally, all industrial and export coal moves were excluded. The "train by train" data file then was summarized by collapsing the database by origin, destination, contract and plant code.

A similar process was followed in the selection of non-coal traffic; that is, the BNSF train event database was used to identify non-coal trains moving over the

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[1] {

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[2] The exceptions are the aforementioned interline general freight traffic, coal traffic moving from Colorado to the Coleto Creek Generating Station in Texas, and coal trains originating at Spring Creek and Decker Mines in Southern Montana and moving to destinations south and east of Alliance, NE via Edgemont, SD. The Coleto Creek traffic presently is transported by UP, which uses and pays BNSF fees for trackage rights over BNSF's line between Pueblo, CO and Fort Worth, TX. The TNR will replace BNSF between Pueblo and Oklaunion, TX. While it is not assumed to handle the Coleto Creek traffic directly, the TNR does step into BNSF's shoes as the landlord as recipient of an appropriate share of the trackage rights fee.

[3] {

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Amarillo-Oklaunion segment of the TNR route. AEP Texas then attempted to link the revenue (loaded) carloads in BNSF's traffic file to the TNR trains on which they would move. However, deficiencies in the data produced by BNSF with respect to non-coal traffic precluded a complete match between the carloads identified in the train movement records and the revenues extracted from the traffic database. As a result, lading weights and revenues are understated for several TNR trains, to varying degrees.

The data deficiencies result in an understatement of revenue. To be conservative, the TNR operating plan allows for movement of the BNSF non-coal trains exactly as identified in the train event reports. As a result, however, the TNR is assumed to handle revenue carloads of non-coal BNSF traffic for which no revenue is claimed based on the traffic data. AEP Texas' solution to this data inconsistency is discussed in Part III-A-3.

In order to transport the traffic developed through the procedure summarized above, the TNR directly serves sixteen (16) PRB mines in Wyoming that are presently served by BNSF. Six of these mines (Eagle Butte, Buckskin, Rawhide, Dry Fork, Fort Union and Clovis Point) are served exclusively by BNSF via its line extending north from Campbell, WY. The remaining mines (Caballo, Belle Ayr, Caballo Rojo, Cordero, Coal Creek, Jacobs Ranch, Black Thunder, North Rochelle, Rochelle/North Antelope and Antelope) are located on the Orin Subdivision (including the Reno Branch serving the Black Thunder and Jacobs Ranch mines) and are served both by BNSF and by

UP. Utilizing historic data for 2001 (the first full calendar year of operation for the TNR) produced by BNSF in discovery, { } that moved via BNSF from these mines, or moved via BNSF from Montana origins in overhead service over the TNR lines between Campbell and Alliance, were identified for inclusion in the TNR traffic group as originated or overhead traffic.[4] In addition, { } moving between Amarillo and Oklaunion, TX were identified and included.[5]

The TNR will serve five (5) coal-fired electric generating stations located on its system, including the Oklaunion Station. Additionally, the TNRR will serve six (6) coal-fired stations that are located off the system, but whose traffic would travel the entire TNR route to Oklaunion en route to final destination. These plants, and the 2001 base year volumes attributable to each, are as follows:

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[4] *See* electronic workpapers "TNR Coal Revenue Forecast. xls."at worksheet "Tonnages" cell N123 and "TNR Coal Traf and Rev 0100-0603 .xls" at worksheet "SARR Traffic Summary" cell Y124.

[5] *See* electronic workpaper "bnsfsactrnx Ø1 summary 1. .xls" at worksheet "Summary" cell Ø 3800.

Table III-A-1

	Plant	Location	Operator	2001 Tons
1.	Arapahoe [1/]	Denver, CO	PSC of Colorado	{ }
2.	Harrington [1/]	Harrington, TX	Xcel-SPS	{ }
3.	Comanche [1/]	Minnequa, CO	PSC of Colorado	{ }
4.	Oklaunion [1/]	Oklaunion, TX	AEP Texas North	{ }
5.	Pawnee [1/]	Pawnee Jct., CO	PSC of Colorado	{ }
6.	Fayette [2/]	Halsted, TX	LCRA	{ }
7.	Gibbons Creek [2/]	Iola, TX	TMPA	{ }
8.	Limestone [2/]	Donie, TX	Texas Genco	{ } [3/]
9.	Nelson [2/]	Sulphur, LA	Entergy	{ }
10.	Parish [2/]	Smithers Lake, TX	Texas Genco	{ }
11.	Big Brown [2/]	Big Brown, TX	TXU	{ }
			TOTAL	{ }

Notes: [1/]Local to TNR

[2/] Destination interchange at southern terminus of TNR (Oklaunion, TX).

[3/] 2002 Calendar year tons, following the plant's fuel conversion from local lignite to PRB coal.

See electronic workpaper "TNR Coal Traf and Rev 0100-0603.xls" at worksheet "SARR Traffic Summary" Column T.

In addition to the eleven shippers described above, the TNR will handle coal tonnage destined to 96 other power plants with deliveries by BNSF, other railroads with which BNSF presently maintains interchanges, or another mode of transportation (*i.e.*, barge or vessel). Coal destined for AEP Texas Central's Coleto Creek Station also will move over the TNR's lines, though it will be handled by UP under trackage rights (as is

the case today).[6] Finally, the TNR will handle both eastbound and westbound general freight traffic (in relatively even splits) between Amarillo and Oklaunion, TX, in interline (overhead) service with BNSF. The mix of general freight moving over the TNR during the base traffic period (2001) is as follows:

[6] Exhibit III-A-2 contains a list of the TNR's coal customers and their 2001 traffic volumes.

Table III-A-2[7]

Train Symbol/Traffic Type		2001 Tons (Millions)	Trains/Day	Avg. Rail cars/Train
	Eastbound[1/]			
M	Normal priority manifest	{		}
H	High priority manifest	{		}
P	Premium service intermodal	{		}
Q	Guaranteed service intermodal	{		}
Z	Highest priority intermodal	{		}
S	Stack intermodal	{		}
U	Unit trains (non-coal/grain)	{		}
V	Vehicles (autos, parts)	{		}
	Westbound [2/]			
M	Normal priority manifest	{		}
H	High priority manifest	{		}
P	Premium service intermodal	{		}
Q	Guaranteed service intermodal	{		}
Z	Highest priority intermodal	{		}
S	Stack intermodal	{		}
U	Unit trains (non-coal/grain)	{		}
V	Vehicles (autos, parts)	{		}
B	Empty flatcars	{		}
	Totals	**8.772**	**10.3**	**54.1 (weighted avg.)**

Notes: [1/] Amarillo to Oklaunion
[2/] Oklaunion to Amarillo

The offline destinations, serving railroads, interchange points and the volume of traffic handled by the TNR for each coal movement in 2001 are shown in

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[7] Source: electronic workpaper "bnsfsactrnx Ø1 summary 1.xls," worksheet "Summary" cells K3805-03823.

Exhibit III-A-2. The tonnages for all movements for each year of the TNR's operation during the 20-year DCF period covered by the SAC analysis are shown in Exhibit III-A-3.

The planned route of the TNR generally follows BNSF's "Frontier Range Route" from Wyoming to Texas via Denver and Pueblo, CO. In two places along that route, BNSF has alternative lines between junction points. Specifically, trains moving from Campbell, WY or from PRB mines served by the Orin Subdivision to Northport, NE can be routed through Bridger Junction and Guernsey, WY on the one hand, or via Edgemont, SD and Alliance, NE, on the other. Similarly, on the southern portion of the Frontier Range Route, trains moving between Pueblo, CO and Amarillo, TX can be routed either through Trinidad, CO and Dalhart, TX, or through Las Animas Jct., CO and Boise City, OK. *See* Exhibit III-A-4. The route of the TNR replicates the Edgemont-Alliance-Northport routing on the northern portion, and the Las Animas Jct.-Boise City-Amarillo routing on the southern portion.

Some of the coal traffic in the TNR traffic group presently moves primarily over the Bridger Junction-Guernsey route, and some empty trains returning to the PRB from Texas are handled by BNSF over the Trinidad-Dalhart route. As a least-cost, optimally efficient carrier unburdened by the diverse mix of commodities, train sizes and service offerings that characterize the BNSF system, the TNR does not need to maintain separate routes between the same two points. As a replacement for BNSF for the identified origin tonnage, the TNR can and would re-route traffic as necessary, so that all

the traffic that moves to Northport goes via Edgemont and Alliance, and all that moves to Amarillo goes via Las Animas Jct. and Boise City. *See* Exhibit III-A-4.

The Board has endorsed the right of a SARR proponent to re-route traffic in order to increase efficiencies and/or traffic densities, and thereby lower costs. *See Duke/NS* at 25; *TMPA* at 21-22. In *Duke/NS*, the Board addressed concerns that might arise "if a complainant wishes to re-route traffic in its SAC presentation without having the SARR operate over all of the rerouted portion of the move."[8] However, such a scenario is not presented here. All of the re-routed traffic will be handled by the TNR over all of the rerouted portions of the move. With respect to crossover traffic, there will be no change in the nature of the residual BNSF's operation as compared to its current operations, and thus no "ramifications of requiring the residual carrier to alter its handling of the traffic"[9] to be accounted for.

As noted, no loaded BNSF coal trains currently move via the Trinidad-Dalhart route to Amarillo. BNSF has instituted a directional running plan between Pueblo and Amarillo, and northbound empty trains are routed via Dalhart.[10] The TNR will shift its empties to its Las Animas Jct.-Boise City line, which as shown in Parts III-B,

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[8] *Duke/NS* at 26.

[9] *Id.*

[10] *See* Workpapers Vol. 17, p. 08579-08582.

C, D and F, *infra,* is designed to efficiently accommodate both the southbound loaded trains and the empty trains returning north.

At the northern end of the TNR, depending on the mine origin, the distance to Northport via Edgemont and Alliance may be somewhat longer for some movements than a routing via Guernsey. As explained fully in Parts III-B, C, D and F, *infra,* however, operations for all shipments on the TNR are more efficient and lower in cost via Edgemont, due in part to economies of scale and density that can be realized by consolidating the TNR's coal movements on that route. Overall train speeds and cycle times on the TNR will be superior to BNSF's current service, regardless of the route used by the incumbent. As explained immediately below, none of the shippers whose traffic is internally rerouted by TNR would experience a deterioration in service quality as a result.

Exhibit III-A-5 lists every coal movement that TNR would handle via Edgemont which BNSF routed (to any degree) via Guernsey in 2002. For all of the destinations listed in Exhibit III-A-5, some of the traffic was routed via Edgemont in 2002, confirming the operational viability of TNR's route selection. In 2002, {

} were routed by BNSF exclusively via Guernsey. Columns 21 and 22 of Exhibit III-A-5 shows the round-trip transit time differentials between the two routes, based on BNSF's 2002 average coal train speeds as recorded in BNSF's train movement records. According to this evidence, 35 of the 121 internally rerouted movements would experience shorter transit times (and presumptively better service) via the TNR Edgemont

route, even assuming BNSF train speeds. These reroutings clearly pass the *Duke/NS* test. *See also Duke/NS* at 26 n.39 (no objection raised to reroutes that would be interchanged to the incumbent along its usual route).

There are {

} when routed via Edgemont.

However, as Column 21 shows, when the average TNR train speed is substituted for BNSF's 2002 train speed, {

} than were experienced on BNSF's Guernsey route. This evidence likewise confirms that the affected shippers will not suffer any deterioration in service quality as a result of the reroutes. In addition to shorter transit times, TNR shippers would also benefit from the higher priority that TNR would assign to their coal traffic as compared to BNSF.

As BNSF itself acknowledged in response to AEP Texas' discovery requests,[11] {

} longer wait times, longer time spent in yards, slower refueling, and myriad other consequences that translate into poorer service quality but are not necessarily reflected in transit time

[11] *See* Document No. BNSF/AEPTX 06474 (Workpapers Vol.17, p. 8723).

statistics. By contrast, the TNR would be dedicated almost exclusively to coal,[12] which would occupy the top position on TNR's priority list. As outlined in Part III-C and confirmed by AEP Texas' parent's own experience, transit or cycle times are not as important to utility coal shippers as the secure delivery of all coal purchases on a schedule consistent with their requirements. As a carrier focused on its coal customer base with a system specifically designed to serve that base at lower rates than the incumbent charges, the TNR would offer service quality assurances that easily match or exceed those offered by BNSF.

As already noted, all of the planned reroutes are internal to the TNR system, and none would require the residual BNSF to alter its handling of the traffic. Further, as shown in Parts III-B, C, D and F, any changes in the level of service received by the shippers in question would be improvements over the *status quo.* Under *TMPA* and *Duke/NS,* the reroutes proposed by AEP Texas are reasonable and well-supported. *See also Carolina* at 21.

2. Volumes (Historical and Projected)

Annual coal and general freight traffic volumes for the first thirty (30) months of the TNR's operation (from the Third Quarter of 2000 through the Fourth Quarter of 2002) are based upon actual volumes transported by BNSF, as reported in the

[12] The modest amount of non-coal traffic handled by TNR would be overhead traffic only between Amarillo and Oklaunion.

traffic tapes and train movement records maintained by BNSF in the ordinary course of business and produced to AEP Texas in discovery. *See* electronic workpapers "TNR Coal Traf and Rev 0100-0603.xls."

TNR coal volumes for calendar years 2003 through 2008 were projected using BNSF's own, internal Long Range Plan { } *See* Workpapers Vol. 17, p. 07624. For the balance of the DCF period (2009-2020), coal traffic growth is projected based upon estimates of future growth in Powder River Basin coal production prepared and published by the U.S. Department of Energy's Energy Information Administration (EIA), and expert analyses of generating unit-specific coal demand conducted by Pace Global Energy Services, Inc.[13] Consistent with procedures approved by the Board in previous coal rate cases and statistical analyses of U.S. power plant performance, coal traffic growth for TNR utility shippers is capped at the volume of coal used by each power plant when operating at 85% of its rated capacity. The exceptions to this last rule are utilities in the TNR traffic group that already were operating at *more* than an 85% capacity factor during the historic period. For these utilities, future coal volumes were fixed at the historic level demonstrated in 2002.

[13] Since the rates at issue in this proceeding were established as of the Third Quarter of 2000, the DCF period actually extends for 20 years and six months, which permits calculations to be made over 20 consecutive calendar years.

To be conservative and simplify the SAC analysis without sacrificing adherence to the principles underlying the *Coal Rate Guidelines,* AEP Texas has assumed no growth in non-coal traffic over the 2003-2020 time period from levels shown for 2002, the most recent year for which full records are available.

a. Historical Volumes

The total annual traffic volumes transported by the TNR in its first two full calendar years of operation (2001 and 2002) are approximately { } respectively. These volumes were developed from BNSF traffic tapes and train movement records produced in discovery. The distribution of these tons among all movements in the TNR traffic group (interline as well as local) is shown in Exhibit III-A-3. The TNR's line segments are described in detail in Part III-B, *infra.*

As described in detail in Part III-C, the heaviest traffic volume occurs in the Powder River Basin itself and on the TNR line from Donkey Creek to Alliance. Loaded coal trains move in both directions on the Donkey Creek-South Logan segment, which replicates a portion of BNSF's Orin Subdivision. As described in Part III-C, *infra*, some of the northbound traffic is interchanged to BNSF at Campbell for movement on BNSF's northern corridor via Montana. Some of the tonnage moving southbound from origins on the Campbell Branch (extending from Campbell to Eagle Butte Junction, WY) also is handed off to BNSF at Campbell for further movement via this corridor.

The TNR line segment from Donkey Creek to South Logan handles coal moving south to interchange with BNSF at South Logan for ultimate delivery to Pacificorp's Dave Johnston Station, Basin Electric's Laramie River Station, and Platte River Power Authority's Rawhide Station. All other southbound TNR traffic moves through Edgemont to Alliance, thence through Denver, Pueblo, Las Animas Jct. and Amarillo to Oklaunion, with gradually reduced volume levels as it reaches the interchange points and local destinations further described in Part III-B, *infra*.

The principal point where cross-over traffic leaves the TNR is Alliance, NE, the first major interchange southeast of Donkey Creek. Further south, approximately { } million base year (2001) tons are interchanged to UP at Northport, for transportation to Westar Energy's Jeffrey Energy Center. About { } million tons leave the TNR at Sterling, CO, for delivery to Nebraska Public Power District's Gerald Gentleman Station. Proceeding south, coal is interchanged to BNSF at Las Animas Jct. and at Amarillo. The total base year coal volume arriving at Oklaunion, the southern terminus of the TNR and the point of connection with the spur to AEP Texas' Oklaunion Station, is about { } million tons, including { } million tons of AEP Texas coal and { } million tons of interline traffic forwarded to BNSF for delivery to other power plants further south. *See* Exhibit III-A-3.

As noted *supra,* eastbound and westbound trains carrying intermodal and other general freight traffic are handled by the TNR between Amarillo and Oklaunion.

According to the BNSF traffic tapes, for 2001 the general freight handled by the TNR totaled approximately { } In 2002, the corresponding volumes { } respectively. *See* electronic workpapers "bnsfsactrnxØ1 summary 1.xls" at worksheet "Summary" cells Q3801-3802 and "bnsfforecast.xls." worksheet "bnsf forecast" cells CD 2908-CD 2909.

b. Projected Volumes

i. Standard Volume Projections

As noted above in Section III-A-1, deficiencies in the train event and traffic databases and the materials provided in support of those databases have compromised AEP Texas' ability to establish a link between the traffic database and the train event database for every revenue carload that moved on the non-coal TNR trains selected by AEP Texas.

AEP Texas began its SARR traffic selection process by using BNSF's train event database to establish the set of trains moving over the TNR lines. After the trains moving over the TNR were identified, groups of those trains were selected as the TNR traffic group. The train event database provides information on the number of loaded (revenue) and empty (non-revenue) railcars[14] moving on each BNSF train. AEP Texas

[14] More specifically, the train event database provides the "articulated car count" for loads and empties moving on each train. Articulated car count is defined at BNSF/AEPTX 02049 as follows: car count based on formula that each two units of a

(continued...)

then attempted to link the revenue carloads in BNSF's traffic file to the TNR trains on which they moved. However, because BNSF failed to provide enough information for AEP Texas to be able to complete this crucial step for every revenue carload, AEP Texas was not able to locate information as to contents and revenues for several of the loaded railcars moving on the subject trains. Lading weight and revenues are thus understated for several TNR trains.

As the TNR's operating plan allows for the movement of the BNSF non-coal trains exactly as identified in the BNSF train event database, the TNR is moving BNSF revenue carloads for which it receives no revenue. Stated differently, though the TNR's operations reflect the movement of all loaded BNSF cars moving on overhead general freight trains, the TNR is collecting revenue on far less than 100 percent of the revenue cars on those trains in many instances.

The "BNSF 2004-2008 Long Range Plan"[15] shows annual growth rates for industrial products and consumer products through 2008. The TNR general freight traffic group is comprised solely of industrial and consumer products. While the TNR's general freight traffic forecast calls for no growth in the number of trains moving over the TNR in future years, the revenue traffic moving on TNR trains has room for growth in that the

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[14](...continued)
single articulated car is equal to 1 regular freight car; total articulated units of a single articulated car divided by 2 and rounded up to the next whole number. For example, a 5-unit articulated car has a car count of 3:5 divided by 2 = 2.5, rounded to 3.

[15] BNSF/AEPTX 54874 (Workpapers Vol. 15 p. 07722).

available (non-matched) loaded car slots can be filled by revenue cargo until each train's loaded cars are carrying revenue tons. AEP Texas increased the number of matched 2002 revenue cars by the appropriate growth factor for each train for each year, capping growth on a train by train basis as individual train capacity was reached.[16] Under this methodology the TNR is able to make up some of the revenue foregone as a result of problems associated with the data provided by BNSF.[17]

The volumes of coal transported by the TNR each year are projected to increase gradually throughout the 20-year DCF period, reaching their peak in 2020 when the total coal volume moving over the TNR system is projected at approximately { }[18] By reference to principal line segments, TNR's peak year traffic volumes will be distributed as follows:

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[16]As an example, assume a high priority manifest train is shown in the 2002 train event file to be carrying 50 loaded cars and 10 empty cars. Further assume that only 40 of the 50 loaded (revenue) cars could be located in the 2002 traffic file. The BNSF Long Range Plan shows an 11.76% increase in volume (number of units) for consumer products from 2002 to 2003. Thus, it may be assumed that in 2003, 45 revenue cars moved on the example train (40 x 1.1176 = 44.7). The same procedure would be followed for ensuing years: 48 revenue cars in 2004 (5.75% growth), and 50 revenue cars for year 2005 (6.26% growth). The revenue cars in the train in this example will remain at 50 for the 2006-2021 time period.

[17] *See* electronic workpaper "bnsfforecast.xls" worksheet "bnsfforecast."

[18] This figure includes coal volumes transported by UP to the Coleto Creek Station using trackage rights over the TNR. Without the Coleto Creek tons, peak year volumes total { }

Table III-A-3
TNRR Peak Year Traffic Volumes

Segment	Net Tons (Millions)
Eagle Butte to Campbell	{ }
Donkey Creek to Converse Jct.	{ }
Converse Jct. to South Logan	{ }
Campbell to Donkey Creek	{ }
Donkey Creek to Alliance	{ }
Alliance to Northport	{ }
Northport to Sterling	{ }
Sterling to Pawnee Jct.	{ }
Pawnee Jct. to Denver	{ }
Denver to Pueblo	{ }
Pueblo to Las Animas Jct.[1/]	{ }
Las Animas Jct. to Amarillo[1/]	{ }
Amarillo to Oklaunion[1/]	{ }

[1/] Includes UP traffic to Coleto Creek moving via trackage rights, and general freight traffic moving in both directions between Amarillo and Oklaunion.

A detailed schedule showing projected volumes (both for coal and general freight) for each year of the DCF period is shown in Exhibit III-A-3. For 2002, coal and general freight traffic levels are based on actual shipments as recorded on the BNSF traffic tapes and train movement records. For the years 2003-2008, coal volume forecasts[19] are based on BNSF's own internal projections, prepared in the ordinary course of business.

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[19] As noted, general freight traffic volumes are held constant at 2002 levels throughout the DCF period.

Historically, the Board has accepted internal railroad forecasts prepared for reasons unrelated to litigation as the most reliable and credible estimates for purposes of coal rate cases. *See Duke/NS* at 59-60; *TMPA* at 25; *FMC* at 32; *West Texas Utilities,* 1 S.T.B. at 662-63. More recently, the Board departed from a railroad defendant's internal forecast when, under the peculiar facts of that case, the accuracy of the railroad's forecast was called into serious question. *See Carolina* at 16-18. There are no indications that the types of anomalies found in the defendant's forecast in *Carolina* are present in BNSF's Long Range Plan, however, and the Board specifically has endorsed the use of internal BNSF forecasts in the past. Therefore, AEP Texas has used the 2003 BNSF forecast to project coal volumes for the TNR.

Starting with the last year covered by the BNSF Long Range Plan (*i.e.,* 2008), TNR coal volumes are projected to increase at annual growth rates equivalent to a compound annual growth rate of 2.7%, until the volume for a generation facility whose traffic is moved by the TNR reaches a consumption level that equates with an 85% plant capacity factor.

In calculating the forecasted tonnage levels each year, the projected total coal receipts (both PRB and non-PRB) for each facility for the prior year were compared to the actual burn capacity to determine if the prior year's projected total was below 85% of actual plant capacity. If so, the PRB portion of the tonnage for the movement in

question was increased by the applicable growth rate for that year.[20] Once the 85% level is reached, coal volumes for the facility are held constant through 2020. Utility facilities served by the TNR that already are operating at or above an 85% capacity factor (such as Public Service of Colorado's Comanche Station and Kansas City Power & Light's Hawthorn Station) have their volumes held constant throughout the DCF period. *See* electronic workpaper "SARR Traffic Group Tonnage Model 12-31-2003 DELIVERED".

The annual growth in coal consumption was determined through analyses of projected changes in PRB coal production conducted by the U.S. Department of Energy and published in EIA's *Annual Energy Outlook 2003 With Projections to 2025 ("AEO 2003"),*[21] and confirmed by private analysis undertaken by Pace Global, an internationally recognized energy services and consulting firm. The 85% capacity factor cap is

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[20] The BNSF traffic tape data and Long Range Plan were used to develop the percentage of PRB coal handled by the TNR as compared to the total amount of coal consumed by each plant. Using this percentage distribution, the amount of PRB coal that could be consumed assuming a plant was operating at an 85% capacity factor was developed. In calculating the annual volume handled by the TNR over the 2009-2020 time period, the volume of PRB coal each year was increased based on the applicable forecasted growth rate so long as the resulting volume did not exceed the PRB maximum for the plant in question.

[21] *See* electronic workpapers "AEO2003.xls" and "AEO2003".

supported by a Pace Global analysis of power plant operations and by the Board's decisions in *TMPA*[22] *Wisconsin*[23] and *West Texas Utilities.*[24]

Demand for low sulfur PRB coal has grown exponentially in recent decades. In 1979, total PRB production was 80.75 million tons; in 2002, production exceeded 396 million tons.[25] This 390% increase over 23 years is equivalent to a compound annual growth rate of 7.2%. As over 97% of coal mined from the PRB is consumed by domestic electric generating facilities, the PRB production growth rate also reflects the trend for growth in utility demand and consumption.

Through EIA, the Energy Department analyzes and forecasts coal production, both in the aggregate and based upon region and coal type. *AEO 2003* is the most recent iteration of this analysis. EIA's methodology and results are relied upon by private industry and other government agencies, including the Board in the context of forecasting future coal volumes for SAC calculations under the *Coal Rate Guidelines.*[26] As the Board explained in *Duke/NS*:

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[22] *TMPA* at 25.

[23] *Wisconsin* at 20-21.

[24] *West Texas Utilities,* 1 S.T.B. at 663-64.

[25] *See* Workpapers Vol.17 p. 07625-27 and EIA 2002 Annual Coal Report at 9 (www.eia.doe.gov/cneaf/coal/acr/acr.pdf).

[26] *See Carolina* at 17-18; *TMPA* at 25; *Wisconsin* at 18-20.

> As the Board has stated before, it is preferable to rely on coal demand forecasts that have not been specifically prepared for litigation.... Moreover, composite forecasts can be manipulated through the selective inclusion or exclusion of forecasts. Thus, they are less reliable than a single forecast prepared by an independent, neutral source.
>
> Here, both parties have used EIA forecasts as a reliable source for portions of their presentations. EIA, an independent statistical arm of the Department of Energy, was created by Congress for the express purpose of providing policy-neutral data and forecasts. Thus, EIA provides an authoritative source for coal forecasts.

Duke/NS at 60 (citations and footnotes omitted).

As shown in Exhibit III-A-6 and applied in Exhibit III-A-3, EIA's annual production growth forecast for low sulfur sub-bituminous coal for the region that includes the PRB shows an annual growth rate of 2.7% over the 2009-2020 time period. EIA's projected annual changes in PRB demand are incorporated into the future traffic projections for the TNR.[27]

ii. Plant-Specific Volume Projections

The reliability of the EIA forecast as a predictor of future coal volume growth on the TNR is corroborated by the independent, plant-specific coal forecast

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[27] The actual change forecasted for each year in the *AEO 2003* was used to develop each year's annual coal volume for the TNR.

analysis performed by Pace Global, using tools applied by the firm in the ordinary course of its consulting business.

The ultimate determinant of how many tons of coal will move to TNR's utility customers is actual coal plant consumption over the DCF period. Actual generating unit consumption is driven by a number of different factors, including regional power demand, the relevant generating units' operational availability, and how economic each unit is relative to other units in their respective power market region over the course of time. Pace Global has extensive experience in the measurement, analysis and forecasting of each of these in the course of its professional consulting practice on behalf of lenders, energy developers, industrials and electric utilities. For this proceeding, Pace Global used a power market-driven approach to capture the fundamentals of the operational expectations of the power plants in the TNR traffic group and, thus, the volume projections for the TNR on a plant and unit-specific basis. The key elements of this analysis include:

- a determination of unit availability limits for each facility served by the TNR;
- a forecast of load growth for each NERC[28] demand region that includes TNR-served units;
- a determination of generating unit characteristics (heat rates, O&M, etc.) that affect dispatch merit order in each NERC region;

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[28]North American Electric Reliability Council.

- a determination of actual annual generating unit dispatch and fuel requirements in British Thermal Units (BTUs);
- a conversion of unit dispatch BTUs to tons of coal fuel; and
- an allocation of TNR's share of unit coal requirements.

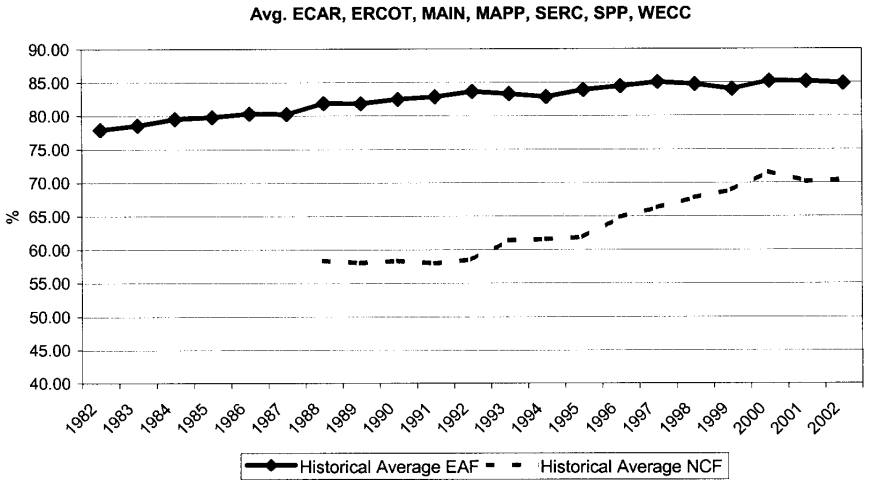
(i) Equivalent Availability Factors

The ultimate limit of dispatch is a plant's equivalent availability factor ("EAF"). The equivalent availability factor is equal to the percentage availability of the plant, considering both the percent of time that a plant is down for maintenance and forced outages, and the percentage of time that it is forced down from its full operating capacity due to partial outages or derates. Pace Global reviewed the equivalent availability factors for every generating unit reporting data to the NERC Generating Availability Data System ("GADS") database, and found that the upper limit of availability is approximately 95%. This is the ultimate limiting value that plants in the seven-region power market that include the SARR plants have been able to achieve and maintain. The average availability factors of the NERC regions that include the TNR-served generating units grew appreciably from the long-term trend over the past twenty years (1982-2002). For example, the average regional EAF increased from 77.9% to 84.8% over this period, as shown in Table III-A-4.

A trend that emerges is that with time, net capacity factors ("NCF") are getting closer to availability factors for coal plants; *i.e.,* utilities are using plants to their full available capacity more frequently. The TNR traffic group plants are located in the

following NERC regions: East Central Area Reliability Coordination Agreement ("ECAR"), Electric Reliability Council of Texas, Inc. ("ERCOT"), Mid-America Interconnected Network, Inc. ("MAIN"), Mid-Continent Area Power Pool ("MAPP"), Southeastern Electric Reliability Council ("SERC"), Southwest Power Pool, Inc. ("SPP"), and Western Electricity Coordinating Council ("WECC"). Regional average NCF in the plant group North American Electric Reliability Council ("NERC") regions increased from 57.4% to 69.9% from 1988 to 2002.

Table III-A-4
Historical Average NCF and EAF



Historically, the net difference between capacity factors and availability factors declined from 24% in 1988 to about 15% (according to the graph above) in 2002.

Approximately 93% of the generating units that would be served by the TNR can be identified in the GADS database, within 1% accuracy, which allows direct

reporting of availability and capacity factors for these units. Where confidentiality or other limitations preclude unit identification, an alternate methodology is used to calculate base year EAFs. The base year availability factors are estimated by applying the regional average differentials between NCFs and EAFs from 2000 to 2002 to the capacity factors for the subject units. Table III-A-5 shows the differentials applied to plant level capacity factors from POWERdat[29] based on actual 2002 regional operational data, in three facility groups: those with low capacity factors (under 52%), medium capacity factors (52%-74%), and high capacity factors (over 74%).

Table III-A-5
EAF and NCF Base Year Differentials

	MAAC-NPCC	SERC-FRCC	ECAR-MAIN	MAPP-SPP	ERCOT-WECC
High CF	7.58	8.44	9.71	7.74	5.04
Mid CF	18.71	18.07	17.46	15.77	7.47
Low CF	30.57	40.13	32.51	31.73	N/A

Exhibit III-A-7 shows the starting availability factors for each generating unit that would be served by the TNR.

The next step in the Pace Global analytical process is to develop a trend for each plant's availability factor. A simple 20-year trend analysis of historic data for each unit yields an annual growth rate of 0.428%. This rate was applied to all units whose 2002 EAF values were below the maximum EAF rate. Unit-level EAF were projected to

[29] POWERdat is a publicly available Platts database product that consolidates power industry operational and financial data from a variety of public sources, including forms filed with EIA, FERC, the Securities and Exchange Commission and NERC.

increase by 0.428% until reaching the level of the maximum EAF value of 95%. If a unit's projected EAF reaches the maximum value, the EAF remains at the maximum value through 2020. Those plants with base year EAF levels above that maximum value were held constant through 2020. Resulting EAF values for the TNR group member units in 2020 are presented in Exhibit III-A-8.

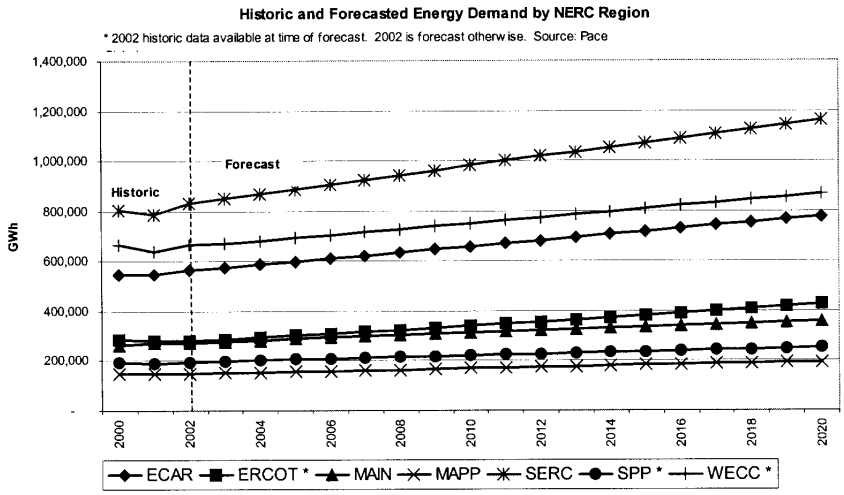
(2) Load Forecasts

Pace Global forecasts energy demand for all NERC regions in the ordinary course of its consulting business. The methodology projects energy demand by discrete areas within the various NERC regions, then aggregates the data to a regional level. The forecasts are based on actual historic energy demand as reported to EIA, as well as historic data on population, employment, income, demographics, and other relevant factors. Econometric models are used to quantify the historic relationship between energy demand and these factors. Once these relationships are identified, they are used to predict demand for energy. Combined with a 'load profile' that replicates historic load shapes of all 8,760 hours in a year, the growth in energy demand defines the generation requirements for the applicable power market region.

Historically, energy demand has grown at 2.2% per year from 1991 to 2002 for all of the affected regions. Over this historical period, electricity growth rates range from 1.1% in the MAPP region to 2.8% in the SPP region. Pace Global's energy forecast from 2003 to 2020 grows at 1.7% for all regions combined, and ranges from 1.4% in SPP

to 2.4% in ERCOT. Table III-A-6 illustrates historic and forecast energy demand by NERC region.

Table III-A-6



(3) Plant Dispatch

For its independent assessment, Pace Global projected plant-specific TNR coal tonnages beyond the 2003-2008 BNSF forecast period using its Capacity and Energy Market Analysis System ("CEMAS") model, which is described in detail in Exhibit III-A-9. Once the load curve (a representation of power demand by time of day and season) for a region is identified, CEMAS simulates how this demand is met by the economically driven dispatch of every generating unit in the region up to the limit of its availability, and where needed, by the introduction of new announced capacity additions. The demand for power in every hour is met by dispatching plants in merit order, where the least cost units are loaded first and higher cost units are added as needed. Plant minimums are used to

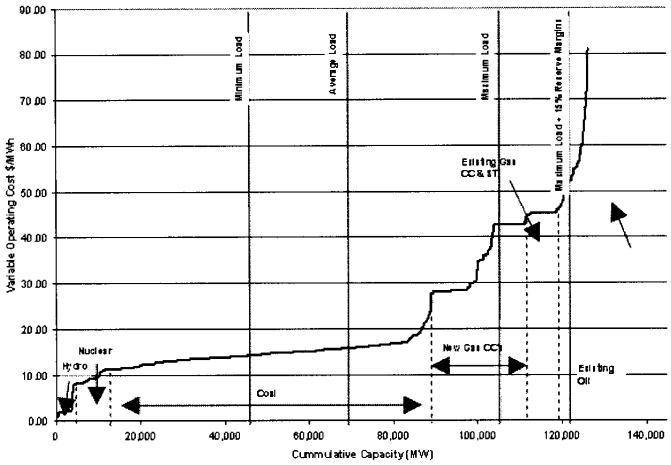
ensure that units that cannot be cycled are properly reflected. The model determines which generating units dispatch on a unit level for every hour of every day, given a load duration curve that reflects seasonal and daily load patterns over time. This is aggregated to an annual forecast.

CEMAS simulates unit dispatch in merit order, or from lowest marginal (fuel and non-fuel) cost to highest. In general, the first units to dispatch will be low-cost hydroelectric plants which can be used as "base load" plants, which run all the time they are available or to the cycles of water availability, or "peak demand" units such as pumped storage units. From an economic merit order standpoint, hydroelectric units are generally the first to dispatch.

Next in the merit order are nuclear units with low variable fuel and non-fuel costs. Nuclear units also run most of the time they are available. Nuclear units are typically followed in the merit order supply curve by coal plants, then gas-fired combined cycle units followed by oil-fired units and, finally, oil-and gas-fired peaking units. Generally speaking, hydroelectric, nuclear and coal units are considered base-load units.

Table III-A-7 illustrates a typical supply/dispatch curve. In this example, low cost hydroelectric plants are the first to dispatch, followed by nuclear units. Coal plants are then dispatched in merit order until the instantaneous demand is served. Since most of the coal capacity is priced at or below the average market price, coal units are dispatching most of the time the units are available.

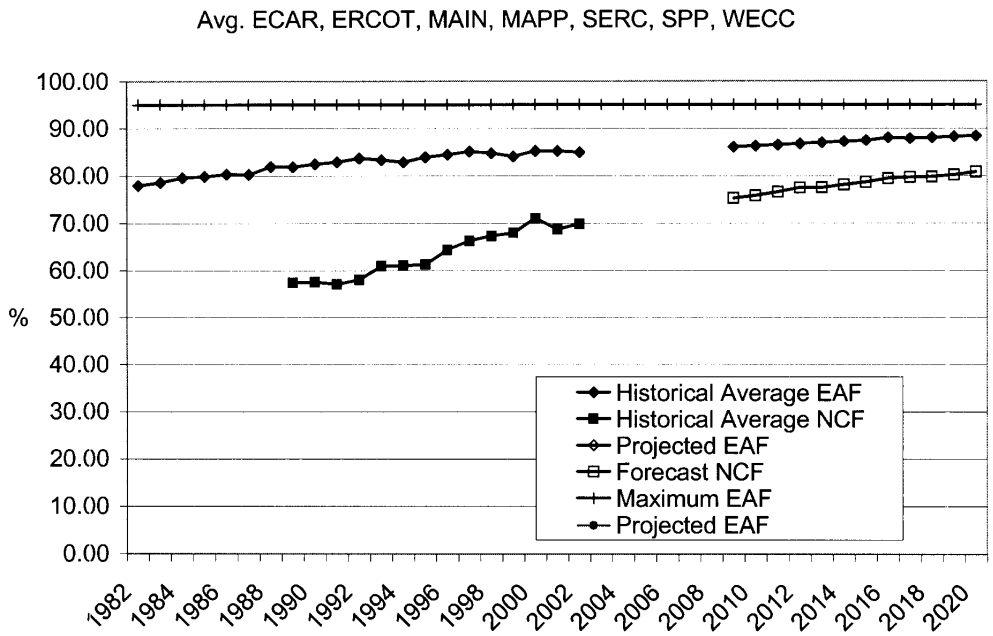
Table III-A-7
Supply Dispatch Curve



As shown in Table III-A-7, most coal plants dispatch most of the time, and many coal plants dispatch whenever they are available. As load grows over time, the minimum load, average and maximum load lines move to the right and more existing units dispatch at higher capacity factors up to their individual limits. This is reflected in the narrowing gap between availability and capacity factors shown previously in Table III-A-4.

The resulting average differential between availability factors and capacity factors of the 2003-2020 CEMAS run is consistent with the general historical trend line shown in Table III-A-4. Table III-A-8, below, shows this data for all of the seven regions combined.

Table III-A-8



Key assumptions that were used in the analysis of these regions are described in Exhibit III-A-10.

(4) Coal Tonnage Forecast

CEMAS unit generation results (expressed in BTUs) are converted into tons of coal fuel by using each plant's average historic calorific heat content for coal as reported in Federal Energy Regulatory Commission Form 423 as reported in COALdat for the years 2000-2002.[30] Exhibit III-A-11 shows total projected coal consumption in

[30] COALdat is a publicly available Platts database product that consolidates coal industry operational and financial data from a variety of public sources, including forms filed with EIA, FERC, the Securities and Exchange Commission and NERC.

MMBtus for each generating unit in the TNR traffic group. Coal volumes to be transported by the TNR were computed using a projected ratio of BNSF-transported PRB volumes to other tonnage consumed at the same plant equivalent to the average of the 2000-2002 tonnage split as reported in COALdat.

Based on unit level heat rates and the average heat content of the coal historically consumed at each plant, Pace Global translated the projected dispatch of units in the TNR traffic group into tons of PRB coal consumed. The resulting coal volume forecasts for each TNR customer over the 2000-2020 time period are shown in Exhibit III-A-12. Table III-A-9, below, shows Pace Global's plant-specific projection of TNR tonnages on an aggregate basis. These results confirm that AEP Texas' reliance on the EIA coal demand forecast for SAC purposes is conservative and, if anything, understates the coal volumes that actually would be handled by the TNR.

Table III-A-9
Historic and Plant-Specific
Forecasted TNR Coal Tonnage

Year	Tons
2000	176,859,615
2001	187,248,630
2002	189,256,471
2003	194,130,567
2004	203,733,549
2005	202,459,588
2006	204,386,201
2007	207,506,499
2008	209,995,492
2009	212,955,912
2010	219,046,163
2011	220,480,803
2012	222,867,032
2013	223,447,646
2014	224,659,270
2015	226,027,667
2016	227,199,457
2017	228,370,628
2018	229,368,875
2019	230,304,147
2020	231,713,580

Source: Exhibit III-A-12.

3. Revenues (Historical and Projected)

Coal traffic handled by the TNR falls into three groups for purposes of estimating revenues: traffic that originates and terminates on TNR lines that replicate the single-line BNSF route presently used by that traffic; traffic interchanged with a railroad other than BNSF that moves over TNR lines that replicate the same portion of the BNSF system presently used for the same interline service (*e.g.,* coal traffic interchanged with UP at Northport, NE); and "cross-over" traffic, which currently moves over a larger segment of the BNSF system than the TNR replicates and is interlined between TNR and BNSF. Different procedures are used to calculate stand-alone revenues for each traffic category.

a. Single-Line

In its first full year of operation (2001), the TNR would handle approximately { } million tons of coal in single-line service; that is, service in which both origin and destination are local to the TNR. In addition to AEP Texas' Oklaunion Station, single-line TNR customers include Xcel-Public Service Company of Colorado's Arapaho, Comanche and Pawnee Stations; and Xcel-SPS's Harrington Plant. *See* Table III-A-1.

Stand-alone revenues for AEP Texas' traffic are calculated based on the rates established by BNSF in the common carrier pricing authority applicable to coal shipments from PRB origins to Oklaunion. For 2004, the published common carrier rate

is $18.83 per ton. *See* Exhibit I-A-4.[31] The TNR revenues for other single-line coal traffic were derived from the BNSF traffic tapes produced in discovery. *See* electronic workpaper "TNR Coal Traf and Rev 0100-0603.xls" at worksheet "SARR Traffic Summary." The base year revenues attributable to all single-line TNR traffic are summarized in Exhibit III-A-13.[32]

b. Divisions-Existing Interchanges

Approximately { } million tons of coal traffic that would be handled by the TNR in 2001 would be interchanged with another carrier other than BNSF – the UP at Northport, NE or the Nebraska, Kansas & Colorado Railnet ("NKCR") at Sterling, CO – for delivery to off-line destinations. This traffic presently is handled by BNSF in interline service over the same routes via the same interchanges; *i.e.*, the TNR replicates all of the BNSF lines that are needed to serve the customers in question. Traffic in this category

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[31] As discussed in Part I, *supra,* with the approval of two federal courts AEP Texas has withheld payment of a portion of the rates at issue in this proceeding pending the Board's determination as to their reasonableness. For purposes of calculating stand-alone revenues under the *Coal Rate Guidelines*, however, it is necessary and appropriate to use the rates that BNSF has established and seeks to collect. Those are the rates under challenge, and a ruling on their reasonableness must be based on SAC calculations that assume they would be the rates charged and collected by the stand-alone railroad. If their reasonableness is upheld in whole or in part, AEP Texas would be liable to BNSF for so much of the withheld funds as is consistent with the Board's findings. Conversely, if the rates at issue are found to be unreasonable and unlawful, the amounts withheld by AEP Texas would be taken into account in the calculation of any reparations that may be due from BNSF.

[32] Historical and projected BNSF revenues are shown in Exhibit III-A-13 on a total movement basis. TNR's divisions of revenues from cross-over traffic are shown on Exhibit III-A-14.

includes coal moving to Westar Energy's Jeffrey Energy Center in Kansas, and Nebraska Public Power District's Gerald Gentleman Station in Nebraska.

Consistent with established practice,[33] it is assumed that the revenues earned by the TNR for handling this interline traffic are the same as those actually earned by BNSF for the same service. For the Jeffrey movement, these revenues are derived from BNSF traffic tape data, which were produced in discovery and are summarized in Exhibit III-A-13. *See also* electronic workpapers "TNR Coal Traf and Rev 0100-0603.xls" and "TNR Coal Revenue Forecast.xls."

For the movement to Gentleman, the revenues from the BNSF traffic tape data were adjusted to reflect payments made by BNSF to NKCR for the delivery, unloading and return of unit coal trains between Sterling, CO and Gentleman Station. Specifically, BNSF Contract 41011[34] {

} AEP Texas {

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[33] *See, e.g., FMC* at 27.

[34] *See* BNSF/AEPTX 02902 to 03131 for the Agreement For Sale Of Certain Assets, Rights and Obligations Of Burlington Northern Railroad Company to Nebraska, Kansas & Colorado Railnet, Inc. dated November 27, 1996 (as Amended) (*included in* Workpapers Vol. 15, pp. 07659-07663).

[35] *See* BNSF/AEPTX 02959 (Workpaper Vol.15, pp. 07663).

}.[36] This adjustment is conservative in that it does not take into account {

} AEP Texas assumed NKCR would meet its cycle time requirement for all carloads { }

c. Cross-Over Traffic

The largest category of coal traffic--and all general freight traffic--that would be handled by the TNR is cross-over traffic; *i.e.,* traffic which currently moves over a larger segment of the BNSF system than is replicated by the TNR. These shipments, which include all of the traffic exiting the TNR at Campbell and South Logan, WY, Alliance, NE, Las Animas Jct., CO, and Amarillo, TX as well as coal leaving the TNR at Oklaunion, TX for delivery to the Fayette, Gibbons Creek, Limestone, Nelson, Parish and Big Brown Stations, and the coal that originates in Montana and enters the TNR system at Campbell, WY, are presumed to be interlined between the TNR and BNSF either for ultimate delivery by BNSF (such as the aforementioned Texas and Louisiana shipments), or for further interchange by BNSF to another carrier (such as coal moving to Detroit Edison power plants in Michigan). For cross-over traffic, it is

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[36] {

}

necessary to apportion the current and prospective revenues that BNSF would earn from its single-line move or its division of a joint line move between BNSF and the TNR.

The issue of revenue divisions on cross-over traffic has been contentious in most coal rate proceedings conducted under the SAC methodology.[37] More recently, however, in *Duke/NS* and *Carolina* the Board clarified the preferred methodology to be used in making these revenue allocations:

> [R]evenues should be allocated between the SARR and the residual railroad applying a "modified straight-mileage prorate" approach. *See Duke/NS* at 24-25. Under that approach, the revenue allocation is based on the actual mileage of each carrier's participation in the movement, but the 100-mile block for originating or terminating traffic is retained to reflect the additional costs associated with those functions. As the Board observed in *Duke/NS* at 25, this approach should better approximate the relative costs the defendant railroad incurs to haul this traffic over each of the segments, by applying the reasonable assumption that average total costs are a continuous function of distance.

Carolina at 21; *see also Duke/NS* at 18-22 (discussing and rejecting "market-based" and "density based" methods proposed by the defendant carrier that would have significantly reduced the revenues available to the SARR).

In this proceeding, AEP Texas has calculated the TNR's division of interline revenues from cross-over traffic by application of the modified straight-mileage

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[37] *See, e.g., Wisconsin* at 24; *TMPA* at 31.

prorate formula.[38] *See* Exhibit III-A-14, and electronic workpapers "TNR Coal Traf and Rev 0100-0603.xls" and "TNR Coal Revenue Forecast.xls."

d. Coleto Creek Traffic

In addition to the three groups of unit coal train movements discussed above, a fourth traffic group traverses the TNR lines between Pueblo, CO and Oklaunion, TX. This group consists solely of UP unit coal trains moving between Colorado mines and the Coleto Creek Generating Station. This traffic currently moves over the BNSF lines between Pueblo and Oklaunion. As a replacement for BNSF for this service, TNR assumes the role of landlord for this segment of track and collects trackage rights fees for the movement of UP trains over the segment.

There are two (2) contracts that govern the payment of trackage rights fees for the segment of trackage between Pueblo and Oklaunion. Contract AT189700, dated August 1, 1995 (as Amended), between BNSF and UP governs the payment of trackage rights fees by UP to the BNSF from Pueblo to Amarillo. Contract BN38740, dated August 1, 1995 (as Amended), between BNSF and UP governs the payment of trackage rights fees by UP to the BNSF from Dalhart TX to Fort Worth (which includes the

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[38] For internal movements on the TNR that are routed differently than BNSF's current routing, the TNR mileage for revenue purposes reflects the mileage from origin to TNR/BNSF interchange based on BNSF's current routing. For example, if a movement from a PRB mine to Northport is routed by BNSF via Guernsey, the mileage used to calculate the TNR revenue division would reflect BNSF's current route of movement rather than the TNR routing via Edgemont and Alliance. This approach was approved by the Board in *TMPA* (at 31). Exhibit III-A-5 shows the miles for each TNR movement.

segment from Amarillo to Oklaunion). Both contracts specify {

}[39] For time periods where actual trackage rights payment invoices were provided by BNSF (2000 through 2002), AEP Texas applied the { } Coleto Creek traffic identified in the BNSF train event data.[40] For future time periods, AEP Texas {

} to the forecasted traffic levels by year through 2020.[41]

e. Projected Revenues

Revenues attributable to TNR customers' coal movements that take place in common carrier service are adjusted according to the terms of the governing pricing document or, in one case, the terms of a Board rate prescription order. The issue traffic and movements to PPL Montana's Corette Station (which is governed by BNSF Pricing Authority 90041) and Otter Tail Power Company's Big Stone Station (which is governed

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[39] *See* BNSF/AEPTX 02705 and 02519 (Workpapers Vol.15, pp. 07665 and 07668). {

}

[40] *See* BNSF/AEPTX 52845-52847, 52854-52856, and 52902-52904 (Workpapers Vol. 15, pp. 07670-07677).

[41] *See* electronic workpapers "GTM change_forecastr.xls", "TNR Coal Traf and Rev 0100-0603.xls", and "TNR Coal Revenue Forecast.xls".

by BNSF Pricing Authority 90062) are covered by publications that make no provision for periodic rate adjustments. Accordingly, the last actually known BNSF rates established for these movements ($18.83 per ton in the case of shipments to Oklaunion) are assumed to remain unchanged over the remainder of the DCF period.

BNSF Pricing Authority 90043, which applies to shipments to Xcel/PSCo's Pawnee Station, specifies quarterly adjustments based on changes in the Rail Cost Adjustment Factor, unadjusted for changes in railroad productivity (RCAF-U). Future TNR revenues from that traffic therefore are projected using Global Insight's published forecast of future changes in the RCAF-U over the life of the DCF model.

Movements to the Gibbons Creek Station are governed by the rate prescription order in *TMPA*. Future revenues from those shipments are projected based upon the Board's rate schedules as set out in that decision. *See TMPA* at 34-35. The revenues attributable to non-contract traffic are summarized in Exhibit III-A-13.

The revenue projections for coal traffic that currently moves under contract were developed through an analysis performed by Pace Global of the actual BNSF contracts that govern the movements, which were produced in discovery. The rate adjustment mechanisms in the contracts were identified, and the historic relationships of changes in the contract rate adjusters to changes in the RCAF-U were measured. For contract movements, the rate adjustment factor for each year (as a percent of the Global Insight forecast value for the RCAF-U) specific to each movement was applied through the scheduled expiration of the contract. For movements shown {

}. For movements not listed in the Plan for which no contracts were provided in discovery, the rate adjustment each year was calculated using the forecast of changes in western coal transportation rates as published in *AEO 2003*.

The methodology described above is consistent with that approved by the Board in previous cases. *See TMPA* at 27; *Wisconsin* at 26-27. *See also Carolina* at 19. Details of the results of this analysis as applied to the TNR traffic group are set out in Exhibit III-A-13.

Like the matter of revenue divisions on cross-over traffic, the issue of how best to project future stand-alone revenues following the expiration of existing contracts has been hotly contested in prior coal rate proceedings. *See, e.g., West Texas Utilities,* 1 S.T.B. at 661-64. Beginning in *TMPA*, however, the Board has expressed a clear preference for the use of EIA regional coal transportation cost forecasts as the barometer of post-contract stand-alone revenues. *See TMPA* at 29; *Carolina* at 19; *Duke/NS* at 64 n. 78 ("Indeed, it would seem that EIA forecasts would be an appropriate impartial source of traffic and rate forecasts to use in all future SAC cases").[43]

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[42] These include movements to Ameren's Newton Station, Georgia Power's Scherer Station, and TXU's Monticello Station.

[43] As a composite projection, the EIA forecast does not differentiate between captive and competitive coal movements, and at least in that sense does not appear to reflect the Ramsey pricing principles that are intended to inform determinations under the *Coal Rate Guidelines*. It may be that the Board has concluded that the neutral nature of the EIA forecasts and the ease with which they can be applied offer adjudicatory benefits

(continued...)

Consistent with the Board's recent admonitions and current policy, AEP Texas calculates changes in revenues from contract coal movements from the expiration of each contract through the end of the DCF period using the forecast of changes in western coal transportation rates as published in *AEO 2003*. The results of this analysis are reflected in Exhibit III-A-13.

Projected revenues attributable to general freight traffic are based on actual revenues derived from the BNSF traffic tapes as adjusted by the carrier's 2004-2008 Long Range Plan for non-coal traffic and non-coal contracts, which were produced in response to AEP Texas' discovery requests.[44] The Plan shows annual growth rates for industrial products and consumer products--the general freight categories moving over the TNR–through 2008.

Upon its initial review of the revenue data provided by BNSF, AEP Texas requested several contracts and tariffs governing non-coal shipments moving over the TNR lines. BNSF provided many of the requested documents; however most of the materials consisted of tariffs that were in effect for short periods of time and contained no revenue adjustment mechanism. Some of the documents produced were longer term

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[43](...continued)
that outweigh any shortcomings attached by virtue of their inconsistency with demand-based Ramsey principles.

[44] *See* Document No. BNSF/AEPTX 54874 (Workpapers Vol. 15, p. 07722).

contracts that did include period to period revenue adjustments for specific movements.[45] AEP Texas applied the actual contract adjustment mechanism to adjust revenue for traffic that moved under the applicable contracts until the contract expiration date. Upon contract expiration, and for all movements for which BNSF did not provide contracts or tariffs showing revenue adjustment mechanisms, AEP Texas applied the annual rate of increase or decrease in revenue per unit as detailed in {

}.[46] AEP Texas applied the revenue per unit growth rates for industrial products and consumer products to each non-coal movement.

Future non-coal revenues through 2008 are projected using {

}. For years after 2008 through the end of the DCF period, {

} Non-coal revenue projections for the TNR are detailed in Exhibit III-A-15.

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[45] *See* Workpapers Vol.15, pp. 07723-07806.

[46] *See* electronic work papers "genfrt02.xls", "2002 to 2020 rate escalators.xls" and "bnsfforecast.xls."

III-B Stand-Alone
Railroad System

III. B. STAND-ALONE RAILROAD SYSTEM

AEP Texas' SARR, the Texas & Northern Railroad ("TNR"), has been designed by AEP Texas' rail operations and engineering experts, Paul Reistrup, Walter Schuchmann and Harvey Stone, to accommodate its peak-year traffic group as described in Part III-A, *supra*. The TNR's route replicates BNSF's lines from West Campbell, WY to Oklaunion, TX via the following principal intermediate points:

Donkey Creek, WY
Edgemont, SD
Alliance, NE
Northport, NE
Sterling, CO
Denver, CO
Pueblo, CO
La Junta, CO
Las Animas Jct., CO
Amarillo, TX

The TNR's route also includes a main line extending from Donkey Creek to South Logan, WY (replicating part of BNSF's Orin Subdivision), and branch lines extending from Campbell to Eagle Butte Jct., WY and from Reno, WY to the Black Thunder and Jacobs Ranch mines. *See* Exhibit III-A-1.

1. Route and Mileage

The TNR's route replicates existing BNSF lines within the PRB and extending from the PRB to Oklaunion, TX.

a. Main Lines

From north to south, the TNR's main line starts at West Campbell, WY, and proceeds east/south to Alliance, NE via Donkey Creek, WY and Edgemont, SD, replicating portions of BNSF's Black Hills and Butte Subdivisions. The main line then extends south from Alliance to Denver, CO via Northport, NE and Sterling, CO, replicating BNSF's Angora and Brush Subdivisions. South of Denver, the TNR replicates BNSF's Pikes Peak Subdivision extending to Pueblo, CO. It then extends from Pueblo to Amarillo, TX, via La Junta and Las Animas Jct., CO, Boise City, OK, and Stratford, TX – thus replicating portions of BNSF's Pueblo, La Junta and Boise City Subdivisions. Finally, the main line replicates part of BNSF's Red River Valley Subdivision between Amarillo and Oklaunion (near Vernon), TX.

The TNR also has a main line that replicates a portion of BNSF's Orin Subdivision, extending south from Donkey Creek to South Logan, WY (located at Milepost 75.0 on the Orin Subdivision). At South Logan the TNR will interchange originated coal traffic with the residual BNSF. Originated traffic also moves geographically north on the Orin Subdivision (although loaded coal trains moving in this direction are considered southbound trains for dispatching/modeling purposes).

BNSF has two routes between Pueblo and Amarillo. One route is via Trinidad, CO and Texline and Dalhart, TX; the other is via La Junta and Las Animas Jct., CO, Boise City, OK and Stratford, TX. In 2003, BNSF (and UP, which has trackage

rights over both lines) commenced directional running over these lines, using the line via La Junta/Las Animas Jct. for southbound trains (including loaded coal trains) and the line via Trinidad/Dalhart for northbound trains (including empty coal trains).[1] The TNR does not need two routes between Pueblo and Dalhart, and AEP Texas selected the La Junta/Las Animas Junction route (replicating portions of BNSF's Pueblo, La Junta and Boise City Subdivisions) because it is shorter, has fewer grades in the southbound (loaded coal train) direction, and requires less earthwork/grading than the route via Trinidad/ Dalhart. TNR trains will move over this line in both directions.

Until last year, there was no direct connection between BNSF's Boise City and Red River Valley Subdivisions at Amarillo. In 2003, BNSF constructed an underpass of its Hereford Subdivision to enable a direct connection between the two subdivisions, to facilitate directional running of coal and other trains between Pueblo and Amarillo and points south.[2] AEP Texas' operations and engineering experts have concluded that a direct connection between these subdivisions, although not absolutely necessary, should be provided and therefore have configured the TNR to include a similar underpass.

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[1] *See* Workpapers Vol. 17, pp. 08575-82.

[2] *See* Workpapers Vol. 17, pp. 08580-82.

The TNR main lines include, for present purposes, one joint facility.[3] This is the Union Pacific Railroad's ("UP") line between Sterling and Union, CO (23.71 miles) on the Brush Subdivision. BNSF presently operates over this UP line via trackage rights. The TNR will not build the Sterling-Union line segment, but instead operates over the line as a tenant by stepping into BNSF's shoes under its joint facility agreement with UP. The TNR will pay UP the same fees that BNSF pays or would pay to move the same traffic over this line segment.

b. Branch Lines

The TNR has two branch lines that serve origin coal mines not served by the Orin Subdivision main line,[4] the Campbell Branch and the Reno Branch. In addition, the TNR has five spurs (or parts of spurs) that serve local destinations, *i.e.*, Public Service Company of Colorado/Xcel's ("PSCo") Pawnee, Arapahoe and Comanche power plants at Pawnee, Denver and Minnequa (near Pueblo), CO, respectively; Southwestern Public Service's Harrington power plant near Amarillo, TX; and AEP Texas' Oklaunion Generating Station. These TNR branch lines and destination spurs are shown in Exhibits III-A-1 and III-B-1.

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[3] As described in Part III-B-4-a, *infra*, there are two other joint facilities (UP lines over which BNSF has trackage rights) on the TNR route which the TNR potentially could use rather than building parallel or replacement lines.

[4] The Orin Subdivision main line serves the following mines, from north to south: Caballo, Belle Ayr, Caballo Rojo, Cordero, Coal Creek, North Rochelle, North Antelope/Rochelle and Antelope.

The Campbell Branch replicates BNSF's Campbell Subdivision. This branch line extends 9.95 miles from Campbell to Eagle Butte Jct., WY. It serves the Clovis Point, Fort Union, Dry Fork, Rawhide, Buckskin and Eagle Butte Mines.

The Reno Branch replicates BNSF's Reno Subdivision. This branch line extends 6.46 miles from Reno to Black Thunder Jct. and Jacobs Jct., WY. It serves the Black Thunder and Jacobs Ranch Mines.

As a result of the RTC modeling of the TNR's peak-period operations, additional passing sidings have been added to these branch lines {

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c. Interchange Points

The TNR interchanges traffic with three other railroads: the residual BNSF, UP, and Nebraska, Kansas & Colorado Railnet, Inc. ("NKCR"). The largest interchange volume involves cross-over coal and other freight traffic which the TNR interchanges with BNSF. The TNR's interchange points with BNSF are located at West Campbell and South Logan, WY; Alliance, NE; Las Animas Jct., CO; and Amarillo and Oklaunion, TX. The non-coal freight traffic moves overhead on the TNR in both directions between Amarillo and Oklaunion.

The UP interchange is located at Northport, NE. It involves a single coal movement from the PRB to Westar Energy's Jeffrey Energy Center near Topeka, KS. This movement is originated by the TNR and terminated by UP.

The NKCR interchange is located at Sterling, CO. It involves a single coal movement from the PRB to Nebraska Public Power District's Gerald Gentleman generating station near Wallace, NE. This movement is originated by the TNR and terminated by NKCR. The interchange occurs near the location of BNSF's Sterling Yard.

The TNR will interchange traffic with the residual BNSF at its yards located at Alliance and Las Animas Jct. The TNR has no other yards; only interchange tracks will be provided at all other interchange locations. The track configuration generally consists of two interchange tracks plus a runaround/staging siding and a setout track. *See* Exhibit III-B-1 and Workpapers Vol. 17, pp. 08499ff.

d. Route Mileage

The route mileages for the TNR's principal line segments are set forth in Table III-B-1 below. Details are provided in Workpapers Vol. 17, pp. 08480-94 and electronic workpaper file "TNR Miles.xls."

TABLE III-B-1

TNR LINE SEGMENTS AND MILEAGES

Segment	Mileage
Main Lines	
W. Campbell to Donkey Creek	2.78
Donkey Creek to South Logan	75.40
Donkey Creek to Alliance	223.92
Alliance to Sterling	113.53
Sterling to Denver	123.44[1/]
Denver to Pueblo Jct.	120.27
Pueblo Jct. to Las Animas Jct.	83.93
Las Animas Jct. to Amarillo	235.55
Amarillo to Oklaunion	175.87
Total Main Line Miles	1154.69
Branch Lines	
Campbell Branch	9.95
Reno Branch	6.46
Total Branch Line miles	16.41
TNR portion of mine spurs	4.38
TNR portion of destination spurs	16.77
Total Route-Miles	1192.25

[1/] Includes 23.71 miles of trackage rights over UP between Sterling and Union, CO

1,168.54 of the 1,192.25 total route-miles shown in Table III-B-1 represent new construction by the TNR. The TNR will operate over the remaining 23.71 miles (the portion of the Brush Subdivision between Sterling and Union, CO) by using BNSF's

rights under its existing joint facility agreement with UP, which is the owner of the Sterling-Union line segment.

e. Development of the TNR's System Configuration

The TNR's track infrastructure, including main track configuration (single-track/second main track/passing sidings), yards, *etc.*, which are described in more detail below, has been designed to accommodate the railroad's traffic group, which consists primarily of coal moving in unit trains as well as other, non-coal freight traffic moving overhead in both directions between Amarillo and Oklaunion, TX, as described in Part III-A-1. Specifically, the system configuration has been designed to enable the TNR to handle the trains that will move over the various parts of the system during the peak one-week period (plus four-day warmup/warmdown periods) in the peak traffic year (2020).

The TNR's track and yard configuration is shown in Exhibit III-B-1, which contains track diagrams for the entire railroad. The configuration of the Alliance Yard is also shown in Exhibit III-B-2. BNSF track charts for all of the lines being replicated are reproduced in Workpapers Vol. 15, p. 07813 to Vol. 16, p. 02836.[5]

The main-track and facilities configuration (including yards) for the TNR was developed by AEP Texas' rail operations experts, Paul Reistrup and Walter Schuchmann, to accommodate the railroad's peak-period traffic volume and train

[5] BNSF track charts for the alternate routes not being replicated by the TNR are included in Workpapers Vol. 16, pp. 08236A-08392.

frequencies developed by AEP Texas witnesses Thomas Crowley and witnesses Gary Vicinus, Arthur Holland, Jr. and Paul Meyers of Pace Global.

The process used to develop the system configuration was as follows. First, in October-November 2003, Paul Reistrup, who is AEP Texas' principal operating expert,[6] conducted a field trip during which he observed most of the BNSF lines being replicated by the TNR, with BNSF track charts for these lines at hand.[7] After completion of this initial field trip (Mr. Reistrup returned to the field in February 2004 to observe BNSF's operations between Donkey Creek and Sterling, including in particular its operations in the vicinity of Crawford, NE, and at its Alliance yard facilities), Mr. Reistrup began the configuration analysis by determining the likely locations for changes in BNSF's present main track/passing siding configuration, taking into account the following factors:

- Peak-period train types, sizes (including number of cars and gross trailing weight) and daily counts by line segment;
- Locomotive type, horsepower/tractive effort and configuration;
- Maximum authorized train speeds of 60 miles per hour except for loaded coal trains, which have a maximum authorized speed of 50 miles per hour;

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[6] Mr. Reistrup is widely regarded as one of the Nation's leading experts on rail operations. His extensive operating experience and qualifications are set forth in Part IV, at pp. IV-9 to 15, *infra*.

[7] Mr. Reistrup's notes, maps, etc. from his two field trips are included in Workpapers Vol. 17, pp. 08457-479C.

- Speed restrictions, grades, curves, topography, etc., as shown in BNSF's track charts and timetables (all used to estimate running times over selected TNR line segments and determine the best locations for sidings);

- Dwell times at yards, interchange points and crew-change points (including time needed at the appropriate yards for functions such as FRA-mandated car inspections, removal of bad order cars/insertion of spares, changing locomotive consists, and locomotive fueling and servicing); and

- Time for track inspections and maintenance and random failures.[8]

In many areas, Mr. Reistrup's initial track configuration essentially replicated BNSF's present main-track/passing siding configuration for the lines being replicated, although Mr. Reistrup made a number of changes based on traffic density and type, particular route selected, etc. For example, BNSF presently moves loaded and empty coal trains between Pueblo and Amarillo via different routes; AEP Texas' experts selected a single route (via La Junta and Las Animas Jct., CO and Stratford, TX) which will have greater traffic density than the present BNSF route so that additional passing sidings are needed. As another example, the TNR's traffic density on the geographically southern portion of the Orin Subdivision will be considerably less than the present combined BNSF/UP traffic density, so this segment has less multiple main track than the existing configuration.

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[8] The development of these "input" items is described in detail in Part III-C, *infra*, which describes the TNR's operating plan developed by Mr. Reistrup.

After completing his initial track and facilities configuration for the TNR, Mr. Reistrup provided the configuration, together with the peak-period train counts and operating inputs used to develop it, to AEP Texas Witness Walter Schuchmann for input into the Rail Traffic Controller Model ("RTC Model"), a widely-used computerized rail capacity and planning model.

Mr. Schuchmann and Mr. Reistrup used the RTC Model, which AEP Texas licensed from its proprietor, Berkeley Simulation Software, to assess the TNR's system configuration in an iterative process intended to optimize the railroad's design in terms of providing sufficient capacity to keep its peak-period operations fluid while avoiding the construction of unnecessary facilities. The result of the iterative modeling was to add capacity in certain areas (*i.e.* between Donkey Creek and Alliance, which was double-tracked, and between Mileposts 422.95 and 406.22 in the Crawford helper district on the Butte Subdivision where 16.75 miles of third main track were added), reduce capacity in other areas such as the southern part of the Orin Subdivsion (where BNSF presently has double and triple main tracks), and relocate/lengthen some sidings particularly toward the south end of the railroad. *See* Workpapers Vol. 17, pp. 08509A-08574. The end product was the track and yard configuration shown in AEP Texas Exhibits III-B-1 and III-B-2.

i. Reasons for Selection and Use of the RTC Model

The RTC Model was selected by AEP Texas' operating experts as an appropriate simulation model to be used in this proceeding for several reasons. First, the

RTC Model is a widely-accepted rail capacity simulation model with reiterative capabilities that is used by both railroads (including BNSF) and planning agencies. Second, the Board is familiar with the RTC Model from other recent rail rate cases. BNSF itself used the RTC model to critique the system configuration and capacity of the shippers' SARRs, and to develop its own version of SARR configuration, in two recent cases (Docket No. 42057, *Public Service Company of Colorado d/b/a Xcel Energy v. The Burlington Northern and Santa Fe Railway Company* and Docket No. 42071, *Otter Tail Power Company v. The Burlington Northern and Santa Fe Railway Company*).[9]

The complainants in several recent rate cases have criticized the defendant's use of the RTC Model because the Model was not provided to the Board as part of the defendant's workpapers (a problem BNSF has recognized by arranging to furnish a notebook computer with the model installed for use by the shipper and the Board in both the *Public Service of Colorado* and *Otter Tail* rate cases). AEP will avoid this problem by providing the Model to the Board. AEP Texas plans to discuss the arrangements for providing the Model to the Board at the technical conference scheduled for March 29,

[9] In the public version of their Reply Evidence Narrative filed on January 27, 2004, in Docket No. 42058, *Arizona Electric Power Cooperative v. BNSF and UP* ("*AEPCO*"), the defendants also touted the "advanced dispatching logic" of the "sophisticated models" used in the railroad industry, citing pages III-B-17 to 21 of BNSF's Reply Evidence Narrative in the *Otter Tail* case. (*AEPCO* at III-C-9 n.16.) Given the citation, this can only be a reference to the RTC Model.

2004.[10] In the meantime, AEP Texas is providing the Board with the output from the Model as part of the electronic workpapers submitted herewith.

In addition, complainants in other cases have argued that the proprietor of the RTC Model has provided only a compiled version of the underlying computer program, meaning that its underlying logic cannot be examined. In this case, AEP Texas submits that the Board should accept the RTC Model and its results, notwithstanding the Board's inability to examine the Model's underlying logic, as the Model is widely accepted and used by the railroad industry and public planning agencies, *i.e.*, it has no "made for litigation" bias. Moreover, the defendant in this case already has effectively agreed that the RTC Model is appropriate because it has used the Model in two recent rate-reasonableness proceedings as explained *supra*. Thus, this is the first case in which the complainant and the defendant are on the same page with respect to the propriety of a particular computerized model to develop a SARR's system configuration and assess its capacity to handle its peak-period traffic.

In this regard, the electronic files containing the RTC Model runs, output and case files are included in AEP Texas' electronic workpapers as Part III-B electronic workpaper folder "RTC." Given the substantial cost of licensing one copy of the RTC

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[10] The terms of AEP Texas' license with Berkeley Simulation Software, under which it obtained one copy of the RTC Model software, permit AEP Texas to share the Model and its results with the Board. The software has been installed on a notebook computer which (together with the model runs) will be provided to the Board.

Model from Berkeley Simulation Software and purchasing an appropriate notebook computer on which to install it, AEP Texas is not providing either the Model itself or the PC on which it has been installed to BNSF. BNSF obviously has the RTC Model, given the statements in its *Otter Tail* Reply Narrative, and therefore should be able to input AEP Texas' Model runs, output and case files into the Model for purposes of evaluating them and preparing its Reply Evidence in this proceeding. At the technical conference in this proceeding scheduled for March 29, 2004, AEP Texas plans to discuss with the Board's staff (and BNSF) appropriate procedures for providing the PC on which its licensed copy of the RTC Model has been installed to the Board.

ii. Application of RTC Model

As indicated previously, AEP Texas witness Reistrup developed an initial version of the TNR's system configuration (including main tracks, passing sidings, yards, interchange tracks and traffic control system). In developing the TNR system Mr. Reistrup considered the loaded coal train counts for each segment of the TNR, the train counts in each direction for the non-coal freight traffic moving overhead in both directions between Amarillo and Oklaunion during a 15-day study period that included the peak week of the TNR's peak traffic year (2020), and the operating inputs described in Part III-C hereof.

The peak period was developed by AEP witness Crowley based on forecasted train movements for the traffic included in the TNR traffic group in 2020. Mr.

Crowley determined the number of trains that would move during calendar year 2020 by applying the percentage increase in the TNR's traffic from 2002 to 2020 (developed by Pace Global) to the 2002 train data provided by BNSF in discovery. Based on a review of loaded coal trains and general freight trains, Mr. Crowley ascertained that the peak traffic week was { }, 2020. At the request of Messrs. Reistrup and Schuchmann, Mr. Crowley also developed the loaded coal train and the non-coal train counts during an additional four-day warmup period and an additional four-day warmdown period, thus providing a total study period 15 days in length { } The train counts for the 15-day study period in 2020 were used by Mr. Reistrup in developing his initial system configuration for the TNR. The peak period train counts provided by Mr. Crowley and used by Mr. Reistrup are shown in Exhibit III-B-3; further details are provided in electronic workpaper files "Simulation trains-peak calc.xls" and "Peak 2020 train list-worksheet.xls."

Mr. Reistrup then provided his initial configuration to AEP Texas witness Schuchmann, who input it into the RTC Model. When inputting the TNR's main track/siding configuration, Mr. Schuchmann included grades, curves and speed restrictions, which he ascertained from BNSF's track charts and operating timetables for the lines being replicated.

After inputting the track and yard configuration into the RTC Model, Messrs. Reistrup and Schuchmann then populated it with the peak period trains provided

by Mr. Crowley. Mr. Schuchmann then ran the trains though the Model using the operating-plan inputs (maximum train speeds, crew-change times, interchange times, yard dwell times, etc.) provided by Mr. Reistrup and described in Part III-C-2, *infra*.

Specifically, the TNR's coal trains were analyzed and grouped by mine origin and destination. This yielded 50 distinct coal train O/D combinations. Of these, { } combinations, representing { } coal trains identified as operating in the 15-day study period, comprised local traffic (*i.e.*, trains that are both originated and terminated by the TNR), and { } combinations, representing { } study period coal trains, represented traffic interchanged with other railroads. For example, Caballo Mine to Alliance is one O/D combination. All Caballo Mine-Alliance trains were simulated as having the same train size as the largest train size for that O/D combination in the "Peak Train Analysis" spreadsheet provided by Mr. Crowley. This is a conservative assumption, as many trains actually had smaller sizes, causing the RTC simulation to understate likely train performance in those instances.

Slightly different approaches were used to simulate the operation of local coal trains and interchange coal trains. With respect to local trains, to address the Board's criticism of the shippers' SARR modeling approach in prior rate cases, where actual release times at the mines were used for every train (which caused many trains to "disappear" after their empty return to the mine), Messrs. Reistrup and Schuchmann decided that all trains would be cycled continuously. That is, initially the release time at

the mine would serve as the starting point for a train's cycle and, after the empty train returned to the mine, it was immediately placed for loading and moved out of the mine after loading was completed.

To be conservative, and consistent with Board precedent in *TMPA*, Mr. Reistrup directed Mr. Schuchmann to assume that each empty coal train required 5.5 hours of "dwell" time at the mine origins on the Orin Subdivision and Reno Branch and four hours of dwell time at the mine origins on the Campbell Branch. (*See* pp. III-C-28 to 29, *infra*.)

Interchange coal traffic was simulated by populating the model with inbound empty trains in a pattern corresponding to the 15-day loaded train release times contained in Mr. Crowley's spreadsheet. Typical empty train inspection, staging, running and loading time was subtracted from the specified mine release time to determine the date when the empty train would enter the network. Thus, the pattern of train movements by day mirrored the schedule of loading release dates and times generated by Mr. Crowley. Specific empty train arrival times at the interchange point were generated randomly for each train section (multiple movements between each origin and destination on the same day are referred to herein as "train sections").

For modeling purposes, a train's movement in the simulation commences with the arrival of the empty train at the interchange location. The train is held in the yard or on the interchange tracks for the appropriate amount of time for crew changes,

inspections, staging or other tasks specific to each interchange location, as provided by Mr. Reistrup (and described in Part III-C-2, *infra*). The empty train then proceeds to the appropriate mine where it is held for the appropriate loading/dwell period specified by Mr. Reistrup. Upon expiration of that time, the simulation advances the corresponding loaded train from the mine to the appropriate interchange location.

The RTC modeling indicates that the TNR's peak-period trains cycle over its system (or its portion of the total route in the case of cross-over and other coal trains) faster than the real-world BNSF trains did in 2002. *See* Exhibit III-A-5. That exhibit permits a direct comparison of BNSF and TNR transit times for the various movements represented in the 2020 study period.

Although Exhibit III-A-5 compares transit times only and does not include loading/unloading or yard dwell time, it is still possible to compare round-trip cycle times for 2002 BNSF coal trains and TNR 2020 study period trains. For example, the 2002 BNSF and TNR 2020 study-period cycle times for the { } coal trains moving from the North Antelope/Rochelle origin to { }[11] are shown in Table III-B-2 below.

[11] These trains are shown in Exhibit III-B-3 as moving to { }

TABLE III-B-2
BNSF AND TNR TRAIN CYCLE TIMES

	BNSF (Hours)	TNR (Hours)
Transit time	{ }	93.1
Origin (loading) dwell time	5.5	5.5
Yard dwell time (inspection, etc.)	11.0	11.0
Destination (unloading) dwell time	{	}
Total	{ }	115.6

Note: BNSF times other than transit times assumed to equal TNR times per Reistrup operating plan for comparative purposes.

Table III-B-2 shows that the { } coal trains would experience a cycle time improvement of { } percent in the TNR peak period compared with the equivalent BNSF cycle time in 2002. This allows the plant to receive its coal faster, employ fewer trainsets, or increase its coal consumption without increasing its car fleet.

In the real world, if BNSF were able to cycle coal trains as fast as the TNR does based on the RTC Model results, what would probably happen is that shippers would reduce the number of trainsets in service to avoid receiving all of their planned quarterly or annual coal deliveries too early and to even out the flow of coal throughout the quarter or year. This would reduce the number of trainsets in service, which in turn reduces congestion on the rail route(s) used to transport coal.

The non-coal overhead trains were coded into the RTC Model to be received in interchange from BNSF at either Amarillo or Oklaunion (depending on the

direction of movement) on the day and at the time specified in the train movement file provided by Mr. Crowley. Consists were averaged by train symbol to expedite the input process. The TNR overhead coal trains moving between West Campbell and Alliance and the UP coal trains moving over the TNR (via trackage rights) between Pueblo and Oklaunion were handled in a similar manner, with a random departure time assigned to the specific observed date of operation.

The final results of the RTC modeling of the TNR's operations are shown in Part III-B electronic workpaper folder "RTC." The results confirm that Mr. Reistrup and Mr. Schuchmann have developed a configuration and operating plan that enable the TNR's peak-period trains to operate smoothly and efficiently.

2. Track Miles and Weight of Track

The TNR's track miles are shown in Table III-B-3 below. Details are provided in AEP Texas' Opening electronic workpaper file "Track Miles Total.xls."

Table III-B-3
TNR Track Miles

Single main track	754.81
Second/third main track and passing sidings	367.37
Yard tracks	69.41
Interchange tracks	25.41
TNR-owned portion of mine lead and destination spur tracks	21.15
Helper pocket and set-out tracks	15.87
Total track miles	1,253.82

In Table III-B-2, single-track miles equal total route miles less the miles for second/third main tracks and passing sidings. Second/third main track and passing siding miles equal the total miles for second main track and passing sidings, regardless of length.[12]

a. Main Line

As shown in Exhibit III-B-1, the TNR's main lines consist of alternating sections of single track and double track or passing sidings, with some triple track. The double-track sections are longer and spaced closer together on the northern part of the TNR system. In fact, the entire Donkey Creek-Alliance line segment (where the traffic density is heaviest) is double track, with one 16.8-mile section of triple track near Crawford, NE. All main track and passing sidings consist of new 136-pound continuous welded rail ("CWR"). Premium rail is used between Donkey Creek and Alliance, and on the other main lines (between Alliance and Oklaunion and between Donkey Creek and South Logan) in curves of 3 degrees or more. Otherwise, standard rail is used on these lines.

All track and structures are designed to accommodate a gross weight on rail ("GWR") of 286,000 pounds per car and maximum train speeds of 60 mph, conditions permitting. However, loaded unit coal trains will be limited to a maximum speed (conditions permitting) of 50 mph.

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[12] For purposes of the discussion in the text, "passing siding" means a second main track that is only long enough to accommodate one train at a time (some railroads refer to all multiple tracks in CTC territory as main tracks regardless of their length).

b. Branch Lines

The TNR will construct and operate two branch lines, the Campbell Branch and the Reno Branch. These branches, which are described in Part III-B-1-b, *supra*, are used to serve several PRB coal mines that are not served by the Orin Subdivision main line. The track configurations for these branches are shown on pages 1 and 4 of Exhibit III-B-1.

Both branches will be constructed with 136-pound standard CWR, except in curves of 3 degrees or more where premium rail will be used. Each branch consists of single track, with two 1.6-mile passing sidings on the Campbell Branch and three on the Reno Branch.

c. Sidings

The TNR's passing sidings are considered part of its main-line and branch-line trackage, and are discussed in Subparts a. and b. above.

d. Other Tracks

The TNR's yards and related trackage are discussed in the next section. Other tracks include interchange tracks at the TNR's smaller interchange locations (described below), pocket tracks for helper locomotives, and set-out tracks for bad order cars which also will be used for the storage of maintenance-of-way equipment. The loaded train interchange tracks at Alliance are constructed with 136-pound standard CWR

due to the heavy volume of interchange coal traffic at that location. All other interchange tracks have 115-pound relay CWR.

A helper hold track is located at Donkey Creek. Helper pocket tracks are located at West Campbell, Mileposts 8.5 and 15.4 on the Orin Subdivision, and at the beginnings and ends of the TNR's Crawford/Belmont and Big Lift/Palmer Lake helper districts (described in Part III-C, *infra)*. The helper tracks are double-ended with power switches. One set-out track is placed on each side of each of the TNR's Failed-Equipment Detectors ("FED"), as described in Parts III-C and III-F below. All of the setout tracks are also double-ended tracks. One double-ended set-out track is also located at each interchange point. The helper pocket tracks and the set-out tracks, which are shown in Exhibit III-B-1, consist of 115 pound relay CWR.

3. Yards

a. Location and Purpose

The TNR has two yards, located at Alliance, NE and Las Animas Jct., CO. The TNR's largest yard is located at Alliance, which is also the TNR's largest interchange point. The Alliance Yard is used for performing FRA-required car inspections, locomotive fueling, servicing and maintenance, car repairs, interchanging crossover traffic with the residual incumbent, and staging empty trains for loading at PRB mines. The yard at Las Animas Jct. ("Las Animas Yard") is a smaller yard. It is used primarily

for performing car inspections and locomotive fueling, as well as for interchanging trains to the residual BNSF.

Mr. Reistrup has concluded that the TNR does not need yards at its six interchange locations other than Alliance and Las Animas Jct. (West Campbell, South Logan, Northport, Sterling, Amarillo and Oklaunion). Rather, the TNR will provide two interchange tracks at each location. (Two sets of interchange tracks are provided at Amarillo, one for coal trains and the other for non-coal overhead trains.) These tracks are shown in Exhibit III-B-1 and Workpapers Vol. 17, pp. 08503-04. Mr. Reistrup has also provided extra sidings along the main line near each interchange point that can be used to hold trains and stage trains awaiting interchange or staging if necessary. Examples include the Jaffe siding between Mileposts 220.0 and 221.6 just south of Las Animas Jct., and the Vernon siding between Mileposts 316.92 and 318.52 just north of Oklaunion.

In its 1996 decision in *West Texas Utilities*, which also involved PRB coal movements over the same route on BNSF's predecessor (BN), the Board accepted BN's argument that small empty-train staging yards were needed in the PRB at Reno (the junction between the Orin Subdivision and the Reno Branch) and Nacco Junction (where the private spur to the North Antelope/Rochelle mining complex connects with the Orin Subdivision main line). *See* 1 S.T.B. at 686. However, rail operations in the PRB have changed since the record closed in *West Texas Utilities*. Today, unlike the situation in 1995, BNSF and UP crews do not accompany trains through the loading cycle at most of

the mines served by the Orin Subdivision, including Antelope, the North Antelope/ Rochelle complex, North Rochelle, Jacobs Ranch (located on the Reno Branch), Cordero, Caballo Rojo and Caballo. Rather, the BNSF or UP crew places an empty train on mining company staging tracks, and then either ties up or transfers to a loaded train for departure from the staging area. A contractor hired by the mining company takes the empty train through the coal loading facilities and returns the loaded train to the staging tracks, where a BNSF or UP crew boards the train for movement toward destination. This procedure makes it unnecessary for the TNR to construct additional staging tracks of its own at either Reno or Nacco Junction. Moreover, the TNR has empty train staging capability at its Alliance Yard as well as sidings that can be used for staging near South Logan and Amarillo and on the Reno Branch (where two sidings have been added to the single siding that presently exists on this branch).

i. Alliance Yard

The Alliance Yard is the TNR's principal yard. It is located at the largest point of interchange between the TNR and the residual BNSF; the TNR delivers 126 million tons of coal traffic to BNSF at Alliance in the peak year. It is used for functions similar to those BNSF presently performs at its Alliance and Guernsey Yards.[13]

[13] Mr. Reistrup points out that BNSF presently moves all of the TNR's Alliance cross-over coal traffic east from Alliance, although it brings this traffic into Alliance via two routes whereas the TNR will bring it into Alliance via a single route.

Empty coal trains are staged at Alliance Yard for movement to the PRB mines for loading. Locomotives are fueled, serviced and maintained at Alliance. As explained below in Part III-C-2-a-vi, locomotive consists for each empty train are exchanged at Alliance. Alliance also is one of the TNR's three points where FRA-mandated car inspections are performed. Bad-order cars are removed from trains at Alliance and repaired by a contractor at a car-maintenance facility (provided by the contractor) which includes TNR-provided rip tracks. Spare cars are kept at Alliance, and inserted into empty trains destined for the PRB mines as necessary. Alliance is a crew-change point, both for trains interchanged with BNSF and for trains moving in both directions through Alliance on the TNR (*i.e.*, trains moving between TNR-served PRB mines and destinations/interchange points south of Alliance). It is also the location of the railroad's headquarters.

The track and facilities layout of the Alliance Yard is shown on pp. 6-8 of Exhibit III-B-1 and in Exhibit III-B-2. The yard is divided into two sections, one to handle interline coal trains interchanged with BNSF, and one to handle TNR coal trains moving to/from destinations south of Alliance. Both sections include 8,100-foot relay/inspection tracks, which will be used for performing 1,000-mile and 1,500-mile (extended haul train) inspections and staging/storage of empty trains.[14] Gravel roadways

[14] The TNR's car-inspection locations and procedures are described in detail at pp. III-C-40 to 46, *infra*.

are provided between the relay tracks for use by the car inspectors. The yard also includes locomotive servicing/fueling/maintenance facilities and related tracks, spare railcar storage tracks, car repair facilities and related tracks, and a wye track for turning locomotives and rotary-dump cars (the latter so that they can be inserted in trains with the rotary ends properly aligned with the other cars in the train). Fuel racks are provided at the locomotive servicing/fueling facilities, as all road locomotive units are removed from empty trains at Alliance and replaced with freshly fueled and serviced units.

ii. Las Animas Yard

The Las Animas Yard is shown on page 16 of Exhibit III-B-1. This yard is used for performing 1,000/1,500 mile inspections and fueling locomotives, and for interchanging coal trains destined to { } with the residual BNSF. It has been strategically located to avoid populated areas with expensive land, while enabling the TNR to perform car inspections within FRA-mandated distance intervals and to fuel locomotives on coal trains moving to or beyond Amarillo.

All loaded coal trains moving through Las Animas Jct. receive an inspection at Las Animas Yard. In addition, the locomotives on all loaded coal trains moving through Las Animas Jct. are fueled at Las Animas Yard, with the fueling performed by tanker truck. The yard consists of four relay/interchange tracks, with gravel inspection roadways between each of the tracks. Double-ended set-out tracks are provided at each end of the yard.

b. Miles and Weight of Yard Track

The TNR's yards contain a total of 69.41 miles of track. Details on a yard-by-yard basis are shown in electronic workpaper file "Yardcomputations.xls." As shown in Exhibit III-B-1, the yard tracks consist of 115-pound relay CWR. The main running tracks through the yards have the same weight and type of rail as on the adjacent mainline tracks.

4. Other

a. Joint Facilities

The TNR route includes three potential joint facilities involving trackage owned by UP, over which BNSF presently has operating rights. These facilities include all or portions of the UP lines between Sterling and Union, CO (23.71 miles), between South Denver and Pueblo, CO,[15] and between Avondale and N.A. Junction, CO (13.63 miles).

In addition, UP operates via trackage rights over BNSF between Pueblo and Oklaunion. AEP Texas has included the trackage rights revenue from UP coal traffic originating at UP-served mine origins in Colorado and moving to AEP Texas Central's

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[15] At one time BNSF's and UP's predecessors had separate, parallel lines between Denver and Pueblo. These lines were consolidated in the 1980's, with each carrier having reciprocal operating rights over the other's line. Subsequently, some line segments were abandoned, which means that the Denver-Pueblo line now has some single-track segments. The ownership of the various presently-existing line segments between Denver and Pueblo is shown in Workpapers Vol. 17, pp. 08353-84.

Coleto Creek power plant in Texas in the TNR's revenues for purposes of calculating SAC in this case. It has also included the UP Coleto Creek trains moving between Pueblo and Oklaunion in the TNR peak-period train counts for purposes of developing the TNR system configuration and assessing its capacity.

With respect to the UP facilities over which BNSF operates via trackage rights, described in the first paragraph of this subsection, AEP Texas has provided for the TNR to step into BNSF's shoes as a joint facility tenant only with respect to the Sterling-Union line segment. This is because BNSF has provided sufficient information in discovery to enable AEP Texas to determine the precise compensation BNSF (and thus the TNR) pays to UP for use of this joint facility. To date, notwithstanding several AEP Texas requests to BNSF's counsel to provide all of the information needed to determine the trackage rights compensation payable to UP for use of the UP-owned portions of the South Denver-Pueblo line and the Avondale-N.A. Jct. line, BNSF has not provided this information.[16]

Absent accurate information as to the trackage rights compensation the TNR would pay to UP for using the BNSF trackage rights for portions of the South Denver-Pueblo line and the Avondale-N.A. Jct. line, AEP is unable to make an informed decision whether it is more economical to have the TNR use BNSF's trackage rights or

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[16] Copies of correspondence related to the missing information needed to calculate TNR payments to UP for use of portions of the South Denver-Pueblo and Avondale-N.A. Jct. lines are included in Workpapers Vol. 17, pp. 08589-602.

construct these line segments. Accordingly, AEP Texas necessarily has elected, for purposes of its Opening evidentiary presentation, to have the TNR construct these line segments rather than operate over the corresponding UP line segments. AEP Texas' experts believe this overstates the relevant costs. If BNSF provides the relevant information AEP Texas has requested concerning compensation payable to UP for use of BNSF's trackage rights over these segments after Opening Evidence is filed, AEP Texas reserves the right to change the manner in which the TNR will provide the facilities it uses for these line segments on Rebuttal.

b. Track Parameters

All of the TNR's main tracks are constructed to a standard that allows maximum train speeds of 60 mph, conditions permitting. Loaded coal trains are limited to a maximum speed of 50 mph; empties can move at up to 60 mph. Mr. Reistrup notes that {

} Mr. Reistrup has added CTC with power switches to this territory thus allowing an increase in maximum train speed to 60 mph.

The maximum authorized train speed is 50 mph on the TNR's two PRB branch lines. Actual train speeds on both the main lines and the branches are slower at

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[17] {Estelline is located 94 miles east (south) of Amarillo, or more than half way between Amarillo and Oklaunion.}

some locations due to grades and curvature, as is the case with the incumbent BNSF's operations. All tracks are being constructed to permit a maximum GWR of 286,000 pounds per car. Standard fifteen-foot track centers are used in multiple-track territory.

As described below in Part III-F, wood crossties are being used on all TNR tracks. The tie and other track and subgrade specifications (including turnouts, other track material, ballast and side slopes) are shown in Part III-F and associated workpapers. AEP Texas' experienced operating and engineering experts have designed the track and subgrade specifications to allow the TNR to handle its expected peak-period traffic volume efficiently, consistent with the lowest feasible cost as envisioned by the *Coal Rate Guidelines.*

c. Signal/Communications System

All of the TNR's main lines (including BNSF's dark territory between Amarillo and Oklaunion) and the two branch lines are equipped with a CTC traffic control system, with power switches that are controlled by centralized dispatchers located at the railroad's Alliance headquarters. Power switches are also used for the helper pocket tracks. All other switches (*i.e.*, interior yard and set-out track switches) will be hand-thrown.

Communications will be conducted using a microwave system, with microwave towers spaced at appropriate intervals (an average of every 25 miles). All locomotive engineers, dispatchers and supervisory field personnel will be equipped with

radios connected to the microwave system. Certain employees also will be equipped with cellular telephones for emergency railroad use only, as a back-up to the radios. Further details concerning the microwave system are provided in Part III-F-6-c, *infra*.

d. Turnouts, FEDs and AEI Scanners

The TNR's double-track and triple-track sections and passing sidings have been planned with #20 turnouts in CTC territory. This permits trains to operate through the turnouts at speeds of up to 40 miles per hour. No. 20 turnouts are also used for the "wye" connections at Campbell and Donkey Creek, and the switches between the loaded-direction interchange tracks and the main line at both ends of the east (BNSF interchange) section of Alliance Yard. No. 14 turnouts are used between main tracks and all other interchange tracks, helper pocket tracks and yard tracks, where train speeds are slower. This allows trains to operate through these turnouts at a speed of 25 mph (conditions permitting). No. 10 turnouts are used within yards and for set-out tracks.

Failed Equipment Detectors ("FEDs"), which include hot-bearing, dragging-equipment, cracked-wheel and wide/shifted load detection systems, have been spaced approximately every 26 miles along the TNR's route. Two FEDs are provided at each location in double-track territory, one for each main track. Each FED has two setout tracks, each located within two train lengths on either side of the FED. Each such track will be a 600-foot double-ended track to facilitate the setout of bad-order equipment from

trains operating in either direction. These tracks are used for temporary storage of bad-order cars caught by the FEDs, and for temporary storage of work equipment.

Automatic Equipment Identification ("AEI") scanners are located at or near each of the TNR's eight points of interchange with BNSF, UP and the NKCR (Campbell, South Logan, Alliance, Northport, Sterling, Las Animas Jct., Amarillo and Oklaunion). A total of 14 AEI scanners have been provided, as shown in Exhibit II-B-1. The AEI scanners have been placed so as to enable them to capture all train movements that occur on the TNR, including both the local and the interline movements.

III. C. OPERATING PLAN

AEP Texas' principal rail operations expert, Paul Reistrup, has designed the operating plan for the SARR in this case, the Texas & Northern Railroad or TNR. The operating plan has been carefully crafted and matched with the TNR's system configuration to enable the railroad to transport its peak-year traffic volume (as well as the traffic volume during the peak one-week period of the peak year) efficiently, in full compliance with all applicable service requirements under BNSF's contracts with, and other transportation commitments to, the shippers comprising the TNR's traffic group, and at transit times at least as good as those presently provided by BNSF.

As indicated in Part III-A, *supra*, the TNR's peak traffic year is 2020, which is also the final year in the 20-year DCF period used to determine SAC in this proceeding. In that year, the TNR will transport the following total traffic volumes, by commodity and category of service:

TABLE III-C-1
TNR 2020 Traffic Volume

Traffic Type	Net Tons (Millions)
Coal	
- Local	{ }
- Interline forwarded	{ }
- Interline received/overhead	{ }
Total coal[1/]	{ }
Non-coal[2/]	
- Overhead	{ }
Total, all traffic[2/]	234.51

[1/] The TNR also accommodates an additional { } million peak-year tons of UP coal traffic that UP transports in overhead service on the TNR's lines between Pueblo, CO and Oklaunion, TX.

[2/] Includes primarily { } traffic moving overhead on the TNR in both directions between Amarillo and Oklaunion, TX. *See* Exhibits III-A-3 and III-A-15 and electronic workpaper file "TNR Coal Traf and Rev.xls," worksheet "02coalod."

These tonnages (which are broken down by line segment in Table III-C-2, *infra*), combined with the 2020 peak-period train counts developed by AEP Texas witness Crowley (and shown in Exhibit III-B-3), were the driving considerations in Mr. Reistrup's development of the TNR's operating plan.

1. General Parameters

The operating plan for the TNR reflects the fact that it carries coal and some non-coal freight traffic exclusively in unit train or trainload service. All TNR trains will operate between origins and destinations (either local or interchange points) as unit trains or run-through trains. The TNR has no need for freight classification yards, and no intermediate switching will be performed except to set out bad-order cars and insert spare or repaired cars into trains.

a. Traffic Flow and Interchange Points

The peak annual (2020) traffic volume of the TNR is { } net tons of coal traffic and { } net tons of other freight traffic, as shown in Table III-C-1 above.

The TNR's traffic density varies over different line segments. The busiest segments are between Donkey Creek, WY and Alliance, NE, where the TNR transports 190 million net tons of coal traffic in the peak year, and between Donkey Creek and the Orin Subdivision mines (located at and north of Converse Junction) where the peak-year volume is 176 million tons. The 2020 traffic volumes for the TNR's principal line segments are shown in Table III-C-2 below. Further details are provided in Exhibit III-C-1.

TABLE III-C-2
TNR 2020 Traffic Density By Line Segment

Line segment[1/]	Net Tons (Millions)
Campbell Branch	{ }
Reno Branch	{ }
E. Campbell-Donkey Creek	{ }
Donkey Creek-Converse Jct.	{ }
Converse Jct.- South Logan	{ }
Donkey Creek-Alliance	{ }
Alliance-Northport	{ }
Northport-Sterling	{ }
Sterling-Pawnee Jct.	{ }
Pawnee Jct.-Denver	{ }
Denver-Pueblo	{ }
Pueblo-Las Animas Jct.[2/]	{ }
Las Animas Jct.-Amarillo[2/]	{ }
Amarillo-Oklaunion[2/ 3/]	{ }

[1/] Tonnages shown for a line segment are the maximum tonnages moving over any part of the segment; volumes are not uniform for the entire segment in some cases. *See* Exhibit III-C-1.

[2/] Includes UP coal traffic moving overhead on the TNR between Pueblo and Oklaunion.

[3/] Includes TNR non-coal traffic moving overhead (both directions) between Amarillo and Oklaunion.

The TNR serves 16 coal mine origins in the PRB, and five destination power plants to which it delivers { } million tons of coal in the peak year. In addition to AEP Texas' Oklaunion plant, these local destinations include Xcel Energy/Public Service Company of Colorado's ("PSCo") Pawnee plant at Pawnee Jct., CO; PSCo's Arapahoe plant at Denver, CO; PSCo's Comanche plant at Minnequa (near Pueblo), CO; and Xcel/Southwestern Public Service Company's Harrington plant at Amarillo, TX. The TNR also moves { } million tons of PRB coal traffic (in addition to the AEP Texas movement in issue) all the way to Oklaunion for interchange to the residual BNSF.

Most of the TNR's coal traffic is not local traffic. Rather, it is either cross-over traffic that is presently transported by BNSF over lines the TNR is replicating,[1] or traffic that BNSF interchanges to UP at Northport, NE, and to Nebraska, Kansas & Colorado Railnet ("NKCR") at Sterling, CO.

The TNR's non-coal freight traffic is cross-over traffic that moves overhead in both directions, in through trains, between Amarillo and Oklaunion. The TNR interchanges this traffic with the residual BNSF at both of those points. This traffic consists of intermodal, manifest, and vehicle (automobiles and auto parts) traffic moving between points in Texas and West Coast points (although some traffic moves to/from

[1] This traffic will be interchanged to and/or from BNSF/UP at six new interchange points: Campbell and South Logan, WY; Alliance, NE; Las Animas Jct., CO; and Amarillo and Oklaunion, TX.

Denver). Most of this traffic is high-priority traffic. *See* electronic workpaper file "bngfsactrnxo2summary.xls."

i. Traffic Density

In configuring the TNR and designing its operating plan, AEP Texas' witness Reistrup considered both the total traffic volume moving over various line segments in the peak year (2020) and the peak one-week period { } in that year, and the number of loaded and empty coal trains moving over the various parts of the TNR system during the peak week. The peak-week train frequencies were determined by observing the traffic patterns for each day in the peak one-week period in calendar year 2002 from the traffic tapes that BNSF provided in discovery. As explained in Part III-B-1-e, *supra*, AEP Texas' witnesses Reistrup and Schuchmann modeled the railroad's operations (using the RTC Model) during a 15-day study period that included the peak week plus a four-day warm-up period and a four-day cool-down period.

The loaded coal trains and the non-coal overhead trains that the TNR will carry during the 2020 15-day study period (including the peak week) are shown in Exhibit III-B-3. The loaded coal trains, and all of the non-coal trains, that the TNR will handle during these periods are summarized in Table III-C-3 below.

TABLE III-C-3
TNR 2020 Peak-Period Loaded Train Counts

Line Segment	Total Loaded Trains in 15-Day Study Period	Average Daily Loaded Trains in 15-day Study Period
Campbell Branch	{	}
Reno Branch	{	}
E. Campbell to Donkey Creek	{	}
Donkey Creek to Converse Jct.	{	}
Converse Jct. to South Logan	{	}
Donkey Creek to Alliance	{	}
Alliance to Northport	{	}
Northport to Sterling	{	}
Sterling to Brush	{	}
Brush to Denver	{	}
Denver to Pueblo/Minnequa	{	}
Las Animas Jct. to Amarillo[1/]	{	}
Amarillo to Oklaunion - coal[1/]	{	}
Amarillo to Oklaunion - non-coal	{	}

[1/] Includes UP Coleto Creek trackage rights trains.

As shown in Table III-C-3, the heaviest train volume occurs between Donkey Creek and Alliance, reflecting the fact that a large volume of cross-over coal traffic moves in this corridor. Daily train volumes are slightly lower on the Orin Subdivision (and much lower on the southerly portion between Converse Jct. and South

Logan. Volumes are considerably lower on the TNR main line extending south from Alliance to Oklaunion.

In evaluating the TNR's system configuration, operating plan and operating expenses, the Board should keep in mind that they reflect the annualization of operations during the peak seven-day period during the railroad's entire 20-year life. No real-world railroad would plan all of its operations around (or build all the facilities needed for) its absolute peak of operations. Since the TNR is being designed specifically to handle its peak traffic during the peak one-week period of the entire 20-year DCF period, it obviously has plenty of "surge" capacity to recover from any congestion that might occur during the peak week.

ii. Re-Routed Traffic

The TNR's cross-over traffic does not involve any "external" reroutes; that is, all of the interchange points with the residual BNSF are located along the present BNSF routes for all of this traffic (including the non-coal freight traffic moving overhead between Amarillo and Oklaunion). The TNR's traffic group does include two subsets of "internal" reroutes, *i.e.*, some of the coal traffic uses a different route on the TNR itself than the route presently used by BNSF.

PRB Mines to Alliance/Northport. Most of the internally rerouted traffic is coal traffic that originates at mines on the Orin Subdivision and moves to/beyond Alliance and/or Northport, NE. This traffic ({ } million tons during 2002) presently

moves via BNSF's "southern" route through Wendover and Guernsey, WY, and has been rerouted via BNSF's "northern" route through Edgemont, SD and Crawford, NE.[2] The northern route is the route used by the TNR, which as a least-cost efficient carrier has no need for two routes out of the PRB and can achieve higher traffic densities (and thus greater economies of scale) by concentrating all of its coal traffic on a single route.

The distances from each of the TNR-served PRB mines to Alliance and Northport are set forth in Exhibit III-A-5. The distances from the mines located north of Black Thunder/Jacobs Ranch to Alliance are shorter via the Edgemont (northern) route than they are via the Guernsey (southern) route. The distances from Black Thunder/Jacobs Ranch and the three mines located south thereof (North Rochelle, North Antelope/Rochelle and Antelope) to Alliance are greater via the Edgemont route (by amounts ranging from { } miles) than they are via the Guernsey route.

With respect to TNR-originated coal traffic moving to and south of Northport, the distance from the mines north of Belle Ayr to Northport is shorter via Edgemont/Alliance than it is via Guernsey. The distance from Belle Ayr Mine to Northport is { } miles longer via Edgemont than via Guernsey, and the distance

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[2] Some originated coal traffic moving to a particular destination moves via both routes, *i.e.*, BNSF moves some of the traffic via Guernsey and some of the traffic via Edgemont. These "split-route" movements totaled 89.8 million tons in 2002. It should be noted that, although BNSF presently moves loaded PRB coal trains to Alliance via two routes, all of the coal traffic moving *east* from Alliance uses the same BNSF route regardless of how it moved *west* of Alliance.

differential increases from mines located south of Belle Ayr (up to { } miles in the case of movements originating at Antelope Mine which is the southernmost PRB mine).

All of the TNR road property investment and annual operating costs attributable to its construction and use of the northern route via Edgemont have been included for purposes of calculating SAC using the Board's DCF model.[3] AEP Texas has also demonstrated, using the RTC Model, that for those coal movements between the origin mines and TNR destinations/interchange points where the distance using the TNR's route is greater than the distance for the actual 2002 movements that BNSF routed via Guernsey, the TNR's train cycle times using the northern route are lower than the actual cycle times achieved by BNSF as shown in its train and car movement records for the subject traffic. *See* Exhibit III-A-5.

The TNR handles all of its coal movements faster than BNSF presently does, notwithstanding the increase in mileage for some movements, because its infrastructure was specifically designed to handle its peak-period traffic. In addition,

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[3] There would be a modest increase in car costs for some TNR customers that use private cars in those instances where the mileage increases as a result of using the northern route via Edgemont 100% of the time. However, BNSF uses the Edgemont route at least some of the time for all of the coal movements in the TNR's traffic group. Timothy P. Stanley, the Director of Transportation & Marketing for AEP Texas' parent company, American Electric Power ("AEP"), confirms that { } AEP is the largest utility user of coal as electric generating fuel in the nation. In 2002, AEP subsidiaries shipped a total of { } million tons of coal, of which { } million tons were shipped from the PRB to various AEP power plants including several located east of the Mississippi River.

unlike BNSF, the TNR handles only coal traffic on all of its lines except on the south end of the railroad between Amarillo and Oklaunion. Unlike the TNR, which accords coal trains priority (except between Amarillo and Oklaunion), BNSF {

}.[4]

Amarillo-Pueblo. The other internal reroute involves empty coal trains moving between Amarillo, TX and Pueblo, CO. Prior to September of 2003, BNSF routed most of the traffic moving between Pueblo and Amarillo over its Spanish Peaks, Twin Peaks and Dalhart Subdivisions via Trinidad, CO and Texline and Dalhart, TX ("Trinidad route"). On { } 2003, BNSF and UP began "directional running" of trains between Pueblo and Amarillo, using BNSF's route via La Junta, Las Animas Jct. and Stratford, TX ("Las Animas Jct. route") for southbound trains including loaded coal trains, and BNSF's Trinidad route for northbound trains including empty coal trains.[5] The TNR has no need for two routes between Pueblo and Amarillo, and is replicating the

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[4] According to BNSF's response to an AEP Texas discovery request (reproduced in Workpapers Vol. 17, p. 08723), {

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[5] The Las Animas Jct. route involves portions of BNSF's Pueblo, La Junta and Boise City Subdivisions. The directional running between Pueblo and Amarillo was described in UP's Notice of Exemption filed September 4, 2003, in Finance Docket No. 34407, *Union Pacific Railroad Company–Trackage Rights Exemption–The Burlington Northern and Santa Fe Railway Company*. And in the Board's Notice of Exemption in the same docket served September 25, 2003. BNSF confirmed that directional running over these lines commenced on { } 2003, in response to an AEP Texas discovery request. *See* BNSF's Supplemental Responses to Complainant's First and Second Set of Interrogatories, Response to Int. Nos. 15 and 16 (reproduced in Workpapers Vol. 17, p. 08579).

Las Animas Jct. route because, according to BNSF's track charts, that route is 47 miles shorter than the Trinidad route and also has fewer grades and curves.

The change in "internal" routing between Pueblo and Amarillo derives from the fact that whereas BNSF presently uses the Las Animas Jct. route only for southbound loaded coal trains, the TNR is also using it for northbound empty coal trains. AEP Texas' witnesses Reistrup and Schuchmann have taken the additional empty trains into account in designing and modeling the TNR system configuration, by adding two passing sidings to the present BNSF configuration of this line and extending several other sidings. Given the shorter distance and the added capacity, there can be no serious dispute that the internal rerouting of empty trains via Las Animas Jct. is feasible and efficient.

Mr. Reistrup notes that he also added CTC to what is now BNSF's "dark," non-signaled territory between Amarillo and Oklaunion, where the priority intermodal and other non-coal trains operate over the TNR in overhead service.

b. Trains and Equipment

i. Train Sizes

The TNR operates only unit coal trains and complete run-through trains for the non-coal overhead traffic moving between Amarillo and Oklaunion. All trains operate with two-person crews. The TNR's train sizes are the same as those presently operated by BNSF. All trains have locomotives sufficient to provide the same or greater horsepower-to-trailing-ton ratio as BNSF presently employs for these trains to assure they

are adequately powered to meet present train schedules and service requirements. The TNR operating plan assumes that the train sizes and locomotive consists will remain the same throughout the 20-year DCF period used to calculate SAC in this case. For coal traffic, increased volumes are accounted for by adding trains. For non-coal traffic, volume (and thus the number of trains) remains the same throughout the DCF period

ii. Locomotives

The TNR requires a total of 368 locomotives to handle its peak-period traffic volume. The railroad has two types of locomotives: EMD SD70MAC locomotives for road service, and EMD SD40-2 locomotives for helper and yard switching service. The number of locomotives required for each kind of service is shown in Table III-C-4 below. The TNR's road locomotive requirements take into account the need to equalize the power used in run-through service for the non-coal overhead trains.

TABLE III-C-4
TNR Locomotive Requirements

Type of Service	Number
Road - SD70MAC	321
Helper - SD40-2	42
Switching - SD40-2	5
Total	368

(a) Road Locomotives

The TNR's road locomotives consist of EMD SD70MAC locomotives. The SD70MAC is a modern, heavy-duty AC locomotive that is well-suited for hauling both unit coal trains and other trains. This locomotive model is used extensively by BNSF in PRB coal service.

(i) Locomotive Consists/ Distributed Power

The TNR's coal trains have three SD70MAC locomotive units, in a 2/1 distributed power ("DP") configuration. As used by the TNR (and by BNSF for most PRB coal trains), DP involves positioning two locomotives at the front of the train and one (the DP unit) at the rear of the train. This reduces the drawbar tension between cars and enables the same number of locomotives to haul heavier trains or the same size trains at higher speeds. The rear locomotive has no engineer and is remotely controlled from the lead locomotive.

DP locomotive consists are widely used by BNSF (and by UP, the other rail carrier serving the PRB) for unit coal trains. Using DP not only facilitates the efficiency of TNR's line-haul operation of its coal trains, it also facilitates the removal of bad-order cars caught by the TNR's en-route FED's. { } coal trains included in the TNR's traffic group presently use DP locomotive consists, although during his field trip to the PRB in October/November 2003, Mr. Reistrup observed a few empty trains with three units on the head end.

Locomotive consists on all empty coal trains moving to or through Alliance (including the rear DP unit) are removed from the train at Alliance Yard and replaced with fully fueled and serviced units. The train then departs to the mine for loading or for Campbell (in the case of empty trains returning to the BNSF interchange there). The locomotives on coal trains that do not move through Alliance (*i.e.*, trains originating on the Orin Subdivision or the Campbell or Orin Branches and moving to the BNSF interchange at West Campbell or South Logan) are fueled by tanker truck at Campbell or South Logan. When such locomotives require 92-day inspections or maintenance, they are exchanged for inspected/serviced units on another train at the mine or at West Campbell/Donkey Creek. All 92-day inspections and maintenance for the TNR's locomotives are performed by a contractor at a locomotive shop facility constructed by the TNR at its Alliance Yard.

It is AEP Texas' understanding that BNSF does not use DP on the through intermodal and other trains the TNR will move in overhead service between Amarillo and Oklaunion. Accordingly, AEP Texas has assumed that these trains do not have a DP locomotive configuration while on the TNR. Mr. Reistrup has assumed these trains have the same number of cars and the same gross trailing weight as the comparable BNSF trains did in 2002. He therefore assumed that the TNR would provide a sufficient number of SD70MAC road locomotives to maintain a satisfactory horsepower/trailing ton ratio for these trains given their high service priority. The TNR locomotives used on these

trains are exchanged with locomotives on coal trains as necessary for movement to Alliance where they will be inspected and maintained.

(ii) Use of Run-through Power

All of the TNR's interline trains, including trains carrying the overhead non-coal freight traffic moving between Amarillo and Oklaunion, move in run-through service. This means that the locomotives are not removed from a train by either railroad at the interchange point, but stay with the train to destination. Run-through power is used routinely by all Class I railroads for interline unit and other trainload movements, and there is no reason why it would not work in this application.

Under the run-through concept, the number of locomotives that each railroad provides for a particular joint movement is allocated on the basis of the amount of time the locomotives spend on each railroad as a percentage of total movement time, adjusted for any differences in locomotive horsepower (*i.e.*, horsepower hours). Each railroad provides the required number of locomotives, which are put into a pool for the specific movements in question.

The TNR's road locomotive requirements have been developed using this run-through concept (as well as the locomotive consists described in the preceding subsection). The number of locomotives the TNR must contribute to the pool reflects and includes the time that the locomotives needed to handle each interline movement spend on the TNR system.

The locomotive hours spent on the TNR (as well as the number of locomotives required for the railroad's local movements) were developed from the RTC Model analysis of the TNR's peak-period operations, as described in Part III-C-2 below. The total number of road locomotives required includes a { } spare margin, as developed from { }. See Exhibit II-A-19 and Workpapers Vol. 17, p. 07423. This spare margin was accepted by the Board in *TMPA*, which also involved BNSF coal movements from the PRB. *Id.* at 81.

(b) Helpers

Based on information provided by BNSF in discovery and the results of the RTC computer modeling of the TNR's operations, the TNR has three helper districts, in which loaded trains require assistance from manned helpers to negotiate ascending grades. Helper locomotives are EMD SD40-2 locomotives (a model which BNSF also uses as helpers). The TNR's helper districts include:

(1) Orin/Campbell/Donkey Creek Helper District – Loaded trains operating in the Campbell/Donkey Creek area (including the northerly 15 miles of the Orin Subdivision) receive helper assistance in two areas located in close geographic proximity:

a. Northbound loaded trains require helper assistance on the portion of the Orin Subdivision between Milepost 15.4 (near Belle Ayr Jct.) and Milepost 8.3, a distance of 7.1 miles; and

b. Southbound loaded trains require helper assistance on the portion of the Orin Subdivision between Milepost 0.0 (Donkey Creek) and Milepost 8.2, a distance of 8.2 miles.[6]

Three two-unit helper consists are stationed at Campbell/Donkey Creek. Two are assigned to assist trains as needed in both directions on the northern end of the Orin Subdivision (areas (a) and (b) described above). The third is "roustabout" helper consist which can provide additional helper assistance on the northern end of the Orin Subdivision and also on the Campbell Branch if necessary,[7] including assistance for trains that may be stalled or that encounter locomotive mechanical problems in the general area. This is consistent with what Mr. Reistrup observed during his field trip to the PRB in October/November 2003.

(3) Crawford Helper District – East/southbound loaded trains require helper assistance on the 16.0-mile portion of the Butte Subdivision between Milepost 409.0 near Crawford, NE and Milepost 425.0 near Belmont, NE. Three-unit helper consists are used in this helper district to assure that trains can negotiate the grade at an

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[6] It should be noted that the directional references in the text are geographic. For modeling purposes, the TNR extends from South Logan on the north to Oklaunion on the south. This means that trains heading geographically north on the Orin Subdivision are considered southbound trains for purposes of dispatching and modeling.

[7] BNSF also uses helpers to assist { } loaded trains on the Campbell Branch between the origin mines and West Campbell or Donkey Creek (a maximum distance of 9.5 miles). The RTC modeling of the TNR's trains, all of which operate with three SD70MAC locomotives in a 2/1 DP configuration, indicated that loaded trains do not require assistance from helpers on the Campbell Branch.

acceptable speed. A total of seven helper sets are required to protect all loaded train movements across the Crawford helper district.

(4) Big Lift Helper District – Southbound loaded trains require helper assistance on the 32.7-mile portion of the Pikes Peak Subdivision between Milepost 19.3 at Big Lift, CO and Milepost 52.0 at Palmer Lake, CO. Two-unit helper consists assist trains in this district. The peak period traffic volume and the length of this helper district require five sets to protect loaded train movements over this district.

One additional "swing" helper unit is stationed at Big Lift. This unit is added, as a third helper, to loaded trains destined to PSCo's Comanche power plant at Minnequa (near Pueblo), CO. This unit stays with the Comanche trains all the way to destination due to adverse grades approaching the power plant. Two of the three helpers are removed from the Comanche trains at Palmer Lake and return to Big Lift. The unit that continues on from Palmer Lake to Comanche thus becomes a second DP unit on the rear of the train. On occasion, it will be swapped with the SD40-2 switch locomotive stationed at Las Animas Yard when that unit is ferried to Alliance for 92-day inspections and maintenance.

AEP Texas notes that BNSF presently has one additional helper district for coal trains that use the TNR's route. This helper district {

} Unlike BNSF, which { } according to its train movement records produced in discovery, the TNR operates all loaded coal trains over this line segment with three SD70MAC locomotives in a 2/1 DP configuration. As the TRC Model runs confirmed, this provides ample horsepower and tractive effort to move loaded trains between { } without the need for helper assistance.

As previously indicated, the TNR uses SD40-2 locomotives as helpers. A total of 42 helper locomotives are required to cover the helper assignments described above, including the "swing" unit stationed at Big Lift and a 10% spare margin of four locomotives.

(c) Switch Locomotives/Assignments

The TNR requires a total of five switch locomotives. These locomotives, which also are SD40-2's, are stationed at the Alliance and Las Animas yards and are used in connection with FRA-mandated car inspections performed at those points. (Additional switching of bad-ordered cars is performed at South Logan and at FED locations; this switching is handled by road locomotives.) Three switch locomotives plus a spare are stationed at Alliance, and one unit is stationed at Las Animas. As discussed earlier, the

"swing" helper locomotive at Big Lift also serves as a switch locomotive at Las Animas when the switcher stationed there has to be ferried to Alliance.[8]

The TNR has three "24/7" switch crew assignments at Alliance Yard and one such assignment at Las Animas Yard. Each switch locomotive is equipped with a remote control device so the crew can operate it from the ground if necessary.

The switch crew assignments are on duty around the clock, seven days a week. The primary function of the switch crews is to remove bad-order cars from trains following 1,000 and 1,500-mile inspections, move repaired cars to and from the spare car storage tracks, and insert repaired/spare cars into trains as necessary. During any unusually busy period, road crews can also assist with switching out bad orders and switching in repaired/spare cars at Las Animas.

All trains moving to or through Alliance, including trains interchanged with BNSF, are inspected at Alliance in the empty direction. Loaded coal trains moving to or beyond Las Animas Jct. are also be inspected at Las Animas Yard. Non-coal freight trains moving overhead between Amarillo and Alliance do not need to be inspected by the TNR because BNSF inspects them at { } to the west, and at { } on the east. The distance between { } is less than 1,000 miles.

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[8] The switch engine at Las Animas, and the Big Lift helpers, will be ferried to and from Alliance for 92-day inspections and maintenance.

TNR-originated coal trains that are interchanged with BNSF at South Logan do not move to or through Alliance. These trains are inspected at South Logan, where the TNR maintains a small force of equipment inspectors. Any required bad-order switching at Donkey Creek is performed by road crews using the road locomotive power.

The TNR originates a few trains on the Campbell Branch that are interchanged to BNSF at West Campbell. These trains move a maximum of less than 20 miles (round trip) on the TNR and thus are inspected while on the residual BNSF.

Additional details concerning the trains to be inspected and the TNR's car-inspection procedures are provided at pp. III-C-39 to 45, *infra*.

iii. Railcars

Based on information provided by BNSF in discovery, most of the present BNSF coal movements included in the TNR's traffic group occur in private open-top railcars. The only exceptions are the movements to the following utility destinations:

TABLE III-C-5
TNR Utility Destinations Where
BNSF Currently Provides Railcars

Utility	Destination
AEP	Oklaunion, TX
TMPA	Iola, TX
{	}
{	}
{	}
{	}
{	}
{	}
{	}
{	}

The TNR pays its proportionate share of the cost of the BNSF railcars used for the movements shown in Table III-C-5 while the cars are on the TNR system. The other coal movements in the TNR's traffic group (the vast majority of its traffic) occur in railcars provided by its customers, per diem and mileage free to the railroad. No ownership or lease cost is incurred by the TNR with respect to these cars.

The TNR pays a pro rata share of the cost of the cars used for the non-coal overhead movements, which are provided by BNSF or another railroad. The TNR pays the appropriate time and mileage charges while these cars are on its system.

The car requirements for all of the movements in the TNR traffic group were developed on the basis of the peak-year tonnages to each customer (including the non-coal overhead movements), train lengths, the expected cycle or transit times for each customer's trains, and pro-rating the number of cars needed for the interline and overhead movements with BNSF or the other carriers involved. The number of cars required also reflects the mileage on the TNR (and on BNSF) resulting from the changes in internal routing for some coal movements, as described above. The specific number of cars required was developed using the car-hours produced by the RTC Model results.

2. Cycle Times and Capacity

A major consideration in designing the TNR's system configuration and operating plan was the need to preserve train cycle and transit times during the peak year (2020) and peak period in the peak year that are similar to or lower than the actual BNSF train cycle/transit times for the traffic included in the TNR's traffic group during the most recent calendar year (2002) for which data are available. AEP Texas' operating experts kept this consideration in mind when developing and assessing the railroad's system configuration, capacity, equipment needs, and operating statistics.

The starting point for developing the TNR's configuration and train cycle/transit times was the incumbent's 2002 peak-period traffic densities for the TNR's traffic group, in terms of the number of trains moving in each direction over each line segment. The peak-period train densities are shown in Table III-C-3 on page III-C-6,

supra. Details on a daily basis are provided in Exhibit III-B-2 and electronic workpaper file "Simulation Trains - peak wk.xls."

As described in Part III-B-1-e, *supra*, after developing an initial, "first-cut" system configuration to handle this traffic, a computerized rail capacity/planning model, the RTC Model, was used to finalize the configuration, verify the railroad's capacity to handle its peak period traffic, and develop a few of the TNR's operating statistics (primarily car hours). The key outputs generated by the RTC Model were elapsed train running times over each of the TNR's line segments, train cycle and transit times (used to develop train hours and crew starts) over the portion of the TNR system used by each train during the peak seven days of the 15-day peak traffic period modeled by AEP Texas' operating experts. The RTC Model analysis is described in more detail in Part III-B-1-e, *supra*.

a. Operating Inputs to the RTC Model

After inputting the TNR's facilities, operating parameters and peak-period train frequencies, train cycle and transit times were developed. The elapsed train running time over each line segment, including the running times between initial entry of a train onto the beginning of each single-track segment and the train's exit in the clear at the end of the segment, was determined based on the following parameters: train size and weight, locomotive power (tractive effort), maximum expected train speed (taking into account grades, curvature and any other factors that could cause a reduction in running time), and

train acceleration and deceleration time including acceleration/deceleration time for trains required to stop for crew changes, car inspections, *etc.*, and for trains to enter and leave second main track or passing sidings assuming probable speed through the turnout but not exceeding the maximum allowed for each particular turnout (*e.g.*, 40 mph for a No. 20 turnout).

The following additional operating factors or inputs, which comprise essential elements of the TNR's operating plan developed by AEP Texas witness Reistrup, were input into the RTC Model for purposes of developing train cycle/transit times:

- Maximum train speeds: 60 miles per hour for empty coal trains and non-coal freight trains; 50 miles per hour for loaded coal trains (conditions permitting).
- Loading (dwell) time at origin mines: 5.5 hours for mines located on the Orin Subdivision and the Reno Branch; four hours for mines located on the Campbell Branch.
- Unloading (dwell) time at local destinations (power plants): unloading free time specified in BNSF's transportation contracts or common carrier rate authorities with the customers involved.
- Off-SARR time for trains interchanged with the residual BNSF, UP and NKCR: accounted for based on arrival time at interchange point of prior empty train.
- Crew-change time at crew-change points other than interchange points and Alliance/Las Animas Yards in the case of TNR coal trains moving through those points: 15 minutes.

- Time required to interchange trains with BNSF or other carrier at interchange points other than Alliance and Las Animas: 30 minutes, except three hours in the empty direction only at South Logan for 1,000-mile car inspections.

- Dwell time at Alliance Yard: six hours for all coal trains in the empty direction (including time for car inspections, removal of bad order cars/ insertion of spares, exchanging locomotives, crew change, and staging of trains moving to TNR-served PRB mines for loading) and up to 30 minutes (depending on whether trains are interchanged with BNSF at Alliance or move to/from TNR points south of Alliance) for all coal trains in the loaded direction.

- Dwell time at Las Animas Yard: five hours in the loaded direction and up to 30 minutes in the empty direction.

- Time to add/detach helper locomotives: 20/15 minutes.

Mr. Reistrup's explanation of these times and the related operating functions is set forth in the following subsections.

i. <u>Maximum Train Speeds</u>

Mr. Reistrup and Mr. Stone (AEP Texas' expert engineering witness) have designed the TNR main track and passing track configuration to accommodate maximum train speeds of 60 miles per hour, except that loaded coal trains will be limited to a maximum of 50 mph. This is consistent with { } with the coal train speeds accepted by BNSF in its recent reply filing in the *Otter Tail* case (*see* BNSF Reply Narrative at III-B-22).

The maximum authorized speed for TNR trains represents an increase in maximum train speed of { }, for empty coal trains and non-coal overhead trains operating over the { } of the Red River Valley Subdivision between { }. *See* Workpapers Vol. 17, p. 08708.

The maximum authorized train speeds are not always achievable due to particular operating conditions such as grades, curves, timetable restrictions, etc. These conditions and restrictions have been recognized and incorporated into the RTC Model as applied to the TNR's peak-period operations. Other aspects of the TNR system, including its CTC traffic control system and the speed restrictions applicable to the turnout sizes for crossovers between main tracks, switches between main tracks and passing sidings, and switches between main tracks and interchange/helper tracks as well as the first adjacent yard tracks in the TNR's yards, have also been incorporated into the Model.

ii. Loading/Unloading Dwell Times

Loading times. All of the TNR-served origin mines in the PRB are capable of loading complete trains in two hours or less, and several mines can load two trains at a time. However, BNSF's transportation contracts and common carrier pricing authorities

specify a maximum free time for loading of four hours. Recognizing that another railroad (UP) serves the same Orin Subdivision mines (including the mines on the Reno Branch) that the TNR serves, and that this increases the potential for congestion on the mine lead/spur tracks at these mines, Mr. Reistrup has conservatively assumed that each empty TNR train spends 5.5 hours at these mine before returning to the TNR system as a loaded train. This is consistent with the PRB mine dwell times accepted by the Board in the *TMPA* rate case (Docket No. 42056, STB served March 24, 2003, at 75).

Mr. Reistrup allotted four hours of dwell time at the five Campbell Branch mines served by the TNR at which trains were originated during the 15-day peak period covered by the RTC modeling. His reasons for allotting 1.5 hours less at these mines compared with the Orin Subdivision mines are twofold. First, UP (which originates at least half of the total coal moving from the mines served by the Orin Subdivision and Reno Branch) does not serve any mines located on the Campbell Branch. Those mines are served only by BNSF, and the TNR is handling virtually all of the coal BNSF originates at these mines. Thus, there can be no congestion caused by non-TNR trains waiting to enter or exit these mines' loading facilities. Second, according to BNSF's Mine Guide,[9] four of the mines on the Campbell Branch (Buckskin, Dry Fork, Eagle Butte and Rawhide) can load at least 6,000 tons per hour; the fifth, Clovis Point, can load

[9] Relevant excerpts from BNSF's Mine Guide are included in AEP Texas' Workpapers Vol. 17, pp. 08685-705.

5,500 tons per hour. This means that all of these mines except Clovis Point can load an entire train in two hours, and Clovis Point can load a train in 2.25 hours. Allotting four hours of dwell time at these mines thus provides a two-hour cushion (double the actual loading time in most cases) to absorb any congestion resulting from the presence of other trains at or near these mines.

Unloading Times. For train unloading times at locally-served destinations, *i.e.*, the five destination power plants served by the TNR, Mr. Reistrup assumed destination dwell times equal to the maximum free time for unloading allowed under each applicable BNSF transportation contract or common carrier pricing authority.[10] For example, the normal unloading time for coal trains at AEP Texas' Oklaunion Generating Station is { } hours according to AEP Texas plant personnel with whom Mr. Reistrup spoke during his field trip. This is { } the six hours of free time permitted under Common Carrier Pricing Authority BNSF 306720. However, Mr. Reistrup conservatively assumed each train spends the full six hours at the Oklaunion plant.

[10] The contracts are set forth in the electronic workpapers for Part III-A. BNSF coal trains sometimes dwell at TNR-served destinations longer than the allowable free time, even if unloading has been completed within the free time. This can occur for a variety of reasons, such as crew availability. However, as an efficient least-cost railroad that has been equipped with adequate crew personnel to meet its peak traffic volume, the TNR's dwell times should not be longer than the allowable unloading free time.

iii. Time of Receipt of Empty Coal Trains at Interchange Points

With respect to coal movements interchanged with other rail carriers (primarily BNSF), AEP Texas' operating experts did not attempt to model the off-SARR times for the involved trains. The RTC Model does not provide for the handling of off-system trains; that is, trains cannot "disappear" from the Model without providing trackage to accommodate them. This makes it very difficult to model the off-SARR times for interchange trains.[11] Since the mine release times for each loaded cross-over coal train was known, AEP Texas' experts used the RTC Model to develop the arrival time of the prior empty train at each interchange point. They did this using the procedures described at pp. III-B-16 to 18, *supra.* Using those procedures is a better approach than attempting to estimate off-system train times, particularly given the long period of time (up to a week or more) that many interchange coal trains spend away from the TNR system.

iv. Crew-Change Locations and Times

Mr. Reistrup has designed the TNR with the following crew-change points: Donkey Creek/West Campbell, South Logan, Alliance, Denver (Englewood), Las Animas

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[11] BNSF itself has noted the difficulty of modeling off-SARR times for interchange trains. *See Otter Tail* Reply Narrative at III-B-32 ("[BNSF's RTC modeling approach] did not model the off-line operation of the trains, which would have substantially complicated the modeling exercise").

Jct., Amarillo and Oklaunion. The TNR's road crew assignments (all of which operate from a pool) are described below.

Straightaway Assignments (both directions; home terminal and mileage in parentheses)

1. Campbell/Donkey Creek – Alliance (Alliance; max. distance 224 miles)

2. Alliance – Sterling or Englewood, CO (Alliance, 225 miles; this assignment includes trains moving to/from PSCo's Pawnee and Arapahoe power plants; crews on loaded Sterling and Pawnee trains would return on next Sterling/ Pawnee empty)

3. Englewood – Las Animas Jct. (Las Animas Jct., 192 miles; this assignment includes trains moving to/from PSCo's Comanche power plants; crews on loaded Comanche train would return on next Comanche empty)

4. Las Animas Jct. – Amarillo (Las Animas Jct., 236 miles; this assignment includes trains moving to/from SPS's Harrington power plant at Amarillo)

5. Amarillo – Oklaunion (Amarillo, 176 miles; this assignment includes trains moving to/from AEP Texas' Oklaunion power plant)

Turnaround assignments (Start/end point is home terminal unless otherwise indicated)

1. South Logan turn to TNR-served origin mines on the Orin Subdivision (maximum distance to/from Caballo Mine: 60 miles)

2. Donkey Creek/West Campbell turn to TNR-served mines on the Campbell Branch, with home terminal at Donkey Creek (max. distance 11 miles; crews will be taxied to Campbell for Campbell turns)

3. Alliance turn to Northport (68 miles)

These crew assignments are designed to take advantage of the TNR's status as a least-cost stand-alone railroad that is not constrained by the work rules that limit the

crew districts on unionized Class I railroads such as BNSF. This gives the TNR much more flexibility than BNSF has in scheduling crews and maximizing their use within the constraints of the federal "12-hour" (hours-of-service) law. The distance for each crew district can be covered by a single crew within the 12-hour limit. This has been confirmed by the RTC Model runs.

Mr. Reistrup has allotted 15 minutes for crew changes at locations other than yards or interchange points. Based on Mr. Reistrup's railroad operating experience, including his recent experience at CSXT while serving as Vice President-Passenger Integration, the tasks to be performed during an actual crew change are very simple and 15 minutes is more than ample. Indeed, it is not unusual for crew changes on through freight trains to be accomplished in five minutes.

The TNR follows the most 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 can complete paperwork and receive any necessary briefings and be ready to board the train when it arrives and the incoming crew has de-trained. This should not be difficult to accomplish for a SARR with a limited traffic group involving a single kind of repetitive, unit-train or trainload movement.

v. Interchange Times

Mr. Reistrup has allotted 30 minutes to accomplish the interchange of trains between the TNR and other rail carriers at non-yard interchange points (excluding empty

trains received in interchange from BNSF at South Logan that require 1,000-mile inspections; three hours are allotted at South Logan for empty trains that need to be inspected). This time includes the time needed for crew change by both railroads and time for the performance of a brake set and release/roll-by inspection, which is required under FRA rules.

Mr. Reistrup is firmly of the opinion, based on his extensive operating experience at a number of railroads, that no more than 15 minutes are needed for interchanging run-through trains given the very limited functions that need to be performed. However, to allow for the possibility that the other railroad is not always ready with a crew exactly when a train arrives at an interchange point (even though all railroads involved in handling the TNR's cross-over traffic should have a strong incentive to move trains through the interchange point as quickly as possible), Mr. Reistrup has conservatively provided 30 minutes for interchange.

vi. Dwell Time and Functions to Be Performed At Alliance Yard

Mr. Reistrup has allotted six hours of dwell time at Alliance Yard in the empty direction and up to 30 minutes in the loaded direction, depending on whether loaded trains are interchanged to BNSF at Alliance or move south on the TNR.

Empty trains. Under Mr. Reistrup's operating plan, a number of functions are performed at Alliance Yard with respect to empty coal trains. These include the performance of 1,000 mile car inspections on "standard" trains and 1,500-mile

inspections on "Extended Haul Trains";[12] the removal of cars that are bad-ordered as a result of the inspections; the insertion of spare cars as necessary to fill trains out to their target size (the same size as the actual BNSF trains moving between the same O/D pairs in 2002); the removal of locomotives (including the rear DP unit) and the placement of freshly serviced and fueled units on the train; and a crew change.

All empty coal trains moving through Alliance (including trains received in interchange at Alliance from BNSF) receive a 1,000 mile or 1,500-mile inspection at Alliance Yard. Mr. Reistrup has allowed three hours per train to perform car inspections, under "blue flag" protection as required under FRA rules. Another hour is required to switch out bad order cars, add spare/repaired cars to fill out trains, and exchange locomotive power.[13] Two additional hours have been added for contingencies ("SAT") and train staging (to allow for possible congestion at the mines), bringing the total dwell time for empty trains at Alliance to six hours.

Loaded trains. Except for crew change and interchange, none of the functions performed at Alliance with respect to empty trains need to be performed with respect to loaded trains. No car inspections, exchange of locomotives, or fueling are

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[12] *See* the detailed discussion of car inspection locations and procedures set forth at pp. III-C-40 to 46, *infra*.

[13] Locomotives will be exchanged or swapped on all empty trains moving through Alliance. All locomotives on each arriving empty train will be removed from the train, and will be replaced by freshly fueled and serviced locomotives. Fueling, servicing and maintenance of locomotives will be performed at designated facilities located at Alliance Yard; *see* Exhibit III-B-1, page 6 and Exhibit III-B-2, page 5.

performed at Alliance in the loaded direction. Accordingly, Mr. Reistrup has allocated 30 minutes of dwell time (the normal interchange time allowance) at Alliance Yard for loaded trains interchanged to BNSF there, and 15 minutes (the normal crew-change time allowance) for southbound loaded trains moving beyond Alliance on the TNR. All departing trains are observed in a "roll by" inspection.

vii. Dwell Time and Functions to Be Performed at Las Animas Yard and at South Logan

The TNR inspects and fuels trains in the loaded (southbound) direction at Las Animas Yard. Five hours of dwell time at Las Animas are provided for loaded trains. This includes three hours for performing 1,000/1,500-mile car inspections and fueling locomotives, one hour to switch out bad order cars and switch in repaired cars, and one hour for SAT. Fueling involves topping off locomotive fuel tanks and is performed by a contractor using tanker trucks.

In the empty direction, 15 minutes are allotted at Las Animas Yard for changing crews on through TNR trains (*i.e.*, trains that operate through Las Animas Jct. on the TNR). Thirty minutes of dwell time are allotted for the Sunflower Electric/ Holcomb coal trains received in interchange from BNSF at Las Animas Yard.

Empty trains received from BNSF at South Logan receive a 1,000-mile inspection there as necessary. Not all trains require inspection on each empty trip,

depending on the destination involved.[14] Mr. Reistrup has allotted three hours to perform inspections and remove bad-ordered cars at South Logan. The normal 30 minutes for interchange has been allotted at South Logan for loaded trains and empty trains that do not need to be inspected.

viii. Time to Add/Remove Helpers

Mr. Reistrup has allotted 20 minutes to add helpers at the beginning of each helper district, and 15 minutes to remove helpers at the end of each helper district. The extra five minutes for adding helpers is to perform a brake set/release. Fifteen minutes are conservatively allotted for removal of helpers so that the EOTDs on the rear of the helped train can be checked to be sure they are in working order.

It should be noted that helpers are not always added to trains precisely at the beginning and end of the Orin Subdivision sub-districts in the Campbell/Donkey Creek helper district. For example, a loaded train moving from a mine on the Campbell Branch to South Logan requires helper assistance both on the Campbell Branch and on the first 8.2 miles of the Orin Subdivision. Thus helpers will be added to such a train at the mine and removed either at Milepost 8.2 or Milepost 15.4 on the Orin Subdivision, depending on whether a northbound train requiring assistance between Milepost 16.4 and Milepost

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[14] For example, in 2002, { } trains moved from Antelope Mine (Converse Jct.) to { }. The total round-trip distance for these trains is { }. Thus, these trains can complete { } round trips between 1,000-mile car inspections.

8.2 is available. In the latter event, the same helper consist would be available immediately to provide assistance to a northbound train in the event of a stall or mechanical problem, and would be removed at Donkey Creek.

ix. Other - Track Inspections/Maintenance Windows

In recent rate cases, the defendant railroad has advocated an allowance of additional time for track inspections and maintenance "windows" including time for random failures. Neither is appropriate with respect to the TNR's peak 15-day period. Twice-weekly track inspections (required under FRA rules for Class 4 track), using hi-rail vehicles, are performed between train movements – or even following a train, on the same block, with the dispatcher's approval. Thus there is no need to allot separate time for track inspections.

No program maintenance will be performed during the TNR's 15-day peak traffic period; rather, it will be performed during other, less busy periods. In this regard, it should be noted that since the TNR is being designed and configured for its peak-week of traffic, there is ample space for track inspections and spot repairs during non-peak periods. By definition, it is impossible to allot specific times for random failures.

b. Results of RTC Model

AEP Texas' application of the RTC Model to the TNR's track configuration and peak-period train counts, using the inputs from the TNR's operating plan developed by Mr. Reistrup, confirms that the TNR has the capacity to accommodate its projected

peak-year and peak-period traffic efficiently and in accordance with the train cycle and transit time commitments of its customers. The results of the RTC analysis are shown in Part III-B electronic workpaper folder "RTC."

In fact, the TNR has overcapacity during virtually all of its 20-year existence, since it is being configured, equipped and manned to accommodate the peak traffic week in the peak traffic year. In other words, the RTC Model analysis confirms that the TNR can handle its 2020 peak-period traffic at least as well as the real-world BNSF did in 2002.

AEP Texas notes that its approach to configuring the TNR and modeling its operations for purposes of determining its capacity (and verifying the efficacy of its operating plan) is different, and more detailed, than the approaches used by the complainants in the recently-decided eastern rate cases involving *Duke* and *Carolina* (Docket Nos. 42069, 42072 and 42070). AEP Texas' experts used a computerized capacity/planning model (the RTC Model) that is widely used in the railroad industry in non-litigation contexts, and that has been accepted by BNSF as a valid SARR modeling tool in other recent rate cases (*e.g.*, *Otter Tail).* The TNR's operating plan is also thoroughly supported and documented by Paul Reistrup, who is one of the Nation's leading experts on rail operations.

3. Other

a. 1,000/1,500-Mile Inspections

For many years, Federal Railroad Administration ("FRA") regulations required that cars be inspected not less frequently than every 1,000 miles. Effective April 1, 2001, the FRA amended the inspection rules to permit inspections at 1,500-mile intervals for trains designated as "Extended Haul Trains." *See* 49 C.F.R. § 232.213 and 66 Fed. Reg. 4104 (January 17, 2001). The principal requirement for designation of a train as an Extended Haul Train is that: "The train shall have no more than one pick-up and one set-out en route, except for the set-out of defective equipment pursuant to the requirements of this chapter." 49 C.F.R. § 232.213(a)(5).

The TNR's coal trains qualify as Extended Haul Trains, because they operate from origin to destination as unit trains that do not make pick-ups or set-outs en route except when a failed-equipment detector ("FED") catches a car with a problem requiring that it be set-out en route (which is allowed under the rule).[15] All of the TNR's coal trains moving to local destinations (and coal trains interchanged to BNSF at West Campbell, Las Animas Jct., Amarillo and Oklaunion) are designated as Extended Haul Trains, meaning they can be inspected at 1,500-mile intervals rather than the traditional 1,000-mile intervals. The remaining trains are standard trains requiring inspection at

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[15] { }; *see* Workpapers Vol. 17, p. 08720.

intervals no greater than 1,000 miles. These include the overhead coal trains moving between Campbell and Alliance, coal trains originated by the TNR and interchanged to other railroads at locations north of Las Animas Jct., and the non-coal overhead trains moving between Amarillo and Oklaunion.

i. Inspection Locations

TNR personnel will perform 1,000-mile and 1,500-mile car inspections at three locations. The principal locations are Alliance and Las Animas Yards. All empty coal trains will be inspected at Alliance (including empty trains received in interchange from BNSF at Alliance). All coal trains moving through Las Animas Jct. will be designated as Extended Haul Trains. All such trains that would exceed 1,500 miles on the remaining portion of their cycle will receive an additional inspection in the loaded direction at Las Animas Yard. (This includes {

}, which are interchanged with BNSF at Las Animas Jct.)

The TNR will also inspect empty coal trains at South Logan. The trains to be inspected at South Logan originate at TNR-served PRB mines but do not move through Alliance. These trains move to { } destinations on the residual BNSF, {

} These trains thus are treated as "standard" trains requiring inspections at 1,000-mile intervals.

The TNR will have one 24/7 crew of Equipment Inspectors at South Logan and also at Donkey Creek/Campbell. These will be a "roving" inspection crew, in that they will also be available to inspect cars caught by the TNR's FED's on the Orin Subdivision or Campbell Branch (for example) and perform light repairs on the FED setout tracks, as well as assist with mechanical problems encountered at the mines on the Orin Subdivision. Bad-order cars will be removed from trains at South Logan (or elsewhere on the Orin Subdivision) using road locomotive power.

Coal trains originating at TNR-served mines and interchanged with BNSF at West Campbell do not require inspection while on the TNR. These trains move a maximum round-trip distance of less than 20 miles on the TNR, and move to or through BNSF inspection points that are less than 1,000 miles from Campbell, such as {

}. TNR trains moving between Alliance and West Campbell are inspected at Alliance, and thus do not require an additional inspection at West Campbell.

The size, route and traffic flows of the TNR are such that all other coal trains moving on its system, including interlined trains, will receive an inspection within the 1,000 or 1,500-mile limit provided under FRA rules (whichever is applicable) no matter where they terminate on the TNR.

For example, the distance from Alliance to the furthest-distant TNR-served mine (Antelope Mine at Converse Jct.) and return through Alliance to Las Animas Jct. is approximately 1,020 miles, which is well within the 1,500-mile limit for Extended Haul Trains. Loaded trains moving beyond Las Animas Jct. receive an inspection in the loaded direction at Las Animas Yard if completion of the cycle back to Alliance would exceed 1,500 miles. This includes (for example) trains destined to AEP Texas' Oklaunion Generating Station. The distance from Las Animas Jct. to the Oklaunion power plant and return through Las Animas Jct. to Alliance is approximately 1,265 miles – again, well within the 1,500-mile limit.

Coal trains interchanged with BNSF at Alliance are inspected by the TNR at Alliance Yard in the empty direction. {

} The distance from Alliance to the furthest-distant PRB mine (Antelope Mine at Converse Jct.), back to Alliance and { }.

Coal trains interchanged with BNSF at Oklaunion are inspected in the empty direction at Alliance Yard and in the loaded direction at Las Animas Yard. These trains are designated as Extended Haul Trains by the TNR. These trains also receive a BNSF inspection at { }. The distance from Las Animas Jct. to {

}, which is { } the 1,000-mile limit for standard trains.

The TNR's non-coal intermodal, merchandise and vehicle trains do not require inspection while on the TNR system. These trains move overhead on the TNR

between Amarillo and Oklaunion, a distance of 178 miles. These trains are inspected by BNSF at points to the west of Amarillo { } and to the east of Oklaunion { }, such that intervals of less than 1,000 miles occur between inspections (including the intermediate distance on the TNR).

ii. Inspection Procedures

The TNR will conduct 1,000 and 1,500-mile car inspections quickly and efficiently using streamlined procedures while complying at all times with FRA-mandated safety and inspection rules. It will use four-person inspection crews, with one crew member serving as a foreman, for inspections. Three inspection crews will be on duty on a 24/7 basis at Alliance Yard, and one 24/7 inspection crew will be on duty at Las Animas Yard.

One 24/7 "roving" inspection crew will also be on duty at South Logan. Because the number of empty trains received in interchange from BNSF at South Logan is only about three per day, this crew will also be available to assist in resolving mechanical problems that occur on the southern part of the Orin Subdivision including at the mines. A similar crew will be assigned to Donkey Creek. This crew will not have any specific inspection duties, but will be available to assist with mechanical problems as needed at the Donkey Creek crew-change location, West Campbell, on the Campbell Branch, on the northern part of the Orin Subdivision, and on the western part of the Black Hills Subdivision.

Gravel roadways will be provided between each of the yard relay/inspection tracks. Each inspection crew will be equipped with four low-slung, four-wheel ATV-type vehicles from which the inspectors can inspect cars at wheel/truck level which minimizes the need to dismount from the vehicle. The vehicles will carry spare parts such as brake shoes; spare parts will also be placed periodically adjacent to the rails on the inspection tracks for ready availability.[16] One inspector (each with an ATV) will be placed on each side of a train at the front of the train, and one inspector (again each with an ATV) will be placed on each side of the train at the rear. The inspectors will meet in the middle as the inspection progresses. The inspection crews at South Logan and Donkey Creek will also be equipped with dual-cab pick-up trucks for use when traveling to make on-the-spot repairs to TNR equipment at mines or other locations.

Mr. Reistrup has allotted three hours per train for the car-inspection process, which is conservative based on his experience. An additional hour has been allotted to remove bad-ordered cars from trains and insert spare/repaired railcars at Alliance and Las Animas.[17] Locomotive fueling at Las Animas and South Logan will be performed while trains are being inspected. Obviously, there is plenty of time to

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[16] Coupler knuckles are rarely replaced during 1,000 or 1,500-mile car inspections and can be transported to a specific car needing a knuckle by a company pick-up truck as needed.

[17] Mr. Reistrup notes that FRA "blue flag" regulations prohibit switching of cars in or out of a train while inspections and locomotive fueling are being performed. This is why an additional hour has been allotted for such switching.

accomplish crew changes during the dwell time required to complete the inspection and bad-ordered car removal processes.

b. Train Control and Communications

i. Description of CTC/Communications Systems

The facilities reflected in the TNR's operating plan include a Centralized Traffic Control (CTC) system covering all of the TNR's main lines and its two origin branch lines. This system involves remotely controlled power switches between all main tracks and crossovers, and between main tracks and yard leads, with appropriately-spaced wayside signals. Trains can operate in either direction on any track covered by the CTC system, which provides maximum flexibility and capacity.

All train operations are controlled by centralized dispatchers who will be located in the TNR's headquarters building at Alliance. TNR dispatchers also control the TNR's operations on the trackage rights line between Sterling and Union, CO, which is equipped with CTC. {

}

As indicated above and in Part III-B-4-b, communications among dispatchers, train crews and supervisory field personnel are conducted using radios connected to the TNR's microwave system. The microwave system will also be linked with the CTC system. Each train crew and field supervisor will also have a company-issued cell phone for emergencies.

The FEDs, installed at appropriate intervals along the right-of-way as shown in Exhibit III-B-1, broadcast a local radio signal to the crew on the affected train. If a set-out is required the train crew uses one of the double-ended setout tracks which are located on either side of each FED.

ii. Dispatching Districts

The TNR's dispatchers are stationed at the railroad's Alliance headquarters. There are four dispatching districts or "desks," with each manned by one dispatcher three shifts per day, seven days per week. Each dispatching desk is responsible for dispatching trains, inspection vehicles and work equipment in a defined district. The dispatching districts are as follows:

Desk 1	Orin Subdivision (Donkey Creek to South Logan) including Reno Branch, Donkey Creek to West Campbell, Campbell Branch (94.5 miles)
Desk 2	Donkey Creek to Alliance (224 miles)
Desk 3	Alliance to Las Animas Jct. (441 miles)
Desk 4	Las Animas Jct. to Oklaunion (411 miles)

Desks 1 and 2 cover fewer route miles than Desks 3 and 4 because it has higher train densities than the territories covered by the other desks. Desk 4 covers fewer route miles than Desk 3 because it is responsible for the movement of both coal traffic and the non-coal (higher priority) overhead traffic moving in both directions between Amarillo and Oklaunion.

It should be noted that the TNR's operations are highly repetitive. They primarily involve unit coal trains operating at relatively uniform speeds, as well as overhead run-through trains moving between Amarillo and Oklaunion. The dispatching desks are located in the same room in the Alliance headquarters building. Modern dispatching technology enables communication between the desks quickly and easily, and the territories can be rearranged temporarily, so that (for example) Desk 1 or Desk 3 can cover part of Desk 2's normal territory as necessary.

c. Miscellaneous

Other aspects of the TNR's operating plan, including locomotive fueling and maintenance procedures, equipment maintenance, and personnel requirements (including transportation and mechanical field supervision), are described in more detail in Part III-D, *infra*.

III. D. OPERATING EXPENSES

In this Part, AEP Texas will explain the TNR's peak-year (2020) equipment, personnel, information technology and maintenance-of-way requirements and the development of the related service units and costs. The expert witnesses responsible for the evidence in this Part include Paul Reistrup and Philip Burris (Operating and General & Administrative personnel and equipment), Joseph Kruzich (information technology costs), and Harvey Stone, William Krestinski and Alan Blackwell (maintenance-of-way expenses).

It should be noted at the outset that many of the peak-year operating expenses (*e.g.*, locomotive unit-miles, car-miles, T&E crew starts, *etc.*) described in this Part were determined by annualizing the service units and other expenses for the peak one-week period in 2020 developed by Mr. Reistrup. *See* electronic workpaper file "TNR Operating Statistics.xls." The actual service units and expenses for the peak year would be lower than those presented by AEP Texas' experts because the total number of trains transported by the TNR during the peak year is smaller than the number determined by annualizing from the peak one-week period.

Mr. Reistrup developed most of the TNR's peak period operating statistics using a spreadsheet analysis. *See* electronic workpaper "TNR Operating Statistics.xls" and Workpapers Vol. 17, pp. 08729-40. The analysis considered train transit/cycle times

as developed from the use of the RTC Model to simulate the TNR's operations. The RTC Model results were directly used to calculate the TNR's car hours.

AEP Texas is using 2000 as the "base year" for calculating expenses in the DCF model because the TNR begins operations in the second quarter of that year. The DCF model indexes 2000 costs to June 16 (the operations commencement date) and for each quarter thereafter in the 20-year DCF period.

1. **Locomotives**

a. Leasing

The TNR leases all of its locomotives. As indicated in Part III-C, *supra*, the TNR uses two types of locomotives: SD70MAC locomotives for road service, and SD40-2 locomotives for helper and yard switching service. To determine the costs associated with the road locomotives, AEP Texas' experts used an annual lease cost of ${ } for SD70MAC locomotives and an annual lease cost of ${ } for SD40-2 locomotives. These annual lease amounts are based on information provided by BNSF in discovery.[1] Application of these annual lease amounts results in a total locomotive lease expense of ${ } million in the 2000 base year.

[1] *See* Workpapers Vol. 17, pp. 08746-96 and electronic workpaper file "TNR_OP_EXP.xls."

b. Maintenance

The TNR's locomotives are inspected and maintained at Alliance, NE, where the TNR has provided a locomotive maintenance facility to be used by its locomotive maintenance contractor.[2] Locomotives used on the trains that do not operate to or through Alliance (*i.e.*, originated coal trains interchanged to the residual BNSF at Campbell or Donkey Creek and the non-coal overhead trains operating between Amarillo and Oklaunion) are exchanged with power on trains that do operate to Alliance as necessary to enable them to receive 92-day inspections and necessary maintenance.

Maintenance costs of ${ } and ${ } per locomotive unit mile are used for SD70MAC and SD40-2 locomotives, respectively. In addition, overhaul costs of ${ } and ${ } are used for SD70MAC and SD40-2 locomotives, respectively. Overhauls are scheduled based on utilization and occur every five years for SD70MACs and every eight years for SD40-2s. The locomotive maintenance unit costs are based on locomotive maintenance agreements provided by BNSF in discovery.[3] The total locomotive maintenance cost for the TNR equals ${ } in the 2000 base year.[4]

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[2] The locomotive maintenance facility is shown on page 5 of Exhibit III-B-2. It is described in Part III-F-7, *infra.*

[3] *See* Workpapers Vol. 17 pp. 08797-919.

[4] *See* electronic workpaper file "TNR Loco Maint.xls."

c. and d. Servicing (Fuel), Sand and Lubrication

Contractors based at the TNR's Alliance and Las Animas Yards fuel, sand and lubricate locomotives (including DP units). All locomotives are fueled in the empty direction at Alliance, and all locomotives are fueled in the loaded direction at Las Animas Jct.. Permanent fuel racks are being installed at Alliance Yard; fueling is performed by tanker trucks at Las Animas Yard. Locomotives on empty coal trains that do not move through Alliance (*i.e.*, trains moving between TNR-served PRB mines and the BNSF interchange at Campbell or South Logan) are fueled as necessary by tanker truck at Campbell or South Logan.

Locomotives on the non-coal overhead trains moving in directions between Amarillo and Oklaunion are not fueled while on the TNR. The TNR compensates BNSF for fuel on the basis of BNSF's 2000 average cost of fuel per diesel unit-mile, as described in the next paragraph, applied to the miles operated between Amarillo and Oklaunion.

The TNR's locomotive fuel costs are based on BNSF's year 2000 fuel cost of $0.755 per gallon obtained from BNSF's 2000 Annual Report, Form R-1 to the Board ("R-1") and indexed using the AAR fuel index. An average fuel consumption rate for the TNR was developed by taking BNSF's system average fuel consumption rates per gross ton-mile and diesel unit-mile from its 2000 STB URCS, and applying them to the TNR trains that moved during the peak week. This yielded total gallons of fuel consumed by

TNR trains, which was then converted to 3.24 gallons per diesel unit-mile. The support for this calculation is shown in electronic workpaper file "TNR Fuel Consumption.xls." TNR locomotive servicing costs (including sand and lubrication) are based on a cost of $0.0756 per diesel unit-mile calculated using BNSF's 2000 R-1. *See* Workpapers Vol. 18, pp. 08920-22.

2. Railcars

a. Leasing

The TNR utilizes a mixture of TNR-provided cars, foreign cars and private cars. For TNR-provided coal cars, AEP Texas' experts developed lease costs on the basis of full service leases. The full service lease cost per car for TNR provided gondolas and hoppers in 2000 equals ${ } and $5,400, respectively. The lease cost for gondolas is based on a lease provided by BNSF in discovery which includes a lease amount per month of ${ } per railcar and an amount per car mile of ${ }. *See* Workpapers Vol. 18, pp. 08937-46. The full service lease cost for hoppers is based on the amount reported in the June 2001 issue of *Railway Age*. *See* Workpapers Vol. 18, p. 08936. The *Railway Age* amount was used as BNSF did not provide any long-term full service leases for hoppers in discovery.

b. Maintenance

As discussed, *supra*, TNR uses full service car leases for the coal railcars it provides. As the full service lease payments include maintenance costs, no other maintenance costs are included.

The TNR does not need any cabooses. Instead, it provides End-of-Train Devices ("EOTD") for all of its coal trains. EOTDs for the non-coal overhead trains are provided by BNSF. EOTDs are checked, with batteries charged as necessary, by the car inspectors at Alliance, Las Animas and South Logan. The details concerning EOTD expenses are shown in electronic workpaper file "TNR EOTD.xls."

Shippers who supply railcars for their movements make their own separate arrangements for maintenance of their cars, either at destination power plants (in the case of some coal shippers) or at existing contract-repair facilities on or near the route of movement.

As the TNR neither originates nor terminates any of the non-coal traffic moving overhead between Amarillo and Oklaunion, all such traffic moving in railroad-provided equipment moves in foreign (non-TNR) cars. Car costs for non-coal foreign equipment are based on time and mileage car costs by car type developed from BNSF's 2000 R-1. *See* Workpapers Vol. 18, pp. 08947-55 and electronic workpaper file "TNR Car Cost.xls."

c. Foreign Cars

For private cars used in non-coal overhead service between Amarillo and Oklaunion, TNR has included a private mileage charge per car mile by car type which is applied to all private car miles on the TNR. *See* Workpapers Vol. 18, pp. 08947-55 and electronic workpaper file "TNR Car Costs.xls."

d. Private Car Allowances

The TNR coal movements that occur in private cars involve cars that are provided per diem and mileage-free under the terms of the relevant BNSF transportation contracts. That is, the cars are provided free of charge to the railroad and the freight rate presumably reflects the fact that the carrier is not incurring car costs.

Because BNSF does not pay private car allowances for coal movements in private cars, and because the TNR is replacing BNSF with respect to its coal traffic, the TNR also pays no mileage allowances with respect to coal movements in private cars.

3. Personnel

The TNR has a traffic group consisting of coal and overhead non-coal traffic that moves in a limited number of discrete corridors and that is transported entirely in unit or through trains. Accordingly, the TNR does not need anything remotely approaching the level of staffing customary for a large, unionized Class I railroad such as BNSF. Consistent with the stand-alone concept of identifying the least-cost, most-efficient hypothetical alternative to the incumbent, the TNR will not be bound by existing

BNSF collective bargaining agreements. Its employees can perform multiple functions without regard to traditional craft boundaries. This provides more flexibility in staffing the railroad (particularly its field Transportation, Mechanical and Maintenance- of-Way forces).

AEP Texas' experts have developed a staffing plan and associated personnel for the TNR that minimizes cost and takes advantage of modern technology, but at the same time permits the railroad to handle its projected peak-period traffic volume safely and efficiently while maintaining its facilities in good condition. These witnesses, who are recognized experts in their fields, are well-qualified to do this.

AEP Texas witness Paul Reistrup had the lead responsibility for developing the TNR's personnel requirements. Mr. Reistrup has 45 years of experience in railroad operations/engineering and management. He has held both field and senior management positions at several Class I railroads, including CSXT and its predecessors and the Illinois Central Railroad, and he has been President of Amtrak and the Monongahela Railway (a coal-carrying regional railroad in Pennsylvania and West Virginia). Mr. Reistrup's extensive qualifications are set forth at pp. IV-9 to 15, *infra*.

Mr. Joseph Kruzich, who is sponsoring AEP Texas' evidence regarding IT matters (including capital, software and personnel requirements), also has an impressive background in his field. During his career in the railroad industry, Mr. Kruzich held a number of IT-related positions for major railroads, including the Atchison, Topeka and

Santa Fe and the Kansas City Southern ("KCS"). He was Chief Information Officer of the KCS from 1997 to 2000, and led KCS's development of a state-of-the-art railroad transportation information system known as the Management Control System or "MCS." *See* pp. IV-37 to 39, *infra*.

The railroad maintenance-of-way experience and qualifications of AEP Texas's engineering experts, Harvey Stone, William Krestinski and Alan Blackwell, are described further at pp. III-D- 64 to 65 and IV-40 to 47, infra. These experts have substantial experience in maintaining and developing maintenance-of-way staffing plans for large and small railroads.

a. Operating

i. Staffing Requirements

The TNR's operating personnel include line supervisory and field employees in the Transportation, Mechanical and Maintenance-of-Way departments. The senior operations staff (headquartered at Alliance) reports directly to the Vice Presidents of Transportation and Engineering/Mechanical. They are not included as operating personnel but are included in the TNR's General & Administrative ("G&A") staff, which is discussed in Part III-D-3-c, *infra*. The TNR's operating personnel requirements are summarized in Table III-D-1 below.

TABLE III-D-1
TNR Operating Employees

Position	No. of Employees
Transportation Department	
Manager of Operations Control	5
Crew Callers	5
Dispatchers	18
Manager of Train Operations	9
Asst. Mgr. of Train Operations	21
Train and helper crew members	487
Switch crew members	27
Manager of Locomotive Operations	9
Mechanical Department	
Manager of Mechanical Operations	2
Equipment Inspectors	106
Maintenance of Way Department	
Chief Engineer	1
Engineer of Track	1
Engineer of Bridges and Structures	1
Engineer of Signals and Communications	1
Manager of Administration	1
Manager of Contracts	1
Clerks	2
Dir. of Track Maintenance & Programs	1
Field Maintenance Supervisors	6
Asst. Maintenance Supervisors	6
Signal Supervisors	7
Communications Supervisor	1

Bridge and Culvert Inspector	1
Manager of Welding/Work Equipment	1
Welders	6
Welder's helpers	6
Lubricator Technicians	6
Foremen	18
Signal Maintainers	29
Track Maintainers	54
Total Operating Employees	839

A description of each position in the Transportation and Mechanical departments is provided below. The Maintenance-of-Way positions are discussed in Part III-D-4, *infra*.

(a) Transportation

(i) Supervisory

One Manager of Operations Control is on duty at all times, 24 hours a day/seven days per week, at the TNR's Alliance headquarters. A total of five employees are needed for this position – one person to cover each eight-hour shift seven days a week with a fifth person available to provide weekend, vacation and holiday coverage. The Manager of Operations Control is responsible for coordination of the TNR's train and locomotive operations, and for supervising the train dispatchers and the crew management personnel who are on duty during his shift.

The TNR has a total of 30 Managers and Assistant Managers of Train Operations. These positions are the equivalent of Trainmasters and Assistant Trainmasters on a Class I railroad. They are headquartered in the field, with one Manager and at least one Assistant Manager stationed at strategic locations including each of the TNR's crew-change and interchange points. These locations include Donkey Creek, South Logan, Pedro, SD, Alliance, Sterling, Pueblo, Las Animas Jct., Amarillo and Oklaunion. The coverage is heavier at and north of Alliance, where traffic volume is highest. In addition, 24/7 coverage is provided by the Assistant Managers of Train Operations headquartered at Alliance and Las Animas Jct. due to the additional functions being performed at the yards at these locations.[5]

The Managers and Assistant Managers of Train Operations are responsible for train operations in their respective territories and for supervising train crews. They also perform FRA-mandated and other appropriate testing, and respond to and investigate accidents and day-to-day operating problems encountered by any busy railroad. Total coverage at each location is shown in Table III-D-2 below.

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[5] The TNR does not need Yardmasters at either Alliance or Las Animas. As described in the text, Mr. Reistrup has provided adequate field supervisory coverage of operations at these yards by Managers and Assistant Managers of Train Operations; the Assistants will be on duty 24 hours per day, seven days per week.

TABLE III-D-2
TNR Mgrs./Asst. Mgrs. of Train Operations

Location	MTO	Asst. MTO	Territory
Donkey Creek	1	2	Campbell Branch, main line W. Campbell to Pedro (MP 528 on the Black Hills Sub) and Donkey Creek to Reno (Orin Sub)
South Logan	1	1	Orin Sub main line south of Reno, Reno Branch
Pedro	1	2	Pedro to Belmont (includes Crawford helper district)
Alliance	1	2[1/]	Main line Belmont to Alliance, Alliance Yard
Sterling	1	1	Main line Alliance to Denver/Englewood
Pueblo Jct.	1	1	Main line Englewood to Pueblo Jct./ Minnequa
Las Animas Jct.	1	1[1/]	Main line Pueblo Jct. to Las Animas Jct., Las Animas Yard
Amarillo	1	1	Main line Las Animas Jct. to Amarillo
Oklaunion	1	1	Main line Amarillo to Oklaunion

[1/] 24/7/365 position; at other locations MTO's and Asst. MTO's work one shift and are on call at other times. A total of 9 employees are required to cover the two Asst. MTO positions at Alliance and 5 employees are required to cover the MTO position at Las Animas Jct.

Mr. Reistrup has carefully designed the territories specified in Table III-D-2 to assure adequate transportation supervision over the entire system, including yards, interchanges, helper districts and crew-change points.

The Managers of Locomotive Operations are responsible for the safe and efficient handling of locomotives and trains by the TNR's engineers. Their duties are similar to those of a Road Foreman of Engines on a Class I railroad. They are FRA-

certified locomotive engineers and qualified on their respective territories. They perform FRA-mandated training and observation of engineers in train handling, efficiency testing, and other assistance as needed. The Managers of Locomotive Operations will be headquartered at the same nine locations as the Managers of Train Operations.

(ii) Crew Callers and Dispatchers

The TNR needs a total of five crew callers and 18 dispatchers. The crew-calling function is automated, as described in the footnote below and on p. III-D-53, *infra*.[6] However, one crew caller is on duty at the Alliance headquarters on a 24/7 basis to augment the automated crew-calling system. The crew caller's principal activity is defining the necessary jobs, assuring the proper operation of the automated system, and answering questions.

The dispatchers are stationed at the TNR's Alliance headquarters. As indicated at pp. III-C-46 to 47, *supra*, the TNR has four dispatching districts or "desks," with each manned by one dispatcher three shifts per day, seven days per week. Each dispatching desk is responsible for dispatching trains, inspection vehicles and work equipment in a defined district.

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[6] The automated crew-calling system is designed to handle virtually all basic crew interactions via automated response and calling systems. It can automatically identify the proper crews for the proper job openings, and automatically route calls from crews to their appropriate dispatchers. This greatly reduces the need for the crew caller to redirect such calls.

(iii) Train Crews

All of the TNR's trains operate with two crew members. Helper consists operate with one crew member, and switch assignments at Alliance and Las Animas operate with two crew members (each crew is equipped with a locomotive remote control device). The TNR is unconstrained by Class I railroad work rules, so the crew members are cross-trained to serve as locomotive engineers or conductors/brakemen. TNR crews can operate in either direction from any point, in either straight-away or turn (round-trip) service.

The TNR's crew-change points and crew districts/assignments are described at pp. III-C-31-32, *supra*. These crew assignments are designed to take advantage of the TNR's status as a least-cost stand-alone railroad that is not constrained by the work rules that limit the crew districts on unionized Class I railroads such as BNSF. This gives the TNR much more flexibility than BNSF in scheduling crews and maximizing their use within the constraints of the federal hours-of-service law, under which certain operating employees may not be on duty for more than 12 consecutive hours without rest.

Train crews are assigned using a computerized crew-calling system similar to the one used in the airline industry. (The crew-calling system is described at page III-D-53, *infra*.) Crews contact the dispatchers when going off duty to establish their next assignment, and they can telephone in to the computerized crew-calling system to get

updates. In addition, a crew caller is on duty at the Alliance headquarters around the clock to monitor the system and handle vacations, special requests and any crew scheduling problems that may arise.

The total number of train crew members required by the TNR using the crew assignments described above, taking into account the peak-period train volumes by line segment and crew district, has been determined based on the crew districts developed by Mr. Reistrup and the train transit times developed from the application of the RTC Model to the TNR's peak-period train counts. *See* Parts III-B and III-C, *supra*.

(b) Mechanical

The mechanical function involves maintenance and servicing of equipment (primarily locomotives, inspection vehicles, and other MOW equipment). It is led by a Vice President-Engineering and Mechanical who is covered in the section below addressing General & Administrative Expenses. The line staffing for equipment maintenance and servicing, shown in Table III-D-1 on pp. III-D-9 to 10, *supra*, includes a Manager of Mechanical Operations and 106 equipment inspectors.

The Managers of Mechanical Operations are based at Alliance and Las Animas Jct., and supervise and interface with the locomotive maintenance, fueling and servicing contractor(s) at Alliance Yard and the locomotive fueling/servicing contractor at Las Animas Yard. They are also responsible for budgeting and for leasing new equipment as necessary. Two persons are sufficient to perform these functions

particularly given that, unlike BNSF, the TNR has only two locomotive models (SD70MAC and SD40-2) and two maintenance/fueling/servicing locations.

If a locomotive mechanical failure occurs en route, the train crew will call the dispatcher at Alliance who in turn will notify the locomotive maintenance contractor. The contractor either will repair the locomotive at or near the site of the failure, or dispatch a replacement from the locomotive spare pool to the site. Spare locomotives are placed at the Campbell/Donkey Creek helper track, Alliance, Las Animas Jct. and Oklaunion so they can replace bad ordered locomotives. Bad ordered locomotives are normally moved to Alliance but, in the case of a failure that makes the locomotive unable or unsafe to move, the contractor makes emergency repairs in the field.

The Managers of Mechanical Operations also supervise the maintenance of TNR's small railcar fleet and direct the activities of the Equipment Inspectors. The Equipment Inspectors, whose duties are similar to those of Carmen on a Class I railroad, are based at the Alliance and Las Animas Yards and at South Logan and Donkey Creek. They perform 1,000 and 1,500-mile car inspections. Given the volume of inspections at Alliance, where all overhead trains and empty coal trains will be inspected (or about 69 trains per day during the TNR's peak traffic period), three four-person crews work each shift at Alliance on a 24/7 basis. The inspection procedures are described at pp. III-C-44 to 46, *supra*.

The number of trains requiring inspection at Las Animas Yard (an average of nine loaded trains per day during the TNR's peak traffic week in 2020) is much lower than at Alliance. Accordingly, one four-person inspection crew, with 24/7 coverage, is adequate to cover the TNR's car-inspection needs at Las Animas. The same inspection-crew coverage is provided at South Logan and Donkey Creek.

As noted in Part III-C, *supra*, the inspection crews are assigned small vehicles which can travel on the roadways between the inspection tracks at both Alliance and Las Animas. In addition, the crews based at South Logan and Donkey Creek are assigned dual-cab pick-up trucks so they can travel to locations where mechanical problems occur. The inspection vehicles will be equipped with tools and parts (such as brake shoes) needed for performing light car repairs; the pick-up trucks will be similarly equipped and will also carry spare coupler knuckles.

(c) <u>Maintenance-of-Way</u>

The TNR's maintenance-of-way ("MOW") plan is set forth in part III-D-4, *infra*. Major program (capitalized) track maintenance is addressed in the DCF model, and spot (expensed) maintenance is performed by the TNR's in-house MOW forces and, for larger/infrequent expensed functions such as rail grinding, by contractors. The TNR's engineering/MOW staff is headed by a Chief Engineer (discussed in the maintenance-of-way section, Part III-D-4, *infra*) with four additional staff managers: an Engineer of Track, an Engineer of Bridges and Structures, an Engineer of Signals, and a Director of

Track Maintenance and Programs. The TNR's field MOW personnel requirements are summarized in Table III-D-1 on pp. III-D-9 to 10, *supra*. Details with respect to the MOW staffing and functions are provided in Part III-D-4, *infra*.

ii. Compensation

Compensation for the line operating personnel shown in Table III-D-1 above has been established at or close to the same levels as those presently paid by BNSF for comparable positions, and includes constructive allowances.

Constructive allowances for train crews are based on two types of constructive allowances. First, they are based on the actual constructive allowance amounts paid on a direct basis to BNSF engineers and conductors who worked on trains moving coal to the AEP Texas' Oklaunion station. Second, they are based on constructive allowances paid on a ratio basis to BNSF engineers and conductors that worked on Oklaunion trains.

Both the direct and ratio constructive allowances paid to BNSF train crews include payments for many different items, such as vacation, meals, training, etc. The TNR would not incur payments for many of these items for three reasons. First, because the TNR has two crew members on all trains, the special pay differential that BNSF pays its crew members for "short crew" or reduced crew sizes does not apply to the TNR. The TNR did not exist when train crews were much larger than they are today, so it does not does not have "short crews" or reduced crews which led to this constructive allowance.

Therefore, it is inappropriate. Second, the TNR is not the product of a merger(s) with another railroad(s) and therefore it would not incur constructive allowance payments to its train crew members for "Work Guarantees" and "Reserve Board" that BNSF has negotiated as a result of various mergers. Third, the TNR is a non-union railroad; therefore, union-related constructive allowances do not necessarily apply. These constructive allowance payments include items such as BLE Certification pay and Initial and Final Termination pay. The TNR does incur constructive allowances for payments related to vacations, deadheading, held away from home, meals, training, safety training, military service, jury duty, bereavement, required physical exams and others.[7]

The constructive allowances used for the TNR crews are those that the Wisconsin Central Railroad ("WC") and UTU agreed to in October 1998. Based on WC's agreement with the UTU (*see* Workpapers Vol. 18, pp. 08966-86), many of the constructive allowances paid to train crews by Class I railroads that have a long history of four and five man crews and that have been subjected to outdated union rules and agreements or mergers were not included in this agreement.

Further support for the fact that non-union railroads such as the TNR can compete in the marketplace for T&E personnel without paying all of the constructive

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[7] *See* electronic workpaper file "TNR Constructive Allowances.xls" for a listing of all constructive allowance payments made to BNSF crews that worked on AEP Texas trains. This file designates which of BNSF constructive allowances are included for the TNR's crews.

allowances typically paid by a Class I railroad is provided by the following statement by Tom Power, WC's Executive Vice President and Chief Financial Officer, as reported in the June 29, 1997 issue of *Traffic World* (*see* Workpapers Vol. 18, pp. 08987-88).

> [Mr.] Power said WC operating craft workers would earn the same as their counterparts at Class Ones were it not for such constructive allowance payments as initial and final terminal delay allowances that account for about 25 percent of engineer and conductor pay on the larger railroads.

The constructive allowances paid by TNR to its train crew members, on a combined basis, equal 23 percent of straight-time and overtime wages paid to its engineers and conductors.

Fringe benefits for all employees are included based on 33.9 percent of wages which are based on the ratio of total supplements to total wages paid in the second quarter 2000 for all Class I carriers as shown in the Association of American Railroads' workpapers supporting its calculation of the Rail Cost Adjustment Factor.[8]

Salaries and total annual compensation for TNR operating employees are shown in Table III-D-3 below.

TABLE III-D-3
TNR Operating Personnel Salaries

Position	Number of Employees	Annual Salary	Total Salaries
Manager of Operations Control	5	$73,313	$366,565
Crew Callers	5	$40,793	$203,965

[8] *See* Workpapers Vol. 18, p. 08964.

Dispatchers	18	$59,593	$1,072,674
Manager of Train Operations	9	$73,313	$659,817
Asst. Mgr. of Train Operations	21	$67,467	$1,416,807
Train crew members	487	$58,673	$28,573,751
Switch crew members	27	$58,673	$1,584,171
Manager of Locomotive Operations	9	$73,313	$659,817
Manager of Mechanical Operations	2	$73,313	$146,626
Equipment Inspectors	106	$41,467	$4,395,502
Maintenance of Way Department			
Chief Engineer	1	$135,000	$135,000
Engineer of Track	1	$110,000	$110,000
Engineer of Bridges & Structures	1	$90,000	$90,000
Engineer of Signals & Communications	1	$90,000	$90,000
Manager of Administration	1	$75,000	$75,000
Manager of Contracts	1	$75,000	$75,000
Clerks	2	$40,000	$80,000
Dir. of Track Maintenance and Programs	1	$80,000	$80,000
Field Maintenance Supervisors	6	$70,000	$420,000
Asst. Maintenance Supervisors	6	$56,000	$336,000
Signal Supervisors	7	$69,000	$483,000
Communications Supervisor	1	$69,000	$69,000
Bridge and Culvert Inspector	1	$56,000	$56,000
Manager of Welding/Work Equipment	1	$75,000	$75,000
Welders	6	$45,000	$270,000
Welder's Helpers	6	$42,000	$252,000
Lubricator Technicians	6	$45,000	$270,000
Foreman	18	$45,000	$810,000
Signal Maintainers	29	$45,000	$1,305,000
Track Maintainers	54	$42,000	$2,268,000
Total Operating employees	839	xxx	$46,428,695

Details concerning the compensation levels set forth in Table III-D-3 are included in electronic workpaper files "TNR Salaries.xls" and "SpotMaint.xls."

iii. Materials, Supplies and Equipment

Materials, supplies and equipment for operating personnel include office furniture and equipment, office supplies, safety equipment, EOTDs, two-way radios and batteries, motor vehicles, railcar-inspection vehicles, and tools and supplies. The total annual operating expense for these items equals $7.2 million. Detailed development of these expenses can be found in electronic workpaper files "TNR Materials and Supplies.xls" and "TNR Automobiles.xls."

IT equipment requirements (computers and software) are described on pages III-D-50 to 64, *infra*.

b. Non-Operating

The TNR's personnel have all been designated either as operating personnel or as G&A staff. Those employees who might be considered non-operating personnel on a Class I railroad are all included in the G&A staff. The G&A personnel requirements for the TNR are discussed in detail in Part III-D-3-c immediately below.

c. General and Administrative

The G&A expenses for the TNR include its headquarters administrative staffing, buildings and equipment, and other resources including information technology

("IT") requirements. These expenses have been developed primarily on the basis of the experience of AEP Texas' witness Reistrup, who has held various senior management positions (including the presidency) at Class I and other railroads (AEP Texas witness Philip Burris assisted in developing annual salaries). The TNR's G&A engineering staff and compensation were developed by AEP Texas' engineering witnesses, Messrs. Stone, Krestinski and Blackwell. Its IT requirements (including computer hardware, systems, software, and support personnel/out-sourcing requirements) were developed by AEP Texas' IT expert, Joseph Kruzich, on the basis of the operating plan and personnel requirements developed by the other experts described above.

The principles of the *Coal Rate Guidelines* were followed in developing the TNR's G&A expenses. Under the *Guidelines*, a stand-alone railroad is to be designed, staffed and equipped in a manner that minimizes cost and maximizes efficiency consistent with its ability to provide the service required by its customers. This means that an efficient SARR that performs only one, repetitive kind of operation (the movement of unit and through trains) does not need to be staffed or equipped at the levels needed for a real-world Class I railroad, or even a large regional railroad that handles many different commodities in several different kinds of train service. It also enables a number of functions normally performed in-house by a Class I railroad to be out-sourced, because they can be contracted out for less expense than providing them in-house without sacrificing performance quality.

Before turning to the specifics of the TNR's G&A staffing, it bears noting that in its 1996 *West Texas Utilities* decision, 1 S.T.B. at 694-95, the Board determined that a G&A staff totaling 38 employees – the number recommended by BNSF's predecessor – was adequate for the West Texas Railroad ("WTRR"), the SARR posited to handle the PRB-to-Oklaunion and other coal traffic in that case. The TNR is similar in many respects to the WTRR. It replicates most of the same BNSF lines (although the TNR has 16 percent fewer route-miles than the WTRR[9]), and has a generally similar (albeit larger) traffic group. AEP Texas is not suggesting that the TNR should be limited to a total of 38 G&A employees, but the fact that the Board determined this to be an appropriate number in *West Texas Utilities* certainly should inform its evaluation of the TNR's G&A personnel requirements. The Board should also be mindful of the modern proliferation of desktop computers and e-mail which reduces the number of personnel needed for administrative, clerical and secretarial duties.

i. Staffing Requirements

The G&A staff for the TNR is based at its Alliance headquarters. This staff covers all administrative functions including matters such as executive support, legal services, accounting and bookkeeping, payroll, information systems, human capital (also known as human resources), secretarial and clerical services, budgeting, directing the

[9] The WTRR had 1,416 route-miles (1 S.T.B. at 659), compared with 1,192 route-miles for the TNR (*see* Table III-B-1 on page III-B-7, *supra*).

maintenance-of-way program and the field, maintenance-of-way forces, and supervising contractors in the performance of out-sourced functions.

The TNR's G&A staff is appropriate for the size of its system, its limited and specialized traffic group, and the repetitive nature of its operations which consist entirely of the movement of unit and through trains. The G&A staff (excluding the operating employees located at the Alliance headquarters described in Part III-D-3-a, *supra*, and the headquarters maintenance-of-way employees described in Part III-D-4, *infra*) is summarized in Table III-D-4 below.

TABLE III-D-4
TNR General & Administrative Staff

Department/Position	Employees
President's Office	(3)
President and CEO	1
Director, Corporate Relations	1
Administrative Assistant	1
Transportation Department	(15)
Vice President-Transportation	1
Director of Operations Control	1
Director of Train and Locomotive Operations	1
Director of Customer Service	1
Customer Service Managers	8
Marketing Managers	2
Manager of Operating Rules and Safety	1
Engineering and Mechanical Department	(5)
Vice President/Engineering/Mechanical	1
Director of Mechanical Services	1

Manager of Budgets and Purchasing	1
Manager of Testing/Environmental	1
Clerks	1
Finance and Accounting Department	(21)
Vice President-Finance/Accounting and Treasurer	1
Manager of Administration	1
Director of Taxes	1
Controller	1
Assistant Controller-Revenue	1
Assistant Controller-Disbursements	1
Clerk/Analysts	2
Manager of Financial Reporting	1
Director-Budgeting and Analysis	1
Director-Information Technology	1
IT Specialists	10
Law and Administration Department	(12)
Vice President-Law and Administration	1
General Attorneys	2
Director of Safety and Claims	1
Managers of Safety	2
Director of Human Capital (Resources)	1
Manager of Training	1
Secretaries	4
Total G&A employees	56

This level of staffing is very conservative – indeed, it is nearly 50 percent higher than the G&A staff of 38 persons proposed by BNSF's predecessor and accepted

by the Board in the *West Texas Utilities* case, which involved the same movement and a similar SARR to those involved in this case. *Id.*, 1 S.T.B. at 694-95.

The functions of each G&A position, the reasons why this level of staffing is appropriate for the TNR, and the out-sourced functions are explained below.

(a) President's Office

The President's office consists of three people: the President, a Director of Corporate Relations, and an Administrative Assistant. The TNR's President serves as the railroad's CEO, and the other department heads (*i.e.*, the Vice Presidents) report to him.

In addition to supervising the Vice Presidents, the President is responsible for the TNR's external relations (other than the marketing of its rail transportation services). This includes community and government relations other than those involving legal and financial matters, which are the responsibility of the Vice Presidents for Law/Administration and Finance/Accounting. Given the TNR's narrow operational focus and the fact that it does not have to compete with other railroads or modes of transportation for its business, the President does not need a large staff to assist him with these functions. (Secretarial service will be provided by a pool of Secretaries administered by the Law and Administration Department.)

The President is also a member of the TNR's Board of Directors, and serves as Chairman of the Board. Consistent with stand-alone theory, the TNR does not need to be a publicly-owned company, and it does not need a traditional large board with

numerous outside directors. It can be governed by a five-person board, consisting of the President, the Vice President-Transportation, and three outside directors. The outside directors would likely include a representative of the TNR's customer group, a representative of its investors, and an independent director with no other connection to the TNR. This would assure independent oversight of the TNR's affairs. Similar five-person Boards of Directors of SARRs were recently authorized by the Board in the Eastern rate cases (*Duke/NS* at 74; *Carolina* at 62; *Duke/CSXT* at 59-60).

Quarterly Board of Directors' meetings will be held at the railroad's Alliance headquarters, so the two inside Directors do not need to be compensated for travel to Board meetings. The outside Directors would have a direct and substantial interest in the TNR's affairs, and thus should be willing to serve on its Board without compensation other than the reimbursement of expenses for attending Board meetings. Accordingly, AEP Texas has not provided any expenses for compensating its Directors except for travel expenses by the outside Directors to attend Board meetings. This is also consistent with the approach adopted by the Board in *Duke/NS* at 77, *Carolina* at 64, and *Duke/CSXT* at 72.

The Director of Corporate Relations is responsible for community and government relations. He or she will interface with state and local public officials in the six states in which the TNR operates (Wyoming, South Dakota, Nebraska, Colorado, Oklahoma and Texas), assisted by the Administrative Assistant as necessary.

(b) Transportation Department

The Transportation Department is staffed by 14 supervisors (excluding line operating supervisory personnel, some of whom will be based at Alliance), headed by a Vice President who is the equivalent of a General Manager on a Class I railroad. The Vice President-Transportation is responsible for all transportation, customer service, and marketing functions.

The sub-department heads include Directors of Operations Control, Train and Locomotive Operations, and Customer Service. These Directors have overall responsibility for administering the described functions throughout the TNR system. The line operating supervisors (*i.e.*, the Managers of Operations Control, Train Operations, and Locomotive Operations, described earlier) report to the corresponding Director.[10]

The Director of Customer Service is responsible for all customer service and marketing functions, which include communicating with the mine operators and the TNR's customers.[11] He or she supervises a staff of eight Customer Service Managers and two Marketing Managers. The Customer Service Managers provide 24/7 coverage of this function. They are responsible for monitoring train locations, maintaining contact with

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[10] The Managers of Train Operations and Managers of Locomotive Operations report to the same Director because the train and locomotive operations functions are related.

[11] As described on pp. III-D-44 to 46, *infra*, the marketing function will largely be outsourced. The Marketing Managers are responsible for directing the marketing contractor's activity.

the origin mine operators, answering customers' questions concerning the locations of specific trains, and responding to customers' requests to divert empty coal trains to different origins for loading. The Customer Service personnel are located within the Transportation Department due to their need to interface with other Transportation personnel in dealing with the mines and with customers.

The following factors have been considered in sizing the Customer Service sub-department. The TNR carries only two kinds of traffic: coal in unit trains (both local and interlined), and overhead non-coal traffic in through trains. It has a small customer base – five local utility customers, additional coal customers for which it originates coal, and overhead non-coal customers whose origins and destinations are served by BNSF.[12] It serves a similar group of PRB mine origins, only five local destinations, and eight interchange points. Its traffic is highly repetitive. In addition, the vast majority of customer contacts occur during the first shift which includes normal business hours.

Based on these factors, ample coverage can be provided by having two Customer Service Managers on duty each shift, with an additional Customer Service Manager (or the Director) working the first shift on weekdays. This provides for 24/7 coverage by two customer personnel, with a third individual also on duty five days per

[12] The TNR's overhead traffic is non-coal intermodal, merchandise and vehicle traffic that it handles between Amarillo and Oklaunion. This is long-haul traffic that for the most part is both originated and terminated by BNSF. Very little marketing interface between the TNR and its overhead customers is required under these circumstances.

week during normal business hours. In addition to the Director, a total of eight Managers are needed to provide this coverage.

The functions of the Marketing Managers, who also report to the Director of Customer Service, are described in the subsection on out-sourced marketing, *infra*.

The final position in the Transportation Department is the Manager of Operating Rules. This individual interfaces with the FRA and other government agencies in matters pertaining to rules and operating practices. He or she is responsible for the TNR's operating timetable, operating rules, and related instructions. This individual also interfaces with the Manager of Operations Control and the Managers of Train Operations with respect to rules testing and enforcement. One position is sufficient, given the homogenous, repetitive nature of the TNR's operations.

(c) Engineering and Mechanical Department

All of the maintenance of the TNR's locomotives, freight cars and other vehicles and mobile equipment is being contracted out. Program and some spot maintenance-of-way, including track, bridge and signal maintenance, are also being contracted out.

The primary functions of the staff Engineering and Mechanical Department are to oversee the equipment and track/facilities maintenance contractors, the personnel engaged in inspecting and repairing railcars, and the field maintenance-of-way supervisory personnel and maintenance forces. The Vice President-Engineering/

Mechanical heads this department (there is no need for two vice presidents given the limited number of staff personnel in both sub-departments). The Director of Mechanical Services and the Chief Engineer, who are responsible for the two sub-departments, report to the Vice President.

The Vice President is assisted in performing the staff functions for this department by a Manager of Budgets and Purchasing, a Manager of Testing and Environmental, and three clerks (one to assist the Director of Mechanical Services and two to assist the Chief Engineer). The Manager of Budgets and Purchasing prepares the departmental budget and supervises and approves the purchase of equipment and materials used by TNR employees in performing their functions. (The acquisition of materials for locomotive, equipment and program track maintenance is handled by the appropriate contractor, with no need for direct participation by TNR employees.)

The Manager of Testing and Environmental is responsible for testing of materials and environmental compliance. Since the TNR will not be constructing any new or additional facilities (after the railroad is initially built) during the 20-year DCF period, one individual is ample to cover this function.

The Chief Engineer is responsible for supervision of all maintenance-of-way ("MOW") activities, including supervision of the contractors for out-sourced MOW

work. He is assisted by the Engineers of Track, Bridges and Structures, and Signals, the Manager of Administration, and the Manager of Contracts.[13]

The Director of Track Maintenance & Programs, who is responsible for directing the TNR's field MOW forces and maintenance of the TNR's track, is included in the TNR's Operating employees. He reports to the Engineer of Track. The Manager of Welding/Work Equipment reports to the Director of Track Maintenance & Programs and is also an Operating employee.

The level of staffing provided for the Engineering/ Mechanical Department is appropriate because all of the TNR's major (program) MOW work – and some of its spot MOW work – is being contracted out, it provides no railcars, and all of its locomotives are leased and maintained by contractors. In addition, the TNR has no need for any new facilities or additions to its physical plant after initial construction since it is being configured and equipped at start-up for its peak-period traffic group.

(d) Finance and Accounting Department

The Finance and Accounting Department consists of 18 employees and is headed by the Vice President-Finance and Accounting. This individual also serves as the TNR's Treasurer and as its primary liaison with outside auditors. There is no need for a separate, full-time Treasurer, as there is not be enough work for such a position on a

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[13] The Chief Engineer and his assistants are considered operating (MOW) employees and are shown in Table III-D-1 on page III-D-10, *supra*.

railroad with a limited number of local customers and a repetitive operation involving a known level of unit-train coal movements and overhead train movements. However, the Vice President is assisted by a Manager of Administration who manages the company's cash and performs the functions of an assistant Treasurer. This individual also advises the Assistant Controller-Revenue on receipt of funds from customers and connecting carriers, monitors debt payment requirements, and interfaces with the outside investment company who will manage the TNR's retirement (401K) plan.

The Finance and Accounting Department is also responsible for the railroad's basic financial and accounting functions, including taxation, revenue collection, disbursements for accounts payable, financial reporting, and budgeting and analysis.

Many of the TNR's accounting and finance functions are performed using computerized packages and programs now available (and increasingly being used) in the railroad industry, rather than being performed manually by in-house staff employees. These functions and the related programs are described in more detail in the discussion of the IT Department on pages III-D-50 to 64, *infra*. Given the substantial computing needs associated with the Finance and Accounting Department, the IT function is also being lodged here.[14]

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[14] The eleven IT personnel and their functions are discussed on pages III-D-61 to 63, *infra*.

The staff positions required to cover the accounting and finance functions on a stand-alone railroad with a few discrete traffic flows include a Director of Taxes, a Controller (who serves as the railroad's chief accounting officer), two Assistant Controllers (one responsible for revenue and the other for disbursements), two Clerk/Analysts who assist the Assistant Controllers in performing their functions, a Manager of Financial Reporting, and a Director of Budgeting and Analysis.

The Director of Taxes manages the preparation of the TNR's federal and state income tax returns, sales and use tax returns, and ad valorem and property tax returns. He is the principal tax strategist for the railroad, and advisor to the Vice President-Finance and Accounting on all tax matters. Actual tax returns are prepared by an outside accounting firm with property tax specialists. Preparation of federal and state payroll tax returns is also out-sourced. A financial accounting computer is used to track all of the TNR's physical assets, asset additions, and asset deletions.

The Controller is responsible for all accounting functions, including direction of all billing, vendor payment processing, payroll, budgeting, and auditing. As the railroad's chief accounting officer he advises the Vice President-Finance and Accounting on all accounting issues.

The Controller is assisted by the two Assistant Controllers. The Assistant Controller-Revenue oversees all customer and interline freight billing and collection, and is also responsible for supervising billing for demurrage, storage, easements, utility

crossings, and car repairs. In addition, he or she is responsible for reviewing all shipper contracts and entering contract rate and payment terms into the TNR's billing system. The Assistant Controller-Disbursements is responsible for overseeing all accounts payable and payroll processing; issuing vendor payments; advising the Vice President and the Manager-Administration on cash requirements; and reviewing all contracts with outside suppliers. The Assistant Controllers are assisted in these functions by two Clerk/Analysts as previously described.

The Manager of Financial Reporting is responsible for overseeing monthly accounting closing of the books, preparation of monthly, quarterly and annual reporting packages for review by the Controller, and maintenance of the company's chart of accounts. One individual is sufficient to perform the TNR's financial and accounting reporting functions, largely because the TNR is not be a publicly-held company and does not need to prepare reports to the SEC or to the equity-investment community.

The final position in this department is the Director-Budgeting and Analysis. This individual handles the preparation of the annual company budget, monitors monthly performance against plan, and prepares forecasts and cost and revenue analyses as required. He or she is also the principal contact point between the accounting department and the operating departments for information regarding variances and forecasts, and has responsibility for evaluation of all requests for capital projects arising from those departments.

(e) Law and Administration Department

The Law and Administration Department, also headed by a Vice President, is responsible for the TNR's legal affairs including litigation control, risk management and claims, and regulatory compliance. The Vice President is also responsible for other administrative functions including training and safety, rules enforcement, and human resources.

The Vice President is an attorney and serves as the company's chief legal officer. Almost all of the railroad's legal work is handled by outside counsel, who is supervised by the Vice President with the assistance of two in-house General Attorneys. One General Attorney is primarily responsible for claims and litigation; the other for regulatory, environmental compliance and contract matters. The legal side of the department is also be staffed by a Director of Safety and Claims and two Managers of Safety. In addition to the Vice President, this results in a total legal services staff of five people.

The Director of Safety and Claims, assisted by the Managers of Safety, supervises the out-sourced risk and claims management contractor, and provides assistance in investigating claims. These individuals are also responsible for government safety reporting and liaison, safety rule development and education for contractors and employees, and representing the TNR in industry associations and government safety forums.

The Department's other administration functions are managed by the Director of Human Resources, who will be assisted by a Human Resources Administrator and a Manager of Training. The Director is also be responsible for the headquarters secretarial pool, consisting of four Secretaries who are available for assignments involving any of the TNR's executive/staff departments.

As described further below, the TNR's start-up and training needs are met largely by out-sourcing. This means that the primary responsibility of the Human Resources staff is to preserve the TNR's ability to engage in ongoing operations. Human Resources is a function that lends itself well to out-sourcing, and external resources exist in this field that will support a small in-house human resources department. Accordingly, an appropriate staffing level for the human resources function consists of a Director of Human Resources and a Manager of Training. This staff is sufficient to manage recruiting, compliance, compensation and benefits, employee relations and training since most of these functions will be out-sourced.

ii. Compensation

The salaries and benefits for the TNR's G&A personnel described above are based on comparable and competitive compensation packages presently available in the railroad industry (and in other service industries).

Specifically, annual salaries for the general and administrative personnel were estimated based on data contained in BNSF's Wage Forms A and B with six

exceptions. Salaries for the President, Vice President-Transportation, Vice President-Engineering and Mechanical, Vice President-Finance/Accounting and Treasurer, the Controller and the Vice President-Law and Administration, are based on the salaries, including bonuses, paid for similar executive positions by the Wisconsin Central Railroad in 2000.[15]

Fringe benefits for all employees are included based on 33.9 percent of wages which are based on the ratio of total supplements to total wages paid in the second quarter 2000 for all Class I carriers as shown in the Association of American Railroads' workpapers supporting its calculation of the Rail Cost Adjustment Factor.[16]

The G&A staff salaries are summarized in Table III-D-5 below.

TABLE III-D-5
TNR General & Administrative Staff Salaries

Position	No. of Employees	Annual Salaries	Total Salaries
President and CEO	1	$345,640	$345,640
Director, Corporate Relations	1	$ 89,255	$ 89,255
Administrative Assistant	1	$ 39,662	$ 39,662
Vice President-Transportation	1	$223,217	$223,217
Director of Operations Control	1	$ 89,255	$ 89,255
Director of Train and Locomotive Operations	1	$ 89,255	$ 89,255

[15] Salaries of the Vice Presidents-Transportation, Engineering/Mechanical, Finance/ Accounting and Treasurer, and Law and Administration are based on the salary, including bonus, paid to the Executive Vice President-Chief Financial Officer by Wisconsin Central in 2000.

[16] *See* Workpapers Vol.18, pp. 08963-64.

Director of Customer Service	1	$ 89,255	$ 89,255
Customer Service Managers	8	$ 76,190	$609,520
Marketing Managers	2	$ 62,607	$125,214
Manager of Operating Rules and Safety	1	$ 73,313	$ 73,313
Vice President/Engineering/Mechanical	1	$223,217	$223,217
Director of Mechanical Services	1	$ 89,255	$ 89,255
Manager of Budgets and Purchasing	1	$ 73,313	$ 73,313
Manager of Testing/Environmental	1	$ 73,313	$ 73,313
Clerk	1	$ 39,662	$ 39,662
Vice President-Finance/Accounting and Treasurer	1	$223,217	$223,217
Manager of Administration	1	$ 73,313	$ 73,313
Director of Taxes	1	$ 89,155	$ 89,155
Controller	1	$185,908	$185,908
Assistant Controller-Revenue	1	$ 89,155	$ 89,155
Assistant Controller-Disbursements	1	$ 89,155	$ 89,155
Clerk/Analysts	2	$ 62,607	$125,214
Manager of Financial Reporting	1	$ 89,155	$ 89,155
Director-Budgeting and Analysis	1	$ 89,155	$ 89,155
Director-Information Technology	1	$ 69,416	$ 69,416
IT Specialists	10	$ 62,607	$626,070
Vice President-Law and Administration	1	$223,217	$223,217
General Attorneys	2	$ 69,416	$138,832
Director of Safety and Claims	1	$ 89,155	$ 89,155
Managers of Safety	2	$ 73,313	$146,626
Director of Human Resources	1	$ 89,155	$ 89,155
Manager of Training	1	$ 73,313	$ 73,313
Secretaries	4	$ 42,795	$191,180
Total G&A employees	56	xxx	$4,972,737

Details supporting the derivation of the compensation numbers in Table III-D-5 are included in electronic workpaper files "TNR Salaries.xls" and Workpapers Vol. 18, pp. 08957-92.

iii. Materials, Supplies and Equipment

The TNR owns or leases various types of vehicles and equipment other than locomotives and freight cars. This includes work equipment for the field maintenance-of-way forces, hi-rail trucks and track inspection vehicles,[17] inspection vehicles for the car inspectors at the TNR's three car-inspection points, and company automobiles. Costs for all of this equipment have been included in the calculation of the TNR's annual operating expenses. *See* electronic workpaper file "TNR_OP_EXP.xls" for details concerning equipment and supplies (except for MOW equipment and supplies, which are discussed in Part III-D-4).

With respect to company vehicles, a pool of four Ford Explorers (a small SUV with 4WD) is maintained at the Alliance headquarters for use primarily by the headquarters transportation and engineering/mechanical staffs while traveling in the field on TNR business. Ford Explorers are also needed for the field transportation, mechanical and maintenance-of-way supervisory personnel, and pick-up trucks are needed for the car inspection personnel. A total of 46 company vehicles are needed, including the HQ pool vehicles (43 Ford Explorers and three Dodge 4WD, 4-door extended cab pick-ups).

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[17] The TNR's MOW equipment needs are addressed in Part III-D-4 below.

The TNR's information technology ("IT") needs are discussed in Part III-D-3-d on pp. III-D-50 to 64, *infra*. This includes computers, software, personnel and out-sourcing needs.

iv. Other

(a) Out-Sourced Functions-General

Many functions customarily provided in-house by large Class I railroads such as BNSF can be out-sourced by the TNR. Consistent with the stand-alone concept of an efficient, least-cost railroad, out-sourcing is used wherever the economics so justify without sacrificing service quality.

Out-sourced functions at the TNR include marketing (discussed in more detail below); initial training of line operating employees (also discussed below); several accounting and financial functions including preparation of income, property and payroll tax returns, financial and account auditing; legal services including claims administration and investigation; and administration of the company's retirement plan. *See* electronic workpaper file "TNR GA Outsourcing.xls."

AEP Texas' experts are aware of a number of independent accounting, payroll-service, and other firms with the experience and systems to perform these functions. For example, the payroll-service firm Paychex has experience in complying with Railroad Retirement and other railroad-specific tax and regulatory reporting

requirements. In the human resources area, regional and industry employers' associations are available as a resource for the TNR's internal human resources staff.

Estimated annual costs have been developed for outsourcing all of the functions described above, as well as the marketing function. These estimates have been included in the TNR's annual operating expenses. *See* electronic workpaper file "TNR_OP_EXP.xls."

(b) Marketing

As noted earlier, the TNR is out-sourcing the bulk of the marketing function. Responsibility for this function has been lodged with the Transportation Department, under the supervision of the Director-Customer Service and the Manager of Marketing. This is a logical place to administer the marketing function given the coordination and contact needed between the Transportation/Customer Service personnel and the Marketing Managers and contractor personnel.

Out-sourcing the marketing function is cost-efficient because the TNR has a limited and repetitive traffic group consisting primarily of originated unit-train coal traffic moving to a known set of destination power plants (both local and off-line); a relatively modest volume of overhead non-coal traffic overhead traffic that is both originated and terminated by the residual incumbent for the overhead part of the movement; and a stable customer base with a consistent and regular traffic volume. The TNR's customer group is projected to remain constant throughout the railroad's 20-year life. Because the TNR is a

least-cost replacement for the incumbents, its traffic is not subject to diversion. In short, only "maintenance" marketing for a defined group of shippers is required.[18] Unlike real-world railroads, the TNR does not need to engage in the constant solicitation of new business.

AEP Texas witness Reistrup has substantial railroad marketing experience, both at the Illinois Central (where he served for five years as Vice President Intermodal Services and then Senior Vice President of marketing and Sales) and at the Monongahela Railway ("MGA"), a regional railroad that carried large volumes of coal traffic.

During the first six years of his tenure at the MGA (1982-1988), Mr. Reistrup served the MGA's marketing contractor (he was listed in the Official Railway Guide as "Coal Marketing Consultant Acting as Chief Traffic Officer). The MGA had no additional marketing personnel during that period. When Mr. Reistrup assumed the Presidency of the MGA in 1988, he continued to handle the railroad's marketing function, with the assistance of one full-time Manager of Marketing Services and a member of the accounting staff. *See* Workpapers Vol. 17, pp. 08741-44.

Mr. Reistrup is also aware from his consulting work that many other regional railroads presently out-source their marketing function. A number of firms, such as High Road Consulting based in Chicago, have the resources and personnel to perform

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[18] As noted earlier, very little marketing interface is needed with respect to the TNR's non-coal overhead customers, who will be serviced primarily by BNSF which is the originating and terminating carrier.

all day-to-day marketing functions (including direct customer contact) for a railroad with highly repetitive movements involving a relatively few commodities. These firms can provide consistent coverage by as many of their personnel as are needed, at lower costs than an in-house marketing department with payroll, coverage for vacations and illness, benefit costs, and office overhead.

To be conservative, Mr. Reistrup has included two in-house Managers of Marketing. These individuals will supervise and interface with the marketing contractor (who will deal primarily with the TNR's coal customers), and will also interface directly with the TNR's three local utility coal customers (AEP Texas, Westar Energy and Xcel Energy[19]) and with its non-coal customers. Given the fact that only maintenance marketing is required, two persons will be ample for this function.

Based on his own personal experience at the IC and MGA and later as a consultant, Mr. Reistrup is highly confident that his marketing plan for the TNR, as described above, will be a success.

(c) Training and Other Start-Up Costs

Initial training costs for the TNR's train crew personnel amounts to $4.9 million. Training for train crews is based on actual training costs available in the market place, including training costs charge by AMDG Company for new conductors and

[19] Xcel Energy manages fuel supply/transportation for its public utility operating subsidiaries, including PSCo and Southwestern Public Service Company which operate three of the TNR-served power plant destinations (PSCo's Arapahoe and Comanche plants and SPS's Harrington plant).

Keeping Track Company for familiarizing experienced conductors and engineers with rail territories where they have no current experience. AEP's training costs are based on the assumption that 25 percent of the train and enginemen are experienced enginemen, 50 percent are experienced conductors (one-half of which will receive training to become engineers) and 25 percent have no railroad experience. The average training cost for train and enginemen is $9,481 per individual, including tuition, travel and salary as appropriate.[20]

Training for dispatchers is based on that provided by the Tarrant County College in Fort Worth, TX ("TCC"),[21] which provides for 14 weeks for training for new untrained dispatchers. This includes four weeks of classroom training and ten weeks of field training. According to the TCC website, individuals attending its training are responsible for paying their own tuition, room, board and travel expenses while learning to become dispatchers. However, some railroads reimburse the TCC graduate for his or her $2,500 tuition cost.[22] Based on this, the TNR is paying each dispatcher $2,500 for training.

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[20] *See* Workpapers Vol. 18, pp. 09084-110 and electronic workpaper files "TNR Training and Recruitment.xls" and "AMDG orientation.pdf."

[21] This dispatcher training program was established in conjunction with BNSF (which is headquartered in Fort Worth) and Johnson County Community College.

[22] *See* Workpapers Vol. 18, pp. 09111-17.

Maintenance-of-way crew members are paid 80% of one week's salary during training and maintenance-of-way supervisors are paid two weeks salary during training. In addition, the TNR incurs a $5,000 training cost for each maintenance-of-way crew member and supervisor. IT specialists are paid four weeks salary to set up the computer system of the TNR.

An amount of $1,247 per person is included to account for the initial hiring cost of TNR personnel.[23] This initial hiring cost is based on an assumption that 60 percent of employees are hired by word of mouth, 10 percent of employees are hired using a recruitment firm, 15 percent of employees are hired through advertisement and 15 percent of employees are hired through other means. This percent distribution of hiring methods is based on an annual survey of recruitment practices performed by the firm of Drake Bean Morin.[24]

Initial hiring and training costs are start-up costs, and will not be incurred on an annual basis. Accordingly, they have been capitalized and recovered over the life of the TNR.[25] This is consistent with the "matching rule" which is an accounting

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[23] *See* electronic workpaper file "TNR Training and Recruitment.xls."

[24] *See* Workpapers Vol. 18, pp. 09118-21 and electronic workpaper file "TNR Training and Recruitment.xls."

[25] The initial hiring and training costs have been added to the engineering costs for tax depreciation purposes and recovered over 20 years in the DCF model discussed in the Section II-G, infra. *See* electronic workpaper file "TNR_OP_EXP.XLS" and Workpapers Vol. 18, pp. 09074-75.

principle that holds that expenses should be matched with the revenues those expenses are used to produce. By hiring and training its employees, the TNR is making an investment in human capital. Most of these employees will participate in activities that will generate revenue for the TNR for years to come. Therefore, the training and hiring costs associated with these employees should be "matched" to future revenues. A business's start-up costs should be amortized, and those start-up costs include expenses paid or incurred in connection with "any activity engaged in for profit and for the production of income before the day on which the active trade or business begins."[26]

Annual training and recruiting cost are also included based on the assumption of a three percent annual attrition rate. This is the attrition rate cited for CSXT in the article *With the UP Still Snarled, Shippers Look Nervously to Next Mergers*, published in the April 1998 Global Logistics & Supply Strategies. *See* Workpapers Vol. 18, pp. 09076-83.

Travel expenses have been included for all TNR employees at the Director level and higher and for the three outside Board of Director members. Travel expenses of $8,000 for each of these individuals is included. This amount is based on an annual survey of corporate travel managers performed by Runzheimer International, which estimates the annual cost of corporate travel for corporate employees that travel for business. *See* Workpapers Vol. 18, p. 09072.

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[26] U.S. Master Tax Codes, Section 904; *See* Workpapers Vol. 18, pp. 09074-75.

The initial training for the TNR's operating personnel is being out-sourced to appropriate training schools, of which there are several located around the country. This out-sourcing approach to initial training is very common for regional railroads, and it is also used by Class I carriers. Because the initial training for train crews is being out-sourced, the TNR has no need for the kind of expensive training tools, such as locomotive simulators, used on large Class I railroads.

The TNR's other items of start-up costs are covered elsewhere. These include road property investment costs (and in particular the construction of its fixed facilities), which are included in the railroad's capital costs, and equipment acquisition. Consistent with the stand-alone theoretical principles of unlimited resources and barrier-free entry, the ready availability of materials and equipment is to be assumed.

An amount of $7.5 million has been provided for initial TNR training and recruiting costs. Further details concerning the development of this figure are included in electronic workpaper file "TNR_OP_EXP.xls."

d. Other (Information Technology Requirements)

The TNR is a unique railroad in that it handles only trainload movements. This reduces the complexity of computer and communications systems required to support its operations. The computer system requirements of a typical Class I or regional railroad can be very complex due to the large number of customers served, large number of different commodities handled, large number of different origin and destination pairs,

different types of equipment required to handle the lading, yard operations to handle blocking, and service commitments to customers on an individual car basis. The TNR will have only four local customers, eight interchange points, service measurements by train rather than by individual railcars, and multiple car billing with the RMI Revenue system used to allocate revenues. This type of operation simplifies the information technology requirements considerably, and renders unnecessary the colossally expensive mainframe systems that Class I carriers such as BNSF use.

Based on the TNR operating plan and G&A staff departments, the capital requirements for requisite information technology and communications systems are equal to $2.3 million. *See* electronic workpaper file "TNR-Capital Budget.xls." The annual operating cost for information technology and communications is equal to $4.0 million at year 2000 price levels. *See* electronic workpaper file "TNR-Operating Budget.xls." Table III-D-6 below shows the capital and annual operating expenses separately for information technology and communications systems.

TABLE III-D-6
Capital and Operating Costs for
TNR Information Technology and Communications Systems

Item	Capital Cost	Operating Cost
Information Technology	$1,782,393	$3,779,046
Communications	$553,157	$247,937
Total	$2,335,550	$4,026,983

The TNR's computer and communications system is described below. It has been designed to meet the TNR mission-critical technology needs to achieve operating efficiencies, customer satisfaction, minimal staffing, maximum productivity, and safe train operations.

i. Transportation System

The key item in the TNR information technology architecture is RMI's Transportation Management Services ("TMS") package. This design is very similar to the one currently used on the Transportacion Ferroviaria Mexicana ("TFM"), the Mexican Railroad partially owned by the KCS, though the TMS system has considerably more functionality.

TMS is an integrated system for managing day-to-day rail operations. It includes modules for yard and inventory control, waybilling, train operations, switching settlements, demurrage, EDI consists, waybills, bill of lading, blocking instructions, work orders, switch instructions, and many other features. This system is outsourced to RMI using frame relay communications from Alliance (where the major transactions reporting will occur) to Atlanta, GA, where RMI is located. Field personnel access the RMI system via the Internet.

The capital cost for the RMI system is $300,000, which includes training and implementation. *See* Workpapers Vol. 18, p. 09133 and electronic workpaper file "TNR-Capital Budget.xls." The annual operating expense is $2.36 million based on the

number of carload transactions required by the TNR. *See* electronic workpaper file "RMI Price Sheet.xls."

ii. Crew Management System

A crew management system is needed to efficiently manage the TNR train crews and equipment utilization. The TNR will purchase a license from PS Technology for the SCAT Client Server system, and related equipment and software (Oracle Data Base). This system would provide the capacity needed to schedule train and engine crew requirements over the TNR system. It also minimizes the need for a large staff of crew callers or other crew management personnel.

The cost of the PC-based system for handling approximately 579 train/engine/yard employees (peak year) and six crew-change points is $502,000. This cost assumes a start-up fee of $150,000 for the system, and an additional $46,000 per 100 employees. *See* Workpapers Vol. 18, pp. 09171-74.

iii. Dispatching System

A computerized dispatching system monitors the movement of trains and other equipment at all times, and distributes traffic efficiently across the railroad. The TNR will purchase and implement a PC-based version of the Alstom CTC Dispatching system. This system is similar to the one that is currently being used by the KCS. This system has plenty of capacity to meet the TNR's needs and includes all necessary

equipment, installation and on-site tests. A detailed description of the system's capacity is included in Workpapers Vol. 18, pp. 09169-70.

The estimated cost for a four-dispatcher Alstom system with hot standby servers is $570,000. This is more than adequate to meet the TNR's need for dispatcher coverage three shifts per day, seven days per week. Therefore, $570,000 is included in capital costs to cover the cost of the dispatching system.

iv. Revenue Accounting

The TNR needs a revenue system to handle interline settlements for all the unit coal train transactions and the overhead traffic. RMI has a revenue system that will provide all the functionality required by the TNR. In particular, the RMI Revenue Management Services ("RMS") is a full-function revenue management system that has been certified by the AAR for Interline Settlement System ("ISS") processing. *See* Workpapers Vol. 18, pp. 09146-60. This certification allows railroads using ISS/Connect to participate in the ISS. ISS/Connect provides complex rate management, EDI management, freight billing, support for industry reference files, revenue protection, and additional functionality. The RMS costs are based on the total month settlements. The TNR has an estimated 117,024 interline carloads annually that will processed through the revenue management system at a cost of $1.23 million. The capital cost for implementing and training on the RMI Revenue System is $50,000. These costs are shown in electronic workpaper files "TNR-Capital Budget.xls" and "TNR-Operating Budget.xls."

v. Car Accounting

The TNR needs a receipt and a payable car hire system, even though the vast majority of the coal movements occur in private cars, because the TNR owns some open-top coal cars for its coal movements and the TNR also handles a variety of non-coal, overhead movements between Amarillo and Oklaunion, TX. RMI has a car hire system that provides the necessary features needed by the TNR to keep track of foreign cars on-line and compute charges due from it to foreign roads. The system separates car earnings by designated owner groups, issues remittance and settlement summaries, flags non-moving cars and missing junctions, and helps keep track of assets with on-line access to car movement data.

The capital cost for the car hire RMI system is $50,000, which includes training and implementation. *See* electronic workpaper file "TNR-Capital Budget.xls." The annual operating expense is $105,000 based on the number of non-private interchange cars per month. *See* electronic workpaper file "TNR-Operating Budget.xls."

vi. General Accounting

The Peachtree MAS200 package is used for the TNR's general accounting system. Peachtree MAS200 is an industrial-strength accounting software package that will adequately support all the general accounting functions the TNR requires. It is capable of handling high-volume accounting transactions daily, and has multi-user network capabilities. Peachtree MAS200 provides financial snapshot and business

analysis reporting, extensive job costing and powerful inventory management. The software is designed to run on the Windows 2000 and Windows XP operating systems. The total cost for this system, including hardware and software, is $23,125. This cost includes a Dell OptiPlex GX60 PC, cables, HP LaserJet 5000nt printer and the Peachtree MAS200 software. Details are included in Workpapers Vol. 18, pp. 09175-215.

vii. Human Resource Management

The TNR uses Optimum Solutions, Inc.'s NT/PC based system for human resources. This system provides adequate coverage of the TNR's human resource data needs at an affordable cost. The software package includes all basic employee reporting features, employee profile tracking, attendance reports, benefit, insurance and COBRA reports, compensation/job history reports, EEO and citizenship reports, organizational reports, and all OSHA and workers compensation reports. The capital cost for this system is $11,500 with an annual license fee of $2,500 for 2-5 users. The total hardware cost for this system is $7,590.97, which includes a Dell OptiPlex GX60 PC, cables, an HP Laser Jet 5000N printer and a Dell PowerEdge 2600 Server. *See* Workpapers Vol. 18, pp. 09216-24.

viii. Network And Router Equipment

The TNR needs networking capability and routers because it has a relatively small number of computers in multiple locations. Networking and router equipment permit these computers to communicate with one another. The TNR needs one router at

each field reporting location and two at its headquarters. The cost for the networking equipment includes $89,961 for a networked server system with backup located at headquarters, including Local Area Network (LAN) and Wide Area Network (WAN) capabilities. Additionally, $7,216 is included for routers at various locations, and $18,000 for Internet access for headquarters and field locations. *See* Workpapers Vol. 18, pp. 09257-63.

ix. Network Security

The TNR also needs security devices to protect its network. The TNR will have a firewall system at its Alliance headquarters. The system to be used is a Watchguard Firebox 1000 system at a cost of $2,998 and annual operating expense of $350 for maintenance. The Watchguard is a comprehensive, easily managed firewall and Virtual Private Network (VPN) security appliance for mid-size businesses requiring a secure, private network. It permits headquarters personnel to safely access the Internet and also permits 50 computers to remotely access the main network all with fully-secured access. The specifications for this system and its cost development are shown in electronic workpaper file "TNR-Capital Budget.xls."

x. Workstations and Printers

Both desktop and laptop PC's are provided in the TNR's IT costs, with a high-end configuration to run a state-of-the-art operating system while avoiding the need to purchase other applications. One PC is provided for each general and administrative

employee as well as for operating personnel located at headquarters. Additionally, one PC is provided at each crew change point and the major yard locations where employees are assigned. Laptops are provided for use by employees who are required to travel a considerable amount of their time. The total capital cost for desktop and laptop computers is $170,665. *See* electronic workpaper file "TNR-Capital Budget.xls."

The TNR needs a variety of printers for work orders, safety bulletins and normal office work such as printing contracts, correspondence and reports. A color printer is needed for various maps, charts and diagrams. Printers are also needed in the field and at major interchange locations to print information relating to the work performed there. IT expenses for the TNR include a desktop laser printer for each desktop PC, and a printer for laptop PCs where needed. One color and two line printers are installed at headquarters, and one line printer at each of the TNR's two yards and crew change points. The total cost for these printers is $78,144. *See* electronic workpaper file "TNR-Capital Budget.xls."

xi. Voice and Data Communications

The TNR needs a telephone system and telephone service for external calls. This system includes traditional telephones for each administrative employee, the NTS telephone system, a voicemail system and a calling card system. NexPath Telephony Server-NTS Server Rack Mounted Systems is capable of handling 51 outside lines and up to 85 extensions. The one time total cost for this system is $22,295 for the server, $100

per telephone and $50 per telephone for installation. This system is capable of handling internal calls over the microwave system and external calls from various parties. The external calls consist of local and long-distance telephone servers, 800 services, paging and faxing. The estimated cost for external service is $50 per administrative employee. *See* Workpapers Vol. 18, p. 09296.

Data telecommunications to support the RMI transportation system from Alliance to Atlanta is provided by AT&T. This will be a frame relay system that is based on estimated transactions. The cost for this service is $1,000 per month or $12,000 per year. The Internet is used for data communications for all the field offices. The field offices have Internet access to the RMI transportation system in Atlanta. *See* electronic workpaper file "TNR-Operating Budget.xls."

Cellular phones and pagers are provided for employees who need them to perform their work efficiently. The total capital cost for the cellular phones and the NTS system is $74,480, and the annual expense for all the above systems is $217,937. *See* Workpapers Vol. 18, p. 09264.

xii. Automatic Equipment Identification

Automatic equipment identification (AEI) includes a trackside scanner that reads information from each car (car number and initial) in a manner similar to reading a bar code. That information is accumulated on a PC while the train passes a specific site where the scanner is installed. These readings are then compared to the train consist

residing on a computer to determine if there are any discrepancies. If discrepancies exist, the consist record is adjusted to agree with the reading from the scanner.

AEI enhances car and locomotive utilization, increases train consist accuracy and improves the railroad's ability to reorganize cars within a consist. Since the TNR is a stand–alone railroad that only handles unit and through trains, the critical points to verify train identification are the eight interchange points (West Campbell, South Logan, Alliance, Northport, Sterling, Las Animas Jct., Amarillo and Oklaunion) and three internal locations, two at Donkey Creek and one at Pueblo Jct. In this kind of train operation, cars stay together as a unit except for the occasional setting out of a bad order car. Therefore, the TNR has 14 AEI scanners as shown in Exhibit III-B-1. The total capital cost for the AEI scanners is $478,677. The derivation of this figure is shown in Workpapers Vol. 18, p. 9304.

xiii. Software Maintenance

Software products such as PC accounting packages that run on a server require payments of annual maintenance fees for support and upgrades. Network software and tools such as security software and monitoring software all require payment of annual fees for support and upgrades. Some of these fees are included in the licensing agreement, such as that for the Optimum Solutions program, which has an annual fee payable for the use of its product. Other providers have a flat charge for the package with

no annual fees, but they will have enhancement upgrade announcements from time to time with a specified charge for the upgrade.

These upgrade fees generally run approximately 15% of the original cost of the product. Therefore, a 15% maintenance fee has been included for products that do not have a stated annual fee. An additional $2,000 per router has been included for LAN software maintenance. The total costs for these fees are estimated at $45,254 per year. *See* electronic workpaper file "TNR-Operating Budget.xls."

xiv. Railinc Services

The TNR requires some Railinc services to pass and receive car information to other railroads, especially in light of the number of interchanges between the TNR and BNSF, UP and NKCR. The total annual cost for Railinc service will be $24,732.

xv. Staffing

The Information Technology sub-department is staffed by a Director and ten IT specialists. Since the TNR will not have a mainframe environment, less IT effort will be required than at Class I railroads due to the relative simplicity of a NT/PC based system. A staff of eleven people is adequate to provide coverage twenty-four hours per day, seven days per week with at least one person each shift, and six full-time specialists on duty five days per week during normal business hours. Also, most of the application software proposed is available off-the-shelf, which requires very little development and maintenance effort – all of which the TNR's staff can perform.

The primary IT staff function is to trouble-shoot various problems with vendors, coordinate the transportation applications with RMI and the business users, and monitor the network infrastructure. There also will be occasions when enhancements will be required to the crew calling and dispatching systems, which will be performed by the in-house IT staff. The staffing of eleven IT positions consists of the following:

- One IT Director - oversees the IT department's daily activities, provides senior management with updates on new technology, and creates the future strategic direction for the department. This includes the formulation of the logical and physical computer architecture plans and assessing the cost and feasibility of all user requests.

- One Lead RMI Technician - responsible for all RMI applications and serves as a liaison to RMI and the user Departments. This person ensures that all the users' needs are meet in an efficient and timely manner.

- One Help Desk PC Technician - takes incoming calls from the various users and reroutes the call to a PC Technician for immediate handling. This position follows-up with the user to make sure the problem has been resolved. This assignment is during regular business hours with an answering machine to take calls during the night and the weekends. These messages are monitored by the on-duty Technician to assure prompt handling.

- Three PC Technicians - provide user support in the day-to-day operation of the TNR's operating system and applications software and computers. These positions provide technical support, including configuring desktops and maintaining network connectivity and printing capability. This assignment is during regular business hours with an answering machine to take calls during the night and the weekends. These messages are monitored by the on-duty Technician to assure prompt handling.

- Two Network Engineers - responsible for overseeing network reliability, security and functionality. These positions are also responsible for planning, designing and managing transmission facilities and cabling and communications devices. These positions also handle any telecommunications issues that may occur.

- Two Programers - responsible for maintaining and upgrading the crew calling and dispatchers systems. These positions work closely with management of the crew calling, dispatching and accounting systems. These positions are also responsible for developing a corporate web site and intranet as needed. The TNR's web site will not be elaborate because its customer base is very small.

- One Exchange 2000 Engineer - responsible for messaging design and implementation of the Windows 2000 Exchange Server. Handling the Exchange server is not a full time job. Consequently, this position also assists the PC technicians and network engineers as needed.

Annual costs for IT staff compensation are detailed in Table III-D-5.

xvi. Outsourcing

The TNR is not out-sourcing any functions, except to the extent that such systems are predicated on external processing and handling. In particular, all of the services from RMI's systems (*i.e.,* transportation management, revenue accounting and car accounting) require significant resources from the vendor. Thus, the annual cost for RMI's services is $3.7 million.

Finally, the TNR does not require a data center facility such as those that Class I railroads typically have to house mainframe computer systems and associated peripheral equipment. Since TNR's IT system design is NT/PC based, this system can be

housed in a room approximately 15' X 20', with normal office environment heating and air conditioning. This room is located in the TNR's Alliance headquarters.

4. Maintenance-of-Way

The maintenance-of-way and structures ("MOW") plan for the TNR was designed by AEP Texas' expert MOW witnesses, William L. Krestinski and Alan Blackwell, in cooperation with AEP Texas' principal operating and engineering witnesses, Paul H. Reistrup and Harvey H. Stone. Collectively, these individuals are highly qualified to develop a MOW plan for this stand-alone railroad.

Mr. Krestinski had a 30-year career with CP Rail, where he was responsible for MOW both in the field (at various locations) and at the staff level. In the mid-1990's Mr. Krestinski served as one of CP Rail's two General Managers responsible for infrastructure maintenance systemwide, including the CP Rail lines in the United States.

Mr. Blackwell was employed by the Union Pacific Railroad from 1979 through 1995. He occupied several MOW-related positions in UP's Engineering Department including Track Inspector and Manager Track Maintenance (Roadmaster) on UP's high-density coal lines emanating from the Powder River Basin.

Mr. Reistrup has 45 years of rail operations and engineering experience, including service at CSXT and its predecessors, and as President of Amtrak and the Monongahela Railway. In addition to his extensive rail operations and executive

experience, Mr. Reistrup also occupied several field MOW positions for the Baltimore & Ohio Railroad, one of CSXT's predecessors.

Mr. Stone is President of Stone Consulting & Design, an engineering firm with substantial experience in developing and implementing MOW plans for regional and start-up railroads.

In designing the TNR's MOW plan, AEP Texas' engineering experts were guided by the following precepts:

- use of an efficient workforce consistent with the stand-alone concept;
- consolidation of activities to the maximum extent feasible;
- match the maintenance plan to the requirements of the TNR's unique traffic group;
- use outside resources (contractors) rather than in-house MOW forces wherever this is more cost-efficient;
- rely upon empowered employees to carry out assigned responsibilities with minimum oversight; and
- staff the TNR's MOW force so that all routine and emergency repairs can be attended to by in-house or (where appropriate) contractor forces.

a. <u>General MOW Staffing Approach</u>

The TNR's MOW personnel are shown in Table III-D-1 on pp. III-D-9 to 10, *infra.* This staffing, which is described in detail later in this Subpart, was developed on the basis of the following considerations.

MOW on Class I railroads is usually governed by strict labor agreements which include provisions that prevent the use of the most efficient methods available. Indeed, Messrs. Krestinski and Blackwell have both experienced the artificial limits such agreements put on work assignments for MOW staff. As a SARR, the TNR is not bound to follow the traditional methodologies and practices employed by most Class I railroads today. For example, the TNR's MOW employees will be cross-trained so that an individual can perform the functions of a track maintainer or welder one day and operate a machine the next. Compensation of the TNR's MOW employees, while comparable to that for Class I employees, will be tied to productivity, safety of trains and personnel, minimization of expenses, and maintenance of the railroad in good condition within the parameters of each area of responsibility.

The TNR will contract out for many maintenance services, including some routine (spot) maintenance work that is usually performed by in-house personnel on Class I railroads. This minimizes the expense of administration and benefits, and it reduces the need to acquire and maintain a large fleet of vehicles or specialized track machinery and equipment. The TNR will also employ a substantial force of permanent MOW employees to carry out routine inspections and maintenance including some emergency repairs, as described below.

Although weather and other conditions are important considerations, the total annual gross tons per mile traversing a particular line have the greatest impact on

railroad infrastructure condition and largely dictate how the TNR's MOW resources should be allocated. In particular, the placement of MOW crews is driven by the gross ton miles traveling over the TNR's various line segments. The staffing is based upon industry best practices and the vast personal experience of the TNR's railroad engineering/MOW experts. The staffing also takes into account the smaller in-house staffing needed for a new railroad such as the TNR (as detailed below), the type of rail being used, and other technological advances in recent years.

Another significant factor in the TNR's MOW plan is that all of the TNR's main tracks, except where the TNR is using trackage rights, are being maintained to FRA Class IV track safety standards. All tracks are also being maintained at a level to permit the movement of 286,000 GWR cars at a maximum authorized train speed (where conditions permit) of 60 mph on all main lines, except that loaded coal trains are limited to a maximum speed of 50 mph.

b. <u>In-House Field Maintenance Staffing</u>

At the heart of any MOW plan is the railroad's in-house field forces. The members of the MOW staff are the key to maintaining and inspecting the railroad's infrastructure on a daily basis. The number of MOW employees and their territorial coverage are therefore critical.

i. Historical Crew Sizes and Recent Changes

As late as the mid 1970s and into the 1980s, many Class I railroads employed large maintenance gangs of 12 to 15 people as their basic MOW force. While this approach was comprehensive, it was, in many instances, inefficient. For example, the Canadian Pacific ("CP"), where Mr. Krestinski was a senior MOW manager, found that modern highly productive MOW equipment, longer lasting track components and other technological improvements created redundancy in its large, 12 to 15-person maintenance gangs. Consequently, in the mid-1980's CP began a comprehensive overhaul of its MOW field staff. The end result was that CP determined that gangs of 12 to 15 were unnecessary. CP eliminated the large maintenance gangs and redesigned its basic MOW force to a Foreman and four (4) crew members (one of whom is a signal maintainer) who are responsible for about 70 route-miles of track. At the same time, some functions, such as welding, were bolstered by separate welding crews allocated over more than one maintenance district.

Through these combined actions, CP ultimately reduced its MOW force by nearly 60 percent between 1985 and 1995.

While CP pursued force reductions, it also increased the amount of spot maintenance work that it contracted out particularly for activities that do not need to be performed on a daily or weekly basis. Activities such as ditching, brush cutting (outside the ballast section, along the right of way, and to maintain sight lines at level crossings),

vegetation control in the ballast section, thermite welding, level crossing rehabilitation, culvert cleanout, building repairs as well as snow, rock and mud slide repairs, that were once handled in-house were successfully contracted out. The principal benefits of CP's new approach was that it reduced its need for staff, including all the fringe benefits for that staff, and it reduced the need for CP to own and maintain a large fleet of MOW-related equipment. The opportunity to contract out this work relieved the company of the ownership and maintenance costs for backhoes, brushcutters, weed sprayers, pressure/boring equipment (for culvert cleanout), front end loaders, *etc.*

Another Class I Canadian railroad, VIA Rail Canada, operating on Class V track, where Mr. Krestinski is currently resident Engineer on behalf of Rail Term, Inc., also contracts out all of the annual work described in the preceding paragraph, and as a consequence has no need for and does not own any of the equipment listed.

Mr. Blackwell's experience on the Union Pacific ("UP") is similar. During his tenure as a Manager of Track Maintenance from 1987 to 1990 – a position similar to BNSF's Roadmaster position – Mr. Blackwell saw a rapid reduction of UP's in-house MOW forces. For example, in his territory of approximately 120 miles (UP's high-density main line between Kearney-Gibbon-Columbus, NE), UP reduced its forces from 11 section crews to three section crews, and it reduced the crew size from a foreman and four trackmen to a foreman and three trackmen. At the same time UP was *reducing* its MOW forces, it was *adding* triple track to this very same territory.

What is more remarkable is that this territory is among the busiest rail corridors anywhere in the world. It is located just east of North Platte, NE where UP's line from the PRB and its transcontinental main line merge. Virtually all of UP's PRB coal traffic passes through this territory and a tremendous volume of non-coal traffic moves through the territory as well. During Mr. Blackwell's tenure, the territory was triple-tracked between Kearney and Gibbon, and it carried 100-150 trains a day. The rest of his territory was double tracked.

Despite carrying up to 150 trains a day, Mr. Blackwell's territory had only three section crews. Each crew covered about 40 miles of double (or even triple) track territory, and crews would often assist each other when emergencies would arise. Since Mr. Blackwell left the UP in 1995, the roadmaster territories have been expanded to approximately 200 miles.

In contrast to CP and UP, BNSF does not appear to have significantly changed its basic MOW force sizes in the past 20 years. Indeed in the *Otter Tail* case, BNSF relied heavily on its current MOW staffing levels in developing its MOW reply evidence. Therein, BNSF argued for a permanent maintenance force of 449 people, which was the equivalent of one maintenance worker for every 3.11 route miles and every 3.94 track miles. This kind of MOW staffing proposal is overkill. For example, CP employs about one maintenance worker for every 10.75 route miles on its busy line between Montreal and Toronto. As previously indicated, UP uses three basic, four-

person field MOW crews to cover 200 miles of high-density main line in Nebraska; this represents 16.7 miles per employee.[27] The TNR equivalent is 18 field crews of four people (excluding the signal maintainer on each crew) covering 1,186.54 miles (*see* Table III-D-7, *infra*). This represents 16.2 miles per employee which is similar to UP's coverage.

ii. Basic Maintenance Forces of Regional Railroads

Regional railroads which Messrs. Krestinski and Blackwell have assessed during the past five years maintain staffing ratios from a low of eight route miles per maintenance worker (on the Ontario Northland Railway) to a high of 20 route miles per maintenance worker (on British Columbia Rail). The maximum annual tonnage handled by these railroads is approximately six and 42 MGT, respectively. MOW staffing at a level of approximately eight route miles per maintenance worker involves a Foreman and three crew members covering approximately 35 route miles. Staffing at approximately 20 route miles per maintenance worker involves a Foreman and two or three crew members, depending on the territory, covering an average of 70 route miles.

iii. The TNR's Basic Maintenance Force

Messrs. Krestinski and Blackwell have provided a standard TNR field maintenance crew size of five persons (one foreman, one signal maintainer and three track maintainers). As explained above, this crew size is consistent with the practices of

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[27] *See* electronic workpaper file "UP MOW Staffing.pdf" for more details on UP's field MOW crew staffing.

many regional and some Class I railroads. Moreover, this crew size embodies the concept that some work traditionally handled by in-house personnel will be contracted out.

Each of the TNR's basic, cross-trained field-crew units is expected to perform the following types of tasks in its maintenance district:

- track inspection (while mandatory inspections are normally the responsibility of the Assistant Track Supervisor, special inspections are performed upon request of the Supervisor);
- bridge deck and culvert inspection;
- flagging work at public crossings at grade (provide protection for workmen as well as the traveling public);
- flagging work for outside contractors (provide protection from train movement);
- repair detected and service-related rail defects;
- replace failed tie plates/insulator/clips;
- replace occasional defective ties at critical location (joint, switch point, frog, crossing, etc.);
- correct track geometry defects, including surface, line and gauge;
- shim local high spots (usually due to frost heave);
- effect welding repairs to frog/rail end/switch point;
- slot joints (to prevent chipping of rail end);
- make adjustments to turnout/diamond components to standard;
- replace missing and broken joint bars/bolts;
- plug holes and re-drive high spikes;

- remove snow from switches;
- replace/repair damaged signs; and
- maintain material stocks and right-of-way in neat and tidy condition.

iv. Deployment of the Basic Field MOW Forces

In Messrs. Krestinski and Blackwell's experience, the placement of MOW crews and supervisors is a function of the spot maintenance duties for which each crew is responsible as well as the capacity to handle those duties adequately. While speed and tonnage handled are factors, they are not as significant as one might first expect since the effects of both have their remedy in program work more or less in proportion to the magnitude of each. In other words, high axle loads moving at high speeds place large demands for rail and tie replacement programs which are capital intensive and executed by large gangs, typically hired by contractors. While there are, of course, some exceptions, the factors of most significance in the design and placement of a SARR's internal MOW forces include:

- number of switches that need to be inspected and adjusted as necessary;
- number of road crossings at grade – flangeways need to be kept clear of debris and, where equipped with flashing lights/gates, the mechanisms require regular testing;
- type of rail (jointed or CWR) – jointed rail presents additional concerns in the joint area such as:
  - ➢ rail end condition (remedied by slotting/welding/grinding);

- ➢ joint bar failure;
- ➢ loose /missing bolts;
- ➢ accelerated tie deterioration;

- multiple tracks potentially double the work at road crossings at grade but are helpful in gaining work windows for the crews;
- yards present special maintenance challenges, not the least of which is access to the yard tracks account yard activity;
- traffic density effects the ability to obtain work windows; and
- route miles may require some track inspections to be performed by maintenance gangs in lieu of their normal assignment to the Assistant Track Maintenance Supervisors.

Where a MOW crew has maintenance responsibilities for a yard, the territory assigned to that crew is less than 60 route miles. Where a MOW crew has no yard, the route miles assigned vary between 65 and 70 miles.

c. <u>Supervision of the Maintenance Bases</u>

The TNR has 18 maintenance bases which are subdivisions of larger maintenance districts. The TNR is divided into six maintenance districts, each headed by a Field Maintenance Supervisor with assistance from an Assistant Field Maintenance Supervisor. The Field Maintenance Supervisors are headquartered at Donkey Creek, WY, Alliance, NE, Denver and Pueblo, CO, Boise City, OK, and Amarillo, TX. The Assistant Field Maintenance Supervisors are based at Donkey Creek, Alliance, Brush, CO, Pueblo, Boise City and Quanah, TX.

The maintenance district sizes and locations are consistent with Mr. Krestinski's and Mr. Blackwell's experience on heavy-haul Class I rail lines as well as modern rail industry practice. As mentioned *supra*, UP's Directors of Track Maintenance typically oversee about 200 route miles in heavy-density territory.

The TNR's Field Maintenance Supervisors are responsible for overseeing MOW activities within their respective districts, including:

- ensuring that all employees under their oversight are equipped with the means and training required to carry out their duties safely;
- knowing what needs to be done and ensuring that all employees in their charge are similarly aware and are equipped and trained to do the work properly;
- developing their Assistant Field Maintenance Supervisors, as well as other staff, with succession in mind;
- promoting the objective of their team (and the railroad) which is to maintain the fixed plant infrastructure in the most cost-effective manner possible and, when funding does not permit, using whatever measures are available to him to protect the safety of operations;
- with input from their assistant(s) and the MOW crews, prioritizing the day-to-day maintenance activities;
- assessing plant condition and justifying to the Director of Track Maintenance & Programs their recommendations for major work programs, short and long term;
- coordinating mobilization of MOW crews required to respond to an arising emergency;
- interfacing and cooperating with non-railroad (governmental) jurisdictions to ensure successful execution of work requiring their involvement;

- initiating work place audits in order to evaluate work standards and performance safety;
- investigating breach of rules/regulations and recommending discipline, if any; and
- conducting occasional mandatory track inspections normally performed by an Assistant Field Maintenance Supervisor, should circumstances so require.

The Field Maintenance Supervisors' time is divided between capital and operating expense projects. In Mr. Krestinski's and Mr. Blackwell's experience managing people in a similar position, in a typical year a Field Maintenance Supervisor spends about 50% of his time on capital projects and 50% of his time on routine or "spot" maintenance; therefore, 50% of his time is allocated to operating expense. While the Field Maintenance Supervisor's duties are varied and many, overall he has a two-fold role. First, he has primary responsibility for day-to-day maintenance, which is virtually all non-capital; and second, he recommends short and long term work programs, much of which is capital-related.

Day-to-day maintenance includes the activities detailed on pp. III-D-72 to 74, *supra*. Program work, which includes rail replacement, ballast cleaning, tie renewal, surfacing, vegetation control and bridge & culvert repairs, to name the significant items, requires about 70% of each Field Maintenance Supervisor's time, of which 50% is related to capital. Specifically, his involvement is as follows:

- Rail replacement - Track Geometry Cars ("TGC") have transformed rail condition evaluation from the tedious, labor intensive job it once was to

something more scientific and manageable. Even so, validation of the TGC's data, involving manual checks in the field, has proven necessary.

- Ballast cleaning - design of the program involves a careful review of the existing ballast condition. While actual field inspection, using hand tools, is by far the best way to confirm ballast quality, where programs involve many miles of undercutting, sledding or whatever method may be employed to improve ballast drainage, other sources of information will augment the field inspection in determining program limits. TGC measurements relating to line and surface as well as performance of the ballast relative to any speed restrictions placed account rough track, significantly influences the design of the ballast program.

- Tie renewal - wood ties have a useful life of from 25 to 35 years on average, depending on the geometrics and environment of their location. If management of the ties has been sound, defective ties are located according to the normal spectrum and generated, annually, at a rate of 2.5 to 3.0% of the tie population. What is not known, without a careful field inspection, is which specific ties require replacement.

- Surfacing - this program very much flows from the track geometry car measurements. Additionally, depending on the other work carried out in the territory, such as tie replacement, which causes ballast to be disturbed, such work sites may also require inclusion in the surfacing program.

- Vegetation control - removal of trees, brush and grass outside the ballast section, necessary for clearance and sightline maintenance needs to be identified and quantified. It is also critically important to keep the ballast section free of vegetation. Failing to do so will soon result in fouling of the ballast, thus hindering good draining which is indispensable to maintaining good line and surface.

- Bridges and culverts - inspection of major structures is conducted annually, in the company of the bridge and culvert inspector. By means of this inspection, the work proposed for execution the following year is evaluated and the multi-year program is reviewed and adjusted based on the most recent inspection.

The Assistant Field Maintenance Supervisors have primary responsibility for inspecting the track twice-weekly, as mandated by the FRA for Class IV track. Each Assistant Field Maintenance Supervisor has primary inspection responsibility for approximately 150 miles of track, on average. The requirements of the regulator can be satisfied when, for example, 75 miles of track (Sec. A) are inspected on Monday and 75 miles (Sec. B) on Tuesday. The supervisor is involved in any of a variety of non-inspection duties on Wednesday, such as oversight of a MOW crew or assisting a contractor in rehabilitating an at-grade road crossing. He resumes his inspection of 75 miles of track (Sec. A) on Thursday and 75 miles (Sec. B) on Friday.

Hi-rail capability allows the supervisor great flexibility as he is able to move by road to any section of track requiring inspection thereby skirting a track occupancy which is not convenient for inspection at any particular moment. Additional flexibility is available for inspection duties, where circumstances dictate, whereby a Track Maintenance Supervisor or a MOW crew, itself, is called upon to perform inspections. The only requirements are that (i) the track be inspected twice weekly, and (ii) it be conducted by competent persons. Both of these conditions are satisfied in the design of the TNR's field MOW forces.

The TNR's Assistant Field Maintenance Supervisors also inspect (and direct the field MOW crews in inspecting) the TNR's other facilities, including bridges

and signals, within their respective districts. More specifically, the Assistant Field Maintenance Supervisors engage in:

- inspection of track infrastructure for any condition at variance to standard;
- inspection of turnouts and submission of monthly reports in accordance with the requirements of the railroad and the FRA;
- inspection of drainage systems for interference with natural flow;
- inspection and remediation as necessary of safety conditions at road grade crossings, including clearing of flange-ways and maintenance of adequate sight lines;
- inspection of bridge decks;
- periodic testing of road grade crossing signals; and
- reporting of any condition requiring the attention of MOW crews for appropriate action.

The Assistant Field Maintenance Supervisors' time is also divided between capital and operating expense projects. In the experience of Messrs. Krestinski and Blackwell while managing people in a similar position, in a typical year an Assistant Field Maintenance Supervisor spends about 20% of his time on capital projects. Therefore, 80% is allocated to operating expense.

Maintenance districts. The following table details the TNR's maintenance districts and bases, as well as their territorial coverage.

TABLE III-D-7
Staffing and Territorial Limits of TNR MOW Forces

Field Maintenance Supervisor HQ	MOW Crew HQ	Territory	Miles From	Miles To	Total Miles	Total Staff
Donkey Creek	Converse	Orin	MP 73.00	W. Coal Creek (MP 25.95)	49.03	F+4
			Reno Branch		6.46	
			Other Mine Spurs		1.89	
					57.38	
	Donkey Creek	Orin	MP 25.95	Donkey Creek Jct. (MP 0.00)	25.97	F+4
			West Leg wye		0.40	
		Campbell	Campbell Branch		9.95	
			Mine spurs		2.49	
		Black Hills	W. Campbell (MP 588.26)	Moorcroft (MP 569.00)	20.95	
					59.76	
	Newcastle	Black Hills	Moorcroft (MP 569.00)	MP 504.00	65.00	F+4
Alliance	Edgemont	Black Hills	MP 504.00	Edgemont (MP 476.10)	27.90	F+4
		Butte	Edgemont (MP 476.10)	MP 435.00	41.10	
					69.00	
	Alliance North	Butte	MP 435.00	MP 370.00	65.00	F+4
	Alliance South	Butte	MP 370.00	MP 365.45	5.6	F+4
		Butte/Sand Hills	Alliance East/BNSF Connection		1.15	
			Alliance Yard			
		Angora	Alliance (MP 0.23)	MP 50.00	49.77	
					56.52	
Denver	Sidney	Angora	MP 50.00	Sterling (MP 114.95)	64.95	F+4
	Brush	Brush	Union (MP 138.66)	Brush Center (MP 150.00)	11.34	F+4
			Brush Center (MP 454.90)	Hudson (513.00)	58.10	
					69.44	
	Denver	Brush	Hudson (MP 513.00)	Denver (20th St.) (MP 542.10)	29.10	F+4
			Arapaho Spur		7.03	
		Pike's Peak	Denver (MP 0.0)	Castle Rock (MP 32.50	32.50	
					68.63	
Pueblo	Colorado Springs	Pike's Peak	Castle Rock (MP 32.50)	Wigwam (MP 96.10)	63.60	F+4
	Pueblo	Pike's Peak	Wigwam (MP 96.10)	Pueblo (MP 120.27)	24.17	F+4

			Pueblo (MP 120.27)	MP 123.00	2.73	
			Comanche Spur		1.21	
			Pueblo (MP 617.54)	MP 579.00	38.54	
					66.65	
	La Junta	Pueblo	MP 579.00	La Junta (MP 554.86)	24.14	F+4
		La Junta	LaJunta (MP 554.86)	Las Animas Jct. (MP 533.61)	21.25	
		Boise	Las Animas Jct. (235.51)	Ruxton (MP 212.90)	22.61	
					68.00	
Boise City	Harbord	Boise	Ruxton (MP 212.90)	MP 145.00	67.90	F+4
	Boise City	Boise	MP 145.00	MP 80.00	65.00	F+4
	Dumas	Boise	MP 80.00	Julliard (MP 8.20)	71.80	F+4
Amarillo	Amarillo	Boise	Julliard (MP 8.20)	Amarillo BC (MP 0.36)	7.25	F+4
			Harrington Spur		5.17	
			Amarillo BC	Amarillo RR	0.99	
		Red River	Amarillo RR (MP 334.12)	Ashtola (MP 288.60)	44.02	
					57.43	
	Memphis	Red River	Ashtola (MP 288.60)	Childress (MP 220.20)	68.40	F+4
	Quanah	Red River	Childress (220.20)	Oklaunion (MP 156.22)	63.45	F+4
			Oklaunion Plant Lead		.63	
					64.08	
				Total Miles	**1168.54**	
				Total Crews		**18**
				Total Personnel		**90**

The territories assigned to the 18 field MOW crews have been designed to balance their workloads, considering mileage, traffic density, tonnage, special trackwork (*i.e.*, switches) and yard sizes. The field crew maintenance districts are also short enough (an average of 64.9 miles each) that one field crew can assist another if multiple problems occur in the same district.

d. Other Field MOW Staff

i. Signal Maintainers

In addition to the 18 signal maintainers in the field MOW crews, the TNR has a back-up force of six roving signal maintainers. The workload of the signal maintainer assigned to each MOW crew is such that in the event that he is absent from his territory due to illness, vacation or other circumstances, an adjacent assigned signal maintainer may not be able to cover for his absence. Roving signal maintainers fill in on such occasions. In the course of his regular duties, the assigned signal maintainer also needs assistance in troubleshooting, effecting repairs, etc.; the roving signal maintainers provide an invaluable resource in helping to perform these functions. The non-discretionary regulatory requirements for annual and multi-year testing of signal equipment are also met by the roving maintainers.

In addition, one signal maintainer position is staffed at the Alliance headquarters on a 24/7 basis (thus requiring five employees to cover this position). Because continuous functioning of the Alliance dispatch center and the CTC system is critical, a maintainer is on duty at Alliance around-the-clock to respond to failures. This person also coordinates the activities of the field maintenance personnel with the dispatch center.

In addition, the TNR has seven signal supervisors (one for the main office and one for each of the six Field Maintenance Supervisor districts). The Signal

Supervisor's prime responsibility is to coordinate the resources on his territory such that repairs/maintenance that affect train operations are facilitated in the most cost-effective manner possible. The signal supervisors ensure that:

- signal maintainers under their charge are competent and carry out assigned duties safely;
- no equipment or installation condition, putting operations at risk, is allowed to exist, unprotected;
- field and office equipment is reflected on up-to-date "as-built" plans;
- the skills and competencies of signal maintainers are developed to prepare them for promotion to signal supervisor;
- signal maintainers keep field equipment (wayside signals, signal bungalows, switch machines, etc.) in good working order and appearance; and
- recommendations for signal upgrades or other major signal work are submitted, annually, to the Engineer of Signals and Communications.

The TNR's signals staffing is appropriate given the number of signals that need to be maintained on its route. In particular, there are 53,841 AAR signal units on the TNR system. *See* electronic workpaper file "CTC System & Signals.xls," tab "Total CTC & Signals," cell D30. According to Mr. Krestinski, the CP used an average of one signal maintainer for every 2000 AAR signal units. In this case, AEP Texas' experts are being more conservative by assigning one TNR signal maintainer for every 1856 AAR signal units.

ii. Welding Gangs

The basic maintenance forces are expected to handle routine welding chores. However, where an engine burn, chipped rail end or localized rail flow needs to be attended to, a dedicated welding crew is required. Welding crews also restore battered turnout and rail crossing frogs without removing them from track. It is much more efficient to do the welding repairs in place rather than to remove the defective frog and carry out shop repairs. The same is true for jointed rail located in other than main track and sidings. Rail ends must be well maintained and joints slotted regularly to prevent joint failure and premature rail removal from serious rail end batter, crushing and chipping.

In addition, the welding crews provide necessary backup support on larger jobs. Messrs. Krestinski and Blackwell have determined that six welding crews are required. They have assigned one crew to each of six larger maintenance districts where they can be re-assigned as needed to the individual maintenance bases. Each welding crew consists of a two-person team, a welder and a welder helper.

iii. Lubricator Technicians

While the TNR's basic field maintenance crews occasionally attend to rail lubricator maintenance, the TNR also requires specialized rail lubricator technicians. One lubricator technician can easily maintain 15 rail lubricators at a time. The total of number of rail lubricators on the TNR system is 53. The TNR has six lubricator technicians, one

for each of the six maintenance districts. Therefore, the TNR has an ample number of lubricator technicians.

iv. Additional Field MOW Staff

(a) Communications

Communications responsibilities are handled by the signal staff in the field, with assistance from the Communications Supervisor. Today, signal maintainers are no longer just "installers of bond wires." With the introduction of highly technical wayside equipment, speed predictors at road crossings at grade, and hot box and failed/dragging equipment detectors ("FEDs"), the skills of the signal maintainer must be commensurate with the demands of the newer technologies including those pertaining to railroad communications. The Signal Supervisors, similarly, have oversight of the communications requirements. (This position is similar to the Maintainer [or Supervisor or Engineer] of Signals & Communications, which are titles used by some railroads to more accurately reflect the responsibilities of the position.)

(b) Bridges

Bridge deck inspections are performed and minor repairs carried out by the TNR's field MOW crews. This work includes ensuring that loose/missing hardware is tightened/restored, crushed tie pads are replaced, etc. Work of a major nature, including tie damping, shimming, bracing renewal, steel repairs (*i.e.*, rivet replacement using high strength steel bolts, replacement of corroded gusset plates, and the like) is contracted out.

The probability that there will be significant need for this kind of work is very low given that the structures are new in year one of the TNR's 20-year life and the life expectancy of steel and concrete bridges is 74 years.

In the case of large bridge structures, detailed bridge inspections and preparation of covering reports, including recommendations for repairs/replacement, are contracted out to professional firms. This work is commissioned, as required, by the complexities of the particular bridge. As the TNR's bridges are new in year one, AEP Texas' MOW experts do not expect that major repairs will be required during the 20-year asset life.

(c) Buildings

Apart from signal bungalows which, because of their (steel) construction, are maintained by the signal maintainers, the TNR does not have many wayside buildings. They are limited to crew change points and locations where MOW crews are headquartered and MOW equipment is maintained. The railroad also has a headquarters building at Alliance, NE.

e. Senior Supervisors and Office MOW Staff

As noted on pp. III-D-32 to 34, *supra*, the TNR's MOW forces are in the Engineering and Mechanical Department, which is headed by a Vice President who is included in the TNR's G&A expenses. Two other engineering staffers are also in the G&A budget: a Manager of Budgets and Purchasing and a Manager of Testing and

Environmental. These people work primarily on MOW matters, but they also provide assistance for the smaller mechanical services needs of the TNR. Therefore, these positions are being kept in the G&A budget. All other MOW-related supervisors and employees are covered in this section.

The TNR's senior MOW position is the Chief Engineer. He is responsible for supervision of all MOW activities on the railroad, regardless of whether the activities are effected using in-house resources or outside contractors. These responsibilities include:

- supervision of an engineering staff competent to maintain the fixed-plant infrastructure network consisting of track, signals & communications, and bridges & structures;
- maintaining awareness of the infrastructure condition and the resources needed to maintain the plant in a cost-effective manner;
- development of short-term (1 year) and long-term (5 year) basic and program maintenance plans. The "basic maintenance" plan is in force for a year, includes all permanent staff, and is weighted heavily toward routine or "spot" MOW expenses. The "program maintenance" plan involves large-scale track element replacement and other significant activities. It employs outside contractors almost exclusively, and is heavily weighted toward capital expenditures;
- preparing and presenting annual engineering capital and expense plans for management approval;
- collaboration with mechanical and transportation colleagues to provide customer service at competitive rates;
- fostering a safe work environment where mutual respect is evident and employees are anxious to contribute to the success of the enterprise;

- accepting responsibility for the performance of his staff;
- becoming personally involved in derailment investigation where the cause might be related to defective plant;
- developing subordinates to prepare them for greater responsibility; and
- acquainting himself with the latest best-practices adopted on the properties of other railroads and implementing them for the infrastructure under his stewardship.

The Chief Engineer's time is divided between capital and operating expense projects. In the experience of AEP Texas' engineering experts, in a typical year a railroad Chief Engineer spends about 60% of his time on capital projects. Therefore, 40% of his time is allocated to operating expense.

As the basic maintenance funding, by definition, does not change substantially from year to year, the majority of the Chief Engineer's time is spent on evaluating the program maintenance. In order for the Chief Engineer to be in a position to make effective assessments of the work required, the plant condition must be known intimately. Consequently, much of his time is spent in the field evaluating the rail, ballast, tie and bridge condition to ensure understanding of the priorities and needs of the various field maintenance districts. Since, invariably, the total needs (or requests from the field) almost always exceed the available resources, trade-offs and compromises have to be negotiated in consultation with his management staff.

The Chief Engineer has several direct reports: the Engineer of Track, the Engineer of Bridges & Structures; the Engineer of Signals and Communications; the

Manager of Administration; the Manager of Contracts; and the Director of Track Maintenance & Programs.

The Engineer of Track, who is also the Deputy Chief Engineer, is responsible for:

- assuming the responsibilities of the Chief Engineer in the latter's absence;
- ensuring that the track and roadway maintenance work, spot and program, is carried out in accordance with the company's standard practices and procedures and that these are consistent with the requirements of the FRA;
- conducting regular field inspections in order to be well informed with respect to the state of the physical plant and measures required to meet the demands of business;
- maintaining and promoting relationships between the office and field staffs which is crucial to effective management;
- reviewing and making recommendations to the Chief Engineer on the annual financial plan covering track and roadway maintenance;
- setting the technical engineering standards for the track infrastructure proper and with respect to the fixed plant in general;
- recommending, for consideration by the Chief Engineer, short term and long term plans for plant maintenance and improvement;
- collaborating with the Director of Track Maintenance and Programs in the planning, scheduling and execution of the major work programs; and
- approving payments to outside contractors.

The Engineer of Track's time is divided between capital and operating expense projects.

In Mr. Krestinski's experience, in a similar position with the CP and managing others in

that position, in a typical year the Engineer of Track spends about 70% of his time on capital projects; therefore 30% of his time is allocated to operating expense.

Rail, ballast and tie programs are by far the costliest of all railroad MOW work. Cost considerations alone dictate that the Engineer of Track be satisfied that only needed work is carried out, and that such work is prioritized to prevent restrictive slow orders and improperly scheduled or sequenced work. The design of rail replacement, ballast renewal (undercutting, sledding or dump and lift) and tie renewal requires considerable field time – often in the company of the district Track Maintenance Supervisors. While high-tech equipment is available to collect symptomatic information, there is no substitute for field inspection. Decisions with respect to: (i) exhausting rail life in place versus removal and relaying; (ii) whether the ballast is draining well, and (iii) the density and pattern of defective ties can be accurately made only by careful analyses in the field.

The Engineer of Bridges & Structures is responsible for:

- ensuring that the bridges and structures maintenance work, basic and program, is carried out in accordance with the company's standard practices and procedures and are consistent with the requirements of the FRA;
- preparing and recommending to the Chief Engineer an annual financial plan covering bridges and structures;
- being familiar with the general state of repair of the bridges and structures on the network and intimately aware of those needing attention;
- preparing plans and estimates for maintenance and program repairs to bridges and structures;

- approving payments to outside contractors; and
- ensuring that all work, whether carried out by in-house personnel or outside contractors, is executed safely and in conformance with all legislative/ regulatory requirements.

The Engineer of Bridges and Structures' time is divided between capital and operating expense projects. In the experience of AEP Texas' engineering experts, in a typical year the Engineer of Bridges and Structures spends about 50% of time on capital projects. Therefore, 50% of his time is allocated to operating expense.

The responsibilities of the Engineer of Bridges and Structures are roughly evenly split between expense related repairs and capital related replacements/additions. Since most modifications to buildings and bridge repairs, though significant, are (by "minimum rule" definition) expensed, capital or program work is confined to replacements and additions (again by definition). Significant field work is required to gain the required comfort level for decision making, including tradeoffs, in both categories.

Reporting to the Engineer of Bridges and Structures is a Bridge and Culvert Inspector. This person accompanies the Field Maintenance Supervisor during the latter's annual bridge and culvert inspection and keeps a record of the condition of each structure, making recommendations for short-term and long-term maintenance measures. In addition to the field work, the inspector is responsible for ensuring that office records and plans are current, reflecting "as constructed" bridges and structures. Based upon field

observations, the inspector prepares sketches and proposes solutions for remedial measures required.

The Engineer of Signals and Communications is responsible for:

- ensuring that the signals and communications maintenance work, basic and program, is carried out in accordance with the company's standard practices and procedures and that these are consistent with the requirements of the FRA;
- being familiar with the general state of repair of the signal and communications facilities on the network and intimately aware of those needing attention;
- preparing and recommending to the Chief Engineer an annual financial plan covering maintenance of signal and communications facilities;
- preparing plans and estimates for maintenance and program repairs to signal and communications facilities;
- approving payments to outside contractors;
- collaborating with the signal supervisors in the field to achieve a consistent and safe plant for train operations; and
- monitoring the record of equipment inspections to ensure compliance with mandated frequency.

The Engineer of Signals and Communications' time is divided between capital and operating expense projects. In a typical year he spends about 70% of his time on capital projects. Therefore, 30% of his time is allocated to operating expense.

Of all the disciplines employed in the railroad industry, none is as progressive as the field of signals and communications. Even though a system may be recently installed, the expectations are such that the development and perfecting of high

performance equipment continues. When equipment is replaced through upgrades, these expenditures are usually capitalized. While a substantial part of the Engineer of Signals and Communications' time is directed to maintenance of the existing equipment, and thus related to expense, the greater part of his effort is devoted to keeping abreast of the leading edge technology and how best to apply it to his area of responsibility.

Reporting to the Engineer of Signals and Communications is the Communications Supervisor. This position is responsible for:

- ensuring satisfactory communications capability is maintained:
  - ➢ between traffic control (dispatch desk) and train crew,
  - ➢ between traffic control and field crew, and
  - ➢ between field crews themselves;
- providing offices, locomotives, vehicles and equipment, etc. with radio hardware, as required;
- contracting scheduled inspection and maintenance services of microwave base stations, towers and radios;
- arranging a logistics plan for cycling/maintaining end-of-train devices (EOTDs);
- collaborating with the signal supervisors to provide efficient communications;
- preparing plans and estimates for maintenance and program repairs to communications facilities;
- engaging outside contractors for installation and maintenance of communications equipment not already under contract as in the case of microwave facilities; and

- supervising communications work whether performed in-house or by outside-contracted forces.

The Communications Supervisor's time is primarily occupied with non-capital activities. On the basis of their experience, Messrs. Krestinski and Blackwell estimate that 10% of his time is spent on capital projects; therefore 90% is allocated to operating expense.

The Manager of Administration is responsible for:

- supporting the office of the Chief Engineer in the preparation of all documentation relating to maintenance of the TNR's infrastructure;
- ensuring that all data and information required to be retained is properly logged and retrievable;
- developing systems which will allow the capture and storing of work performance reports whether accomplished by in-house or outside-contractor forces;
- collaborating with the Chief Engineer's direct reports, as necessary, in the handling of correspondence pertaining to:
  - land (surface) occupancy (rent, acquisition),
  - aerial and below ground occupation (pipe, wire), and
  - required authorizations from governmental entities;
- scheduling safety training and maintaining safety records and audit reports, including follow-up for remedial measures;
- scheduling rules testing; and
- processing payments to outside parties and preparing outside billing.

The Manager of Administration's time is divided between capital and operating expense projects. From the duties detailed above, it is evident that this position, in the main, attends to matters relating to operating expense. In the experience of AEP Texas' experts,

in a typical year the Manager of Administration spends about 20% of time on capital projects; therefore 80% of his time is allocated to operating expense.

The Manager of Contracts is responsible for collaborating with the Chief Engineer's direct reports, as necessary, in the handling of contract documents, such as:

- preparation and issuance of proposals;
- calling of tenders;
- evaluating responses;
- awarding contracts;
- progressing payments;
- finalizing payments with in-house accounting; and
- monitoring the progress of work by outside contractors.

The Manager of Contracts' time is divided between capital and operating expense projects. In a typical year the Manager of Contracts spends about 75% of time on capital projects, so 25% of his time is allocated to operating expense.

Contracts with outside firms are used for such capital program work as rail replacement, ballast cleaning (undercutting/sledding/dump & lift), tie renewal, bridge replacement, signal & communications upgrades and joint elimination. Expense program work such as surfacing, rail grinding, rail testing, track geometry measurement, vegetation control, ditching and at-grade crossing rehabilitation is also covered by

contract, but apportionment of effort between capital and expense is generally greater for capital projects.

The Director of Track Maintenance & Programs is responsible for directing the TNR's field MOW forces in their maintenance of the TNR's track. This position's duties include:

- developing the supervisory skills of the Field Maintenance Supervisors with respect to the MOW forces under their oversight;
- ensuring that the day-to-day maintenance effort on all districts is consistently competent;
- making recommendations to the Chief Engineer for promotion of staff under his jurisdiction;
- alerting his field officers to any arising condition which could threaten the integrity of the plant;
- engaging in regular and frequent field inspections in order to evaluate plant condition and adherence by MOW crews to maintenance standards;
- collaborating with the field supervisors on matters relating to track program maintenance;
- evaluating, with input from the field supervisors, the pros and cons of continuing with spot maintenance as opposed to initiating program work with respect to track;
- making recommendations to the Chief Engineer for those track work programs necessary for the maintaining of cost-effective operations; and
- scheduling the work programs for on-time completion within budget and with minimal disruption to train operations.

The Director of Track Maintenance & Programs' time is divided between capital and operating expense projects. In the experience of AEP Texas' engineering experts, in a typical year the Director of Track Maintenance & Programs spends about 50% of his time on capital projects; therefore the remaining 50% of his time is allocated to operating expense.

In addition, to the positions that report to the Chief Engineer, the TNR will have two clerks in the engineering/MOW department. The clerks' functions include:

- handling time and distribution sheets of all hourly paid staff;
- processing employee expense accounts;
- making travel and accommodation reservations for headquarters staff;
- arranging meeting rooms, *etc.*;
- scheduling vacation time;
- maintaining and distributing general (paper) files;
- handling all mail; and
- coordinating accounts payable data with the accounting department.

The clerks' time, much like that of the Manager of Administration, is primarily occupied with non-capital activities. Duke's experts estimate that 10% of their time is spent on capital projects; therefore, 90% is allocated to operating expense.

Finally, the department will include the Manager of Welding/Work Equipment who reports to the Director of Track Maintenance & Programs. This position is responsible for:

- determining which equipment should be owned and which leased given the TNR's philosophy regarding infrastructure maintenance and balancing the use of in-house forces with outside contractors;
- positioning TNR-owned MOW equipment strategically;
- investigating suppliers of leased equipment and communicating that information to the MOW crews;
- establishing connections with equipment maintenance firms for required services;
- ensuring competent operators are available for TNR equipment;
- inspecting the work performed to confirm that it is done properly and to specifications (especially welding); and
- ensuring that company equipment is condition-ready for work with maximum effectiveness.

The Manager of Welding/Work Equipment's time is divided between capital and operating expense projects. In a typical year the Manger of Welding/Work Equipment spends about 30% of time on capital projects; therefore 70% of his time is allocated to operating expense. As most of the program work is being outsourced the contractors will be responsible for the performance of their equipment and operators. The bulk of the Manager of Welding/Work Equipment's time is devoted to equipment and operators involved in spot maintenance. Some company-owned or leased equipment is involved in

capital work, such as bridge tie renewal and joint elimination, the operation of which the manager will oversee (this will not be significant).

f. Cross-Training of Forces

The TNR's field maintenance forces are cross-trained for multiple tasks. Because Class I railroads employ unionized labor in their non-supervisory ranks, they have not attempted to take advantage of the efficiencies of cross-training of their MOW forces. The railroad labor unions jealously guard management attempts to broaden employee classifications, which the unions see as a dilution of hard-won distinctions between classes of employees. It is therefore not surprising that Class I railroads such as BNSF are not supportive of the cross-training of employees.

In contrast, most, if not all, short line railroads have enjoyed success because existing labor agreements are done away with and the new owners are free to hire non-union employees of their choice. Mr. Krestinski notes that where the prevailing provincial (in Canada) jurisdictions insist on preserving pre-existing labor agreements there is little or no interest in purchasing properties from the Class I carriers. A case in point: Canadian National's offer of some $30 million in 2003 to purchase the assets of 706 route-mile network of the regional carrier Ontario Northland Railway was withdrawn when the Province of Ontario was not prepared to allow CN to effect staff reductions necessary for efficiencies that would justify the investment. CN, having abandoned its pursuit of Ontario Northland Railway, went after and successfully acquired the 1,442

route-mile network of British Columbia Rail later in the same year where retention of labor agreements was not an issue.

Mr. Krestinski is also intimately familiar with and responsible for the design of the MOW forces on the Huron Central Railway and the Quebec Gatineau Railway, both Canadian short lines, as well as VIA Rail's Alexandria/Smiths Falls Class 5 track (passenger/freight) network where cross-trained employees have successfully been used. Undeniable benefits have accrued to their owners. Track maintainers are able to inspect bridges and structures and effect minor repairs as needed. Signal maintainers assist their colleagues with track repairs. Welders are similarly assigned to track repairs, delivery of materials, *etc.* All of the above employees are rules-competent, permitting their attendance to flagging requirements in accommodating not only work undertaken by railroad forces but by outside contractors.

The use of cross-trained employees is not a function of a railroad's size. It is incorrect to suggest that while use of such employees works on small railroads with relatively low tonnage, it will not work on large Class I railroads carrying high tonnage with heavy axle loads. The question to be asked of the Class I railroads that hold this view is, simply, why not? The fixed-plant infrastructure elements of all railroads are essentially the same, differing only in detail. The short lines maintain 100/115- pound rail jointed or welded rail, on tie plates supported by wood ties. The Class I carriers maintain 115/136-pound rail, much of it welded, on tie plates supported by wood or concrete ties.

The difference between the two does not render a cross-trained short line MOW employee impotent on the property of a Class I. It is a case of management will. Class I carriers may very well have to stake their future success on accepting the benefits of cross-training, and then "going to the mat" at negotiations to achieve a breakthrough. This has been achieved in other areas, such as contracting out, which the unions at one time also were dead set against.

In short, consistent with the experience of AEP Texas' experts, the TNR's field MOW forces are cross-trained and staffing has been designed around this concept.

g. Out-Sourced Spot (Expensed) Maintenance

The in-house MOW staff is designed to handle a wide variety of potential maintenance issues on the TNR. However, there are a number of areas where AEP Texas' engineering/MOW experts have found that contracting out needed work is a cost effective-way to complete it.

The out-sourced work can be separated into three broad categories. The first is routine maintenance that can be scheduled on a regular basis, but which is not performed frequently enough to justify the TNR's investment in the equipment and personnel required for such periodic activities. These functions include: rail and switch grinding, track geometry testing, ultrasonic rail testing, yard cleaning, weed spraying, brush cutting/mowing, crossing paving, ditching, equipment maintenance, inspections of

communications systems, bridge inspections, miscellaneous engineering, and general building maintenance.

The second category is unplanned maintenance of speciality items on the railroad that is better and more economically handled through outside contractors who have a variety of experts and specialized equipment at their disposal. These functions include: snow removal, storm debris removal, communications systems and radio repairs, building repairs (*e.g.*, plumbing, air conditioning and electrical work), bridge superstructure and substructure repairs, and fueling equipment repairs.

The third category is unplanned maintenance of a magnitude requiring more people and/or specialized equipment than the TNR would normally have because such activities are unusual or infrequent. These occurrences include repairs necessitated by major derailments, washout recoveries, rock/mud/snow slide cleanup, ice storms, environmental cleanups and vandalism.

i. Routine Contract Maintenance

(a) Rail Grinding

Rail grinding is in integral part of any railroad MOW plan because it is crucial to extending the life of the rail. Recent studies have indicated that premium rail in high-density territory, even with heavy curves, can withstand well in excess of 150 million gross tons ("MGT") without the need for grinding. *See* Kevin Sawley, Transportation Technology Test Center Inc, Report 928, "North American Rail Grinding

Practices and Effectiveness," August 1999; *Railway Track and Structures*, December 2000, page 15 (*see* electronic workpaper file "grinding.pdf"). Here, 135-pound rail is being used on the TNR's main track (including some premium rail); 136-pound rail is extremely durable under heavy loads. However, to be conservative, the TNR will rail-grind every 50 MGT on curves equal to or exceeding three degrees. Elsewhere, grinding occurs at 100 MGT intervals except where premium 136-pound rail is used; in those areas grinding occurs every 300 MGT. Tangent rail and rail in curves less than 3 degrees receive one pass, and rail in curves equal to or greater than 3 degrees receives two passes. Switches, rail crossings (diamonds) and rail located in at-grade road crossings will also be ground as required.

The cost for grinding is { } per mile, based on documents provided by BNSF in discovery. *See* Workpapers Vol. 19, pp. 09418-550. The total miles of grinding and the related cost calculations are detailed in electronic workpaper "SpotMaint.xls," tabs "railgrinding" and "contract work."

(b) Track Geometry Testing

Track geometry testing is another routine maintenance function. It ensures that the track and related structures all meet FRA standards in terms of alignment, gauge, profile, *etc.* Like rail grinding, geometry testing requirements are based on MGTs. In Mr. Krestinski's experience on the CP's heavy haul lines, track geometry testing was required six times a year on lines with 50 MGT or greater.

Based on the TNR's annual gross tonnage and the testing requirements described above, rail testing is required six times a year. The total annual miles of testing and the related cost calculations are detailed in electronic workpaper "SpotMaint.xls," tab "Contract Work."

(c) Ultrasonic Rail Testing

Ultrasonic rail testing is an important tool in preventing derailments because it helps reveal internal rail defects that might cause disruptions in the TNR's operations. As with rail grinding and track geometry testing, ultrasonic rail testing requirements are based on MGTs. In Mr. Krestinski's experience on CP's heavy haul lines, ultrasonic rail testing is required three times a year.

Based on the TNR's gross tonnage and the testing requirements described above, ultrasonic rail testing similarly is required three times a year on the TNR. Based on materials BNSF provided in discovery, the cost for track geometry testing is ${ } per track mile. *See* Workpapers Vol. 19, pp. 09594-713. The total annual miles of ultrasonic testing and the related cost calculations are detailed in electronic workpaper "SpotMaint.xls," tab "Contract Work."

(d) Surfacing

No matter how well the track infrastructure is constructed and maintained nor how excellent the ballast quality, track subjected to the high axle loadings of unit coal trains needs to be surfaced and lined on a regular basis to prevent it from deviating from

acceptable standards. In Mr. Krestinski's experience all heavy tonnage track should be surfaced once every three years and light tonnage track once every four years. In preparation for surfacing, ballast must be delivered and unloaded in the areas to be surfaced. This is accomplished through the use of work trains. AEP Texas has included $3.8 million per year for this activity.

(e) Yard Cleaning

Yards should be cleaned once a year in order to ensure that debris does not effect rail operations. The TNR has two yards, one at Alliance, NE and the other at Las Animas Jct., CO. The amount and cost of yard cleaning required for these two yards was based on materials BNSF supplied in discovery. Details of the calculations are shown in electronic workpaper file "SpotMaint.xls," tab "Unit Costs." The total annual cost for yard cleaning is $40,000.

(f) Weed Spraying

Weed spraying is necessary in order to prevent overgrowth into the rail bed or other structures. The most critical of all vegetation control has to do with the ballast section. If vegetation is allowed to flourish in the ballast section, it will soon foul the ballast and interfere with the most important function of ballast which is to permit water to drain, uninterrupted.

The annual cost for weed spraying is based on track miles. AEP Texas' experts' cost per mile of $296 is derived from a quote provided by Asplundh (*see*

Workpapers Vol. 19, p. 09788). The TNR has 1,657 track miles, including set-out tracks and yards, so the total cost for weed spraying is $490,000. *See* electronic workpaper file "SpotMaint.xls," tab "Contract Work," rows 15-16.

(g) Brush Cutting/Mowing

As with weed spraying, annual brush cutting and mowing is required. Next in importance to a free-draining ballast section are the adjacent 8-foot swaths on both sides of the ballast section. These must be controlled to prevent vegetation encroachment of the ballast section. Lastly, trees and brush on the balance of the right of way need to be controlled, especially in close proximity to bridges, including the maintenance of sight lines at-grade road crossings.

Based on Mr. Krestinski's experience, the total annual cost for brush cutting mowing for a railroad the size of the TNR is approximately $100,000. *See* electronic workpaper file "SpotMaint.xls," tab "Contract Work," row 17.

(h) Crossing Paving

Highway grade crossings must be paved periodically. The life of asphalt pavement is almost exclusively a function of road traffic, at least beyond 18 inches outside each rail. Rail traffic is a factor within the crossing zone proper, especially where frost action is present. A typical pavement application will last 8 to 12 years. Consequently, there should be little need for the TNR to begin paving activities immediately. However, to be conservative, AEP Texas' experts have assumed that

paving would begin in the TNR's first year of operations. As the paving should last 10 years, AEP Texas assumed that 1/10 of the total crossing paving quantity would be re-paved each year.

AEP Texas' cost of $5,000 per crossing is based on Mr. Krestinski's experience, and is weighted primarily toward equipment mobilization. A total of 74 crossings require paving each year, based on 1/10 of the total of 741 paved crossings. *See* electronic workpaper file "SpotMaint.xls, " tab "Norm. GrdX." The total cost of crossing paving is $370,500. *See* electronic workpaper file "SpotMaint.xls," tab "Contract Work," row 18.

(i) Ditching

As explained in Part III-F-2, *infra*, the TNR has conservatively chosen to use two-foot ditches, even though most of the BNSF lines being replicated have no ditches at all.[28] These ditches require periodic cleaning. Ditching is required to deal primarily with two issues, drainage and catchment. Natural drainage moving onto the railroad right-of-way needs to be accommodated along or through the sub-grade. Wind and/or water borne light soil or sand has a tendency be deposited in drainage ditches which require cleaning for proper drainage. In environments where rock falls and mud or

[28] This statement is based on the field observations of the BNSF lines being replicated, which were inspected by AEP Texas witnesses Bastow, Ellison and Swanson in October and November 2003, and January 2004. *See* electronic workpaper folder "III-F\Photos."

snow slides prevail, catchment ditches need to be maintained to reduce the danger of the slide material being deposited on the track.

While it is very difficult to predict ditching requirements with precision, 10% of the route miles, annually, is consistent with Messrs. Krestinski's and Blackwell's experience. AEP Texas' ditching cost of ${ } per track mile is derived from materials provided by BNSF in discovery. *See* electronic workpaper file "SpotMaint.xls," tab "unit costs." The total annual cost of ditching is $128,842. *See* electronic workpaper file "SpotMaint.xls," tab "Contract Work," row 18.

(j) Equipment Maintenance

Maintenance of company-owned or leased equipment is contracted out. This includes hi-rail trucks, speedswings, ballast regulators, air compressors and certain power hand tools. Employees are prepared and equipped to perform preventive maintenance and straightforward repairs to this equipment. In Mr. Krestinski's experience the cost of such maintenance is typically 5 percent of the purchase price of the equipment per year.

(k) Communications Systems Inspections

Periodic inspection and maintenance (both planned and unplanned) of the TNR's communications system (described in Part III-F-6, *supra*) will be performed by contractors. CP and UP have similar communications systems, including microwave towers, AEI readers, and two-way radio facilities which are inspected annually.

The TNR's inspection costs are normally a component of maintenance agreements for communications systems entered into at the time of installation. In Messrs. Krestinski's and Blackwell's experience, inspections represent 1% to 2% of original cost, annually.

(l) Bridge Inspections

The Assistant Field Supervisors perform basic bridge deck inspections as part of their track inspection duties. Nevertheless, the TNR's bridges require periodic in depth inspection. Within the first two years of operation, all bridges require inspection to assess integrity. This inspection, performed by professional outside contractors in the company of the TNR's Bridge & Culvert Inspector, using specialized equipment, involves careful examination of the substructure and superstructure of each bridge. Having established the overall condition of the bridges, going forward, the major bridge structures would thereafter be inspected every five years on a rolling schedule. Annual inspection will be performed only if there are signs of developing conditions that would require more frequent checks. The costs associated with these inspections have been determined on the basis of average cost per foot of bridge length. *See* electronic workpapers file "Spot Maint.xls," tab "unit costs."

(m) Miscellaneous Engineering

Consistent with the Board's decisions is recent cases, AEP Texas has included $750,000 in miscellaneous engineering fees. *See, e.g. TMPA* at 109.

(n) General Building Maintenance

While all of the buildings on the TNR are new, occasional routine maintenance is required. Maintenance requirements on buildings are by and large concentrated on heating and air conditioning systems. As in the case of bridges, since all buildings are new in year one, very little, if any, maintenance is needed in the early years. After approximately five years, maintenance of electrical, plumbing and structural systems will be performed. The annual costs will not exceed 0.5% of original building cost.

ii. Unplanned Contracted Maintenance

(a) Snow Removal

Snow removal requirements include sidings, FED tracks, switches, roadways and parking lots. Given the TNR's traffic density, snow removal should not be an issue on the main line or branch lines, but such services may be required periodically on power plant spurs, setout tracks and yard tracks. Main track switches on the northern portion of the TNR are equipped with switch heaters. Ballast regulators equipped with snow blowers are used to blow out snow-laden switches and trackage with low traffic density. Snow removal from roadways and parking lots will be contracted out as railroad supervision is not required. Snow removal at such locations is better handled with contractors because it is uneconomical to have extra in-house staff and specialized

equipment available to perform this work. AEP Texas' experts (who have considerable experience with snow removal in Canada and the Great Plains of western Nebraska) have allocated $100,000 per year for snow removal. *See* electronic workpaper file "SpotMaint.xls," tab "Contract Work," row 23.

(b) Storm Debris Removal

There will be infrequent occasions where severe winds bring down trees and scatter debris on the right of way including, in the higher elevations under winter conditions, ice storm damage. Depending on the severity and extent of the damage, outside contractors will be called upon to clean up the debris. In-house MOW forces will be available to assist, but the TNR will not staff for this eventuality. AEP Texas' experts have provided $25,000 annually for this activity. *See* electronic workpaper file "SpotMaint.xls," tab "Contract Work," row 25.

(c) Communications Systems

The TNR's communications system is described in Part III-F-6, *infra*. Certain communications equipment, including AEI readers and microwave equipment, requires spot maintenance. Such repairs often require special training or equipment, which can be more economically provided by contractors. The cost of such work is included in scheduled maintenance of the communication system.

(d) Building Repairs

As described earlier, all of the TNR's buildings are new. Nevertheless, the buildings will most likely require the occasional unplanned repair. Typical occurrences include storm damage, water and sewer line repairs, electrical failure, HVAC repairs, etc. Wastewater facilities also need to be maintained. In the experience of AEP Texas' experts, unplanned annual expense for building maintenance generally is subsumed within the general building maintenance costs listed *supra*.

(e) Bridge Substructure and Superstructure Repair

Bridge life expectancy under BNSF's depreciation accounting is 74 years. Such longevity generally reflects the stability of bridge superstructure and substructure components – and of course the bridges are being replaced through the DCF process. Nevertheless, unexpected minor repairs on a bridge substructure and superstructure will be required from time-to-time. Bridge longevity notwithstanding, Jordan guard rails and tie spacers in particular may be damaged by dragging equipment, requiring repair. Occasionally the bottom of a bridge tie will become crushed and shimming will be required. Short of derailment, the likelihood that steel repairs will be required is negligible given that the structures are new in year one and have a life expectancy of almost 3/4 of a century.

In the experience of AEP Texas' engineering experts, the annual expense for bridge superstructure and substructure typically does not exceed $4,000 per major

bridge every 5 years. This assumes a contractor's crew of four working over a period of two days ($2,000) plus material ($1,000) and equipment ($1,000).

(f) Fueling Equipment Repairs

Like most machinery, fueling equipment requires occasional unplanned maintenance. Such maintenance might include pump repairs, seal replacements and valve repairs. Based on the experience of AEP Texas' engineering experts, the annual expense for TNR fueling facility repairs typically would be $259,500.

iii. Large Magnitude Unplanned Maintenance

(a) Derailments

A newly constructed railroad is less likely to experience a major derailment then the older plant of most existing railroads. Nevertheless, over the 20-year life of the TNR, derailments will occur. Rectifying a major derailment often involves considerable work requiring heavy equipment. Today, few railroads actually repair the track after such derailments with in-house staff. Indeed, Canada's two Class I carriers, Canadian Pacific and Canadian National, no longer maintain auxiliary consists dedicated to derailment response. The same is true for regional and short-line railroads which are even less able to afford this stand-by luxury. Fifteen years ago, Canadian Pacific maintained auxiliary derailment forces at 16 of its division points spread across its 16,000 mile Canadian network. Today there are none. The carrier relies exclusively on contractors to respond to such occurrences.

The average cost for repairing damage from derailments is approximately $400,000. *See* "BNSF Test Risk-based Ultrasonic Detection," Railway Track and Structures Feb. 2000, reproduced in Workpapers Vol. 19, pp. 09946-50. However, the cost can be as high as $1.4 million. *Id.* Given the larger train sizes and heavy loads on the TNR, and based on AEP Texas' experts' experience with the costs of non-hazardous materials derailments, they determined that $750,000 per incident is appropriate. In their experience, an annual budget for derailments of $4.5 million is not unreasonable given a TNR network approaching 1,200 route miles. While this figure may appear high, especially in view of the new track structure in year one, it cannot be assumed that all, or even the majority of derailments that may occur will be track-related. Defective equipment and train (mis)handling cause derailments more often than track conditions.

(b) Washouts

Again, a new railroad roadbed/track structure is not as prone to washouts as older railroad roadbeds that have experienced previous water-related traumas. Nevertheless, washouts may occur due to a variety of circumstances. The most common of these is when a culvert through the sub-grade becomes blocked, preventing the flow of water. This blockage can be caused by ice which has not melted, even though spring has arrived, and melting snow is causing heavy runoff to move against the right of way. Floating debris and dams built by beavers at the upstream ends of some culverts also prevent them from serving their intended purpose. When culverts are blocked one of two

things happens as a consequence. First, the water may rise until it reaches the elevation of the track and then begins to move through the track elements to the other side of the track, eroding the ballast and maybe even the sub-grade. This continues until the track is no longer adequately supported and the entire structure collapses, having lost its line and surface. This sequence of events does not take very long particularly in continuous welded rail ("CWR") territory.

Alternatively, the water does not rise high enough to overflow the track but is accommodated in the receiving ditch parallel to the track, having risen well up the sub-grade slope. In time, the water saturates the sub-grade resulting in a much-weakened roadbed. When this happens, the sub-grade begins to move laterally and track elevation, line and surface are lost. If the track is located on a curve, a catastrophic slip-out can occur, especially under a train movement. Washouts can also occur when beaver dams break (off-property) on the up-stream side of the right of way. When this happens, the drainage structures, which were designed to handle normal flows, cannot accommodate the backed up volume of water. The track structure experiences consequences similar to those which result from a blocked culvert.

In Mr. Blackwell's experience, the annual expense for washout repairs in the geographic area served by the TNR is typically $100,000.

(c) Environmental Cleanups

The TNR operates locomotive fueling, servicing and maintenance facilities at Alliance, NE that might be sources of inadvertent discharge of environmentally hazardous materials, such as diesel fuel. In the experience of AEP Texas' engineering and operating experts, environmental cleanups are infrequent except where dangerous commodities are released during a derailment or where land use has been changed and/or environmental regulations became more stringent.

The TNR provides protective drip pads and impermeable dikes around the storage tanks at its two fueling locations (Alliance and Las Animas Yards). This ensures that oil emissions from idling locomotives are contained. Given the precautions the TNR is taking, an annual budget amount of $80,000 for environmental cleanup would be sufficient.

h. Equipment

The TNR's in-house maintenance staff requires a variety of equipment to perform the duties assigned to it. Small hand tools and related items are not specifically priced here. Rather, as is standard practice in the railroad industry, the cost of such equipment is included as a materials additive to the base compensation cost for each employee. Larger equipment that will be required is described below. All of the equipment described on the following pages is broken out in detail in electronic workpaper file "SpotMaint.xls," tab "Equipment."

i. Hi-rail Vehicles

Each of the TNR's 18 MOW bases has a hi-rail vehicle which provides transportation for the MOW crew and is equipped with the tools necessary for the crew to perform its duties. This crew-cab vehicle comfortably seats the Foreman and three maintainers. Its hi-rail gear provides the versatility required for maintenance forces to gain access to the track and carry out their duties, particularly on the portions of the TNR network where traffic density is high. For example, if the MOW crew cannot access the track at its headquarters due to imminent train arrival, the crew travels by road to a point where the dispatcher can provide positive protection for the crew to get on the track. Alternatively, if the crew is on the track, and it cannot remain or proceed due to an oncoming train, the hi-rail vehicle is removed until the train clears the block (in CTC territory) and then returns to the track or moves, by road, to a point along the track where again, with authority from the dispatcher, it gains access to the track.

Each of these hi-rail vehicles is equipped with a boom crane and overhead racks. This allows the crew to load 39 ft. long rails, frogs, switch ties, cross ties and other materials necessary for track maintenance. The vehicle is also equipped with a hydraulic system providing the capability for operating portable tamping tools, impact wrenches, rail pullers, *etc.*, which are included in the complement of tools carried on the vehicle.

Other staff will be assigned smaller hi-rail vehicles. This includes the Engineer of Track, Engineer of Signals and Communications, Director of Track

Maintenance and Programs, Manager of Welding/Work Equipment, Communications Supervisor, Bridge and Culvert Inspector, Signal Maintainers and Supervisors, Field Maintenance Supervisors and Assistant Field Maintenance Supervisors, Welders and Lubricator Technicians.

The smaller hi-rail vehicles for the Field Maintenance Supervisors and their Assistants are intended essentially for their transportation and that of others who may accompany them together with some capability for small material transport. Vehicles rated 3/4 - 1 ton are suitable. Hi-rail vehicles for Signal Maintainers, Welders and Lubricator Technicians not only provide transportation for the employees but need to be equipped with service bodies for transporting equipment, tools and parts. Here, too, vehicles rated 3/4 - 1 ton are appropriate. The rating tolerance accommodates a wide variety of vehicle manufacturers.

The TNR's total annual hi-rail vehicle cost is $1.5 million. *See* workpaper file "SpotMaint.xls," tab "Equipment."

ii. Air Compressors

Each MOW crew is equipped with an air compressor. In addition to having the capability to drive pneumatic equipment, the air compressor is a valuable resource for blowing snow out of switches not equipped with heaters, blowing debris out of flange-ways of at-grade road crossings, cleaning ballast off bridge seats and girder flanges, *etc.* The total cost for 18 air compressors is $2,181. *Id.*.

iii. Rail Drills

Rail drills are indispensable to the maintenance effort of the MOW crew. This equipment is needed for drilling holes in a replacement rail when bolted joints are installed and replacing a rail that is found to be defective through electronic testing or visual detection. Each crew must always have at its disposal one working drill and, as happens with all mechanical equipment, it sometimes needs repairs. A second drill should be held in inventory as a spare. The total cost for 36 rail drills (two for each field maintenance crew) is $4,320. *Id.*

iv. Rail Saws

Like rail drills, rail saws are also indispensable to the MOW crew. The saw is used for a variety of tasks including cutting out a defective piece of rail, squaring off a rail end preparatory to thermite welding of a joint, and cutting up scrap for ease in loading. Again, a spare rail saw should be kept in inventory. The total cost for 36 rail saws is $3,600. *Id.*

v. Rail Pullers (hydraulic)

Hydraulic rail pullers are used to pull CWR when a gap needs to be closed in order to install the rail within the Preferred Rail Laying Temperature Range (PRLTR). This occurs when the ambient temperature is lower than the PRLTR and the rail, at equilibrium, is too short to fill the gap. One such piece of equipment should be made exclusively available to each crew. The total cost for 18 rail pullers is $4,320. *Id.*

vi. Impact Wrenches

The impact wrench, powered by the hydraulic system on the MOW crew hi-rail vehicle, is employed to loosen and tighten bolts where joints are used in the track infrastructure. While manual track wrenches can usually do the job, the impact feature is especially effective where the nut and bolt are seized and manual attempts to loosen them might prove unsafe. The impact wrench is also equipped with calibration capability so that the applied force can be set in accordance with the manufacturer's specifications. Each MOW crew has a wrench for its own use. The total cost for 18 impact wrenches is $1,800. *Id.*.

vii. Profile Grinders

The profile grinder does what its name suggests; it is used to grind the rail to the desired profile. The two-person welding gangs use the thermite welding process to eliminate joints created (temporarily) in CWR. The gangs also restore, by welding, rail ends which are battered, crushed or chipped. Its third major function is to restore switch and rail crossing frogs as well as switch points. Once the welding is complete, the weld zone needs to be ground in conformity to the rail profile adjacent to the zone. This is best and effectively performed using a profile grinder, one of which is assigned to each welding gang. The total cost for six profile grinders is $840. *Id.*

viii. Straight Grinders

Each of the two-person welding gangs is also equipped with a straight grinder. This equipment is used primarily for slotting joints which, for a variety of reasons, remain in track and are not candidates for joint elimination. These joints are to be found in the vicinity of switches, rail crossings and bridge approaches when located in CWR territory and, of course, where jointed rail has deliberately been laid, as in yards. The joints require slotting as the railhead flow, under traffic, moves to span the joint gap. If the flow is not checked by slotting, it eventually breaks off causing the rail end to chip. If this damage is such that it cannot be effectively repaired by welding, the rail is then prematurely removed from service and possibly re-cycled at a much greater cost than would have been incurred had the problem been corrected by timely slotting. The total cost for six straight grinders is $360. *Id.*

ix. Tamping Tools (set)

The MOW crews are not equipped with TNR-owned tampers. Major surfacing programs are scheduled and executed by outside contractors. However, some additional spot surfacing is required for joints, switch and rail crossing frogs, switch points, bridge approaches, at-grade crossing approaches, local spots on high sides of curves and during shim removal in the spring – all in the interests of minimizing speed restrictions due to track conditions. This is provided for by equipping each MOW crew

with a set of tamping tools driven by the hi-rail vehicle's hydraulic system. The total cost for 18 sets of tamping tools is $12,524. *Id.*

x. 400-AMP Welders

This equipment is the mainstay of the two-person welding gangs, and each gang is provided with such a power unit. It is mounted on the gang's hi-rail truck, providing the gang with the needed flexibility to access the work site regardless of the location of the task. The total cost for six 400-AMP Welders is $1,080. *Id.*

xi. Oxy-Acetylene Welders

Welding torches and fuel cylinders are also needed by the welding gangs, with power provided by the 400-AMP unit. The total cost for six oxy-acetylene welders is $1,680. *Id.*

xii. Speedswings

This versatile equipment is invaluable where trackside attendance is required but traffic congestion does not permit track occupancy by MOW machines. Special track-work in yards, such as repairing switches, rail crossings, retarders, switch heaters and grade crossings, benefits from the assignment of speedswings. The speedswing is hi-rail equipped and therefore can move by road or rail and its large tires permit the machine to mount the track or cross over the track without needing a road crossing. Its articulating boom is ideal for handling small containers of material, installing jointed rail, replacing turnout elements, distributing ties and performing a

variety of other tasks. Only the two MOW crews with a yard in their assigned territory will require a speedswing. Consequently, a total cost of $28,000 has been included for two speedswings. *Id.*

xiii. Backhoes

A backhoe is needed for use by the track and signal forces. The machine is effective for ditching purposes and, when provided with the optional grapple attachment, makes quick work of clearing debris and beaver dams lodged at culverts and bridges. A magnet attachment is also available for handling materials delivered in open top cars as well as scrap pickup from the right of way. Backhoes are also used to improve drainage in the vicinity of at-grade road crossings, place signal conduit, and for spot excavating. A backhoe is provided for each maintenance district at a cost of $360,000.

xiv. Ballast Regulator (with Snow Package)

MOW crews whose territory requires them to contend routinely with snow-laden switches in yards and setout tracks rent a ballast regulator equipped with a snow package for a period of six months each year. The other MOW crews who are located in snow zones, but have relatively few switches and high density traffic, have switches equipped with heaters and can also clear switches with snow brooms and air compressors. The TNR provides its own operator. The TNR needs three ballast regulators at cost of $90,000. They are located at Donkey Creek, Alliance and Las Animas.

i. Capital Program

As the Board is aware, a SARR's annual capital needs are addressed by application of the DCF model. Nevertheless, AEP Texas' experts have developed a basic capital program, which is reflected in electronic workpaper file "SpotMaint.xls," tab "Norm. Total." Briefly summarized, AEP Texas used BNSF's asset lives to determine the annual replacement costs for the principal elements of the TNR's infrastructure (except that rail is replaced on a gross tonnage basis rather than on an asset life basis). Labor costs were added based on the track installation costs used in developing the TNR's road property investment costs (*see* Part III-F, *infra*). Finally, AEP Texas' experts added some capital improvement activities such as shoulder ballast cleaning and ballast undercutting. The TNR's total annual capital budget is estimated at $51.6 million.

j. Scheduling of Maintenance

Spot maintenance work carried out by MOW crews is sometimes unfairly characterized as unplanned. No doubt there are occurrences which are not, nor can be, planned, but such work is more in the nature of emergency repairs and does not reflect the normal, routine approach to spot maintenance designed by AEP Texas' engineering/ MOW experts. Spot MOW work must, by virtue of the traffic on the railroad, be fluid and flexible, and yet structured to greatest extent possible.

In general, the MOW crews and supplemental forces (signal maintainers, welding gangs, *etc,*) are ultimately responsible for all that occurs on the TNR's right-of-

way. While the in-house crews are not charged with effecting all the work that is required, the crews are the "lords of their domain" and no work is normally performed within the limits of the TNR's right-of-way without their knowledge. Any condition requiring remedial action, and which cannot be met by the MOW field crews and supplemental MOW personnel, is referred to the proper authority, usually the Field Maintenance Supervisor or his Assistant, who calls for the needed resources. In the meantime, the field MOW forces provide protection for such situations.

Each day for any of the TNR's 18 field MOW crews may be unlike any other. In addition to regular duties, which the Foremen of each crew will have planned, the Track Maintenance Supervisor and/or the assistant will have specific tasks which will be referred to the crew or a combination of crews.

On a given day, knowing what the expected traffic will be, and thus the work window available, the crew may be able to move on track by hi-rail directly from headquarters to a location requiring, for example, the shimming out of a frost heave which has precipitated a temporary slow order, thereby restricting the speed of trains. Another crew could have a similar task but, because of a differing circumstance with respect to train location and work window, it must move by road (in its hi-rail vehicle) closer to the task's location, and then obtain a work window from the dispatcher.

Other activities can be scheduled more easily. For example, following the passage of an ultrasonic rail test car, some rails will require removal and joints thermite-

welded. Since the testing is planned, the replacement of defective rails can be scheduled. The MOW crew, assisted by the welding gang, can then be in position to replace the defective rail and weld it.[29]

Ultimately, the MOW crews are not relying on specific maintenance windows. Instead the crews plan their days around specific information about the number of trains expected that day in their territory and the work that needs to completed.

k. Other (Total Annual MOW Costs)

Based on the maintenance-of-way plan described above, a conservative and prudent estimate of the TNR's annual operating expenses for MOW is $27.8 million. This amount represents 35 percent of the total annual MOW cost, including program or capital work as defined *supra*.

5. Leased Facilities

The TNR's operations over the UP trackage between Sterling and Union, CO are included in the development of stand-alone operating costs. As a replacement for BNSF under its joint facility agreement with UP covering its operations over this line, the TNR incurs the same kinds of joint facility payments BNSF incurs under that agreement. This cost equals 3.1 mills per gross ton-mile plus an annual interlocker fee of $14,889, or a total of $4.1 million at the 2000 level.

---

[29] Obviously, no testing or other planned activities such as rail grinding would occur during the TNR's peak traffic period which occurs in the first week of July.

Copies of the joint facility agreements between BNSF and UP covering the Sterling-Union line segment are included in Workpapers Vol. 19, pp. 09978-84. The development of the annual payments to UP is shown in electronic workpaper file "TNR_OP_EXP.xls."

6. Loss and Damage

Annual loss and damage costs for the TNR equal $0.8 million. This cost was developed based on actual BNSF 2000 loss and damage per ton for the commodities moving on the TNR multiplied by the number of tons of each item moved on the TNR.[30] *See* electronic workpaper file "TNR_OP_EXP.xls."

7. Insurance

The standard practice of large railroads is to self-insure against potential liability except for catastrophic risks. The TNR also self-insures for most types of claims, and would obtain insurance at competitive rates to cover catastrophic loss and federal Employers Liability Act exposure.

Insurance expenses for the TNR were calculated using BNSF's 2000 insurance ratio of 2.94 percent of operating expenses. *See* electronic workpaper file "TNR_OP_EXP.xls." This procedure has been accepted by the Board in several recent SAC proceedings, including *FMC*, *Wisconsin* and *TMPA*.

---

[30] The TNR's share of the loss and damage payments was calculated on the percentage of the TNR's revenues to total revenues.

8. Ad Valorem Tax

The TNR operates in the states of Wyoming, South Dakota, Nebraska, Colorado, Oklahoma and Texas. To develop ad valorem taxes, the amount of tax that BNSF paid per route mile was calculated for BNSF's route miles in these states. These amounts were then applied to the TNR route miles on the incumbent's system. The resulting totals were then adjusted to exclude tax on road equipment, reflecting the fact that the TNR will not own its own locomotives and railcars. This exclusion was calculated using the ratio of gross equipment assets to road and equipment assets from BNSF's 2000 R-1 and was accepted by the Board in *TMPA* at 106. In total, the ad valorem taxes payable by the TNR in 2000 are $4.4 million. *See* electronic workpaper file "TNR_OP_EXP.xls."

9. Other

a. Costs Related to Rerouted Traffic

As indicated in Parts III-A, B and C above, the TNR is handling some BNSF coal traffic via an internal route (*i.e.*, a route on the SARR itself) that differs from the route presently used by the incumbent.[31] This internally-rerouted coal traffic consists primarily of coal originated at TNR-served mine origins on the Orin Subdivision and

[31] The TNR's traffic group does not include any "externally" rerouted crossover traffic, that is, the TNR does not interchange any traffic with the residual incumbent at a location that is not on the actual route of movement used by the incumbent. Thus, AEP Texas does not need to address any of the issues related to the off-system handling of this traffic that were discussed by the Board in the *TMPA* and the recent Eastern rate cases.

interchanged to the residual BNSF at Alliance. It also includes coal originated at these mines that the TNR moves beyond Alliance to various destinations and interchange points from Sterling, CO on the north to Oklaunion, TX on the south.

The TNR handles the internally-rerouted coal traffic via Edgemont, SD to Alliance or beyond, rather than via Guernsey. This traffic amounted to 63.2 million tons in 2002. *See* Exhibit III-A-5.

As described at pp. III-C-8 to 10, *supra*, and as shown in Exhibit III-A-5, the re-routing results in some mileage increases depending on the particular movement involved. The TNR's annual operating expenses reflect all increases in mileage-related costs resulting from the re-routes.

To the extent the re-routed traffic moves in private equipment, some customers will incur some increase in car-maintenance costs which are mileage-related. However, the increased costs are *de minimus*.[32] AEP Texas would willingly accept this modest increase in its car costs in return for the rate reduction resulting from the SAC analysis. There is no reason why the other shippers would not also accept the re-route in return for a similar percentage reduction in their rates.

---

[32] The increased miles on rerouted traffic moving in private cars in 2002 would increase car maintenance costs by less than $0.003 per ton moving on the TNRE in 2002. *See* electronic workpaper file "Private Car Rerouted Maintenance Cost.xls."

b. Methodology for Calculation of Annual Operating Expenses

As noted at the outset of this Part, the statistical inputs used to develop the TNR's annual operating expenses (equipment and operating personnel needs, locomotive unit miles, crew starts, etc.) were developed by AEP Texas' expert operating, IT and engineering witnesses (Messrs. Reistrup, Kruzich, Stone, Krestinski and Blackwell, with assistance from Mr. Burris in developing annual salaries and equipment costs). These inputs were provided to AEP Texas witness Crowley who developed the TNR's annual operating expenses using the DCF model.

The procedure used by Mr. Crowley to develop the TNR's annual operating expenses was as follows. First, Mr. Crowley annualized the tons carried (and other operating statistics) during the peak week of its peak traffic year (2020).[33] He then developed a ratio by dividing the tons carried in the first full year of the DCF model (2000) by the annualized peak tons. The resulting ratio was then applied to each of the operating statistics developed for the annualized 7-day peak period to develop the first-year statistics, subject to application of the peaking factor described in the next paragraph, which were input into the DCF model. The DCF model then adjusted the statistics and operating expenses for all other years.

In developing the first-year operating expenses Mr. Crowley applied a peaking factor to be sure he was not understating the expenses. The peaking factor was

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[33] Tons for 7-day peak period times 52 weeks equals annualized peak tons.

applied to locomotives and cars. The peaking factor was applied to the first-year expenses and the DCF model took over for subsequent years. The peaking factor was developed by solving the following equation:

PF = 1 + (A / B) where

PF = peaking factor
A = The sum of the trains for each day in the first year that the number of trains transporting traffic in the TNR group was greater than the daily average
B = Total TNR trains in the first year

Application of this peaking factor ensures that there is no understatement of annual operating expenses in the DCF model.

BEFORE THE
SURFACE TRANSPORTATION BOARD

AEP TEXAS NORTH COMPANY	)	
Complainant,	)	
v.	)	Docket No. 41191 (Sub-No. 1)
THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY	)	
Defendant.	)	

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OPENING EVIDENCE OF COMPLAINANT AEP TEXAS NORTH COMPANY

NARRATIVE
VOLUME 2 OF 2

AEP TEXAS NORTH COMPANY
1 Riverside Plaza
Columbus, Ohio 43215

PUBLIC VERSION
CONFIDENTIAL MATERIAL REDACTED

By: Timothy P. Stanley, Director,
Transportation and Marketing
David Cohen, Senior Counsel
AEP Texas North Company
155 West Nationwide Boulevard
Suite 500
Columbus, Ohio 43215

OF COUNSEL:

Slover & Loftus
1224 Seventeenth St., N.W.
Washington, D.C. 20036

William L. Slover
Kelvin J. Dowd
Christopher A. Mills
Frank J. Pergolizzi
Daniel M. Jaffe
Karen H. Herren
Kendra A. Ericson
Slover & Loftus
1224 Seventeenth Street, N.W.
Washington, D.C. 20036

Attorneys and Practitioners

Dated: March 1, 2004

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III-E Non-Road Property Investment

III. E. NON-ROAD PROPERTY INVESTMENT

1. Locomotives

As previously described, the TNR will lease all of its locomotives. The annual locomotive lease cost is included as an operating expense, as described in Part III-D-1 above.

2. Railcars

The TNR will also lease all of its railcars. The annual lease cost again is included as an operating expense; see Part III-D-2 above.

3. Other

Most of the TNR's other equipment, including company vehicles, maintenance-of-way equipment such as hi-rail trucks, radios, and telephones (see Parts III-D-3 and III-D-4 above) will be leased. The annual lease cost for this equipment is included as an operating expense.

Some items of equipment will be purchased, in particular computers and related hardware. The TNR's computer system needs, and the associated capital investment, are described in Part III-D-3-d above which details the TNR's IT requirements.

III-F Road Property
Investment

III. F. ROAD PROPERTY INVESTMENT

The TNR's road property investment costs are summarized in Table III-F-1 below, and described in greater detail in Exhibit III-F-1.

TABLE III-F-1
TNR Road Property Investment Costs
(millions)

	Item	Investment
1.	Land	$ 89.0
2.	Roadbed Preparation	579.7
3.	Culverts	29.7
4.	Track	1,079.7
5.	Bridges	167.5
6.	Signal, Communications and Other Equipment	121.9
7.	Buildings & Facilities (including Fueling Facilities)	32.5
8.	Public Improvements	12.2
9.	Subtotal	$ 2,112.2
10.	Mobilization	9.4
11.	Engineering	137.6
12.	Contingency	202.3
13.	Other (Soil Tests)	1.4
14.	Total Road Property Investment Costs	2,462.9

1. Land

The following evaluation of land acquisition costs for the TNR was prepared by Oakleigh J. Thorne. *See* generally Exhibit III-F-2 and electronic workpaper folder "III-F-1."[1] Mr. Thorne has nearly forty years of real estate experience. He is a Certified General Real Estate Appraiser in Maryland, Virginia and the District of Columbia, currently carrying temporary license permits by the states of Nebraska, South Dakota and Texas.[2] He is a member of the Appraisal Institute ("MAI"), The Counselors of Real Estate ("CRE"), and the Urban Land Institute ("ULI").[3] Mr. Thorne was assisted by his associate, Craig Lichter, Robert J. Brockman of Keyhole Land Company, and Charles R. Rhodes of Rhodes Appraisal Service. Mr. Brockman, a real estate appraiser located in Wheatland, WY gathered evidence for about 317 of the TNR's route miles from Donkey Creek, WY to Northport, NE. Mr. Brockman is an Accedited Rural Appraiser ("ARA") and is a member of the American Society of Farm Manager & Rural Appraisers ("ASFMRA").[4] Mr. Rhodes provided sales data for a few counties in west Texas.

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[1] Electronic workpapers are contained within the matching folder heading. For example Land files are contained within the III-F-1.Folder.

[2] The other states through which the TNR runs, Wyoming, Colorado and Oklahoma, do not require real estate appraisers to carry a license.

[3] Mr. Thorne's qualifications are set forth in full beginning at page IV-56, *infra*.

[4] Mr. Brockman's qualifications are set froth in full beginning at page IV-58, *infra*.

The TNR's route runs through Wyoming, South Dakota, Nebraska, Colorado, Oklahoma, and Texas. The southernmost portion of the replicated BNSF Orin Subdivision is in Converse County, WY and the line continues north into Campbell County, WY. In Campbell County, the TNR turns east and runs through Crook and Weston counties in Wyoming before it reaches the South Dakota state line. From the South Dakota state line, the TNR continues in a southerly direction through Custer and Fall River counties and then crosses the Nebraska border. The line enters Nebraska in Sioux County and continues south through Dawes, Box Butte, Morrill, and Cheyenne counties. The TNR crosses into Colorado in Logan County and travels in an easterly and then southeasterly direction through Washington, Morgan, Weld, Adams, Denver, Arapahoe, Douglas, El Paso, and Pueblo counties. In the city of Pueblo, the line turns southeast and travels through Otero, Bent, and Baca counties. From Baca County, the line crosses briefly into Oklahoma in Cimarron County and then passes into Texas at Dallam County. From Dallam, the TNR continues its southeasterly route through Sherman, Moore, Potter, Carson, Armstrong, Donley, Hall, Childress, and Hardeman counties to Wilbarger County and the TNR's southern terminus at the Oklaunion Power Station.

a. Right-of-Way Acreage

The TNR will acquire 13,110.75 acres for its right-of-way at a cost of $88.3 million. In addition, the TNR will use 755 acres via easement. The payments for easements average $65 per acre.[5]

The right-of-way width is established by the physical dimensions of the subgrade supporting the track structure and the ground space on each side of the subgrade necessary for drainage features, access by heavy machinery during the construction of the line, and roadways for future inspection and maintenance. At multiple-track and siding locations,[6] and at points where cuts or fills may be extensive, the right-of-way is widened as necessary to accommodate the physical requirements of the sub-grade earthwork. The TNR will acquire land sufficient to allow for placement of all permanent civil works for the railroad.

Consistent with established Board precedent, the right-of-way is based upon an average width of 100 feet in most areas, plus additional width at yard and terminal locations. Some additional acreage will be needed near Donkey Creek, WY and in an area between Edgemont, SD and Alliance, NE to accommodate additional trackage. An average width of 75 feet was used in industrial, commercial, and urban areas in and around Denver, Colorado Springs, and Pueblo, CO and Amarillo, TX. *See Wisconsin* at

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[5] *See* electronic workpaper file "TNRR Easements" and Workpapers Vol. 20, pp. 10018-359.

[6] The TNR's track configuration is shown in Exhibit III-B-1.

76; *West Texas Utilities* at 702. In addition, a right-of-way width of 75 feet was used for industrial and commercial land use types in small towns.

b. Yard Acreage

The TNR will acquire property for yards at Alliance, NE and Las Animas, Jct., CO. The acreage in Alliance will also accommodate the TNR headquarters and locomotive/car shops. *See* Exhibit III-B-2. A total of 273.34 acres will be acquired for the TNR yards at a cost of $944,340.

c. Other Acreage

An additional 61.5 acres will be acquired for the 41 microwave towers to be placed along the TNR lines. *See* electronic workpaper file "MW_Tower_Land_Req.xls."

d. Property Values

Consistent with recent Board decisions, property values were determined by evaluating the land along the BNSF ROW being replicated. "The land along the ROW is a prime indicator of a ROW's value and has been used in all prior SAC cases," *Duke/CSXT* at 74; *see also Duke/NS* at 88. The total cost of property necessary for construction of the TNR is $89.5 million. The methodology used and analysis developed in determining the value are set forth below.

i. Methodology

Vacant land is best appraised using the sales comparison approach. This method provides a price indication by comparing the subject properties to similar

properties that have sold recently, applying appropriate units of comparisons, and making adjustments based on the elements of comparison to the sale price of the analogues. Generally, the sales in rural areas were analyzed using the price per acre as the key determinant to establish a value estimate. Land sales in urban environments were generally appraised using a rate per square foot.

In valuing the TNR ROW, Mr. Thorne utilized a method that is consistent with traditional and accepted real estate practices applied to all types of right-of-ways when a corridor value is not required. Land sales in the vicinity of a right-of-way are found to develop across-the-fence land prices. Land sales found adjacent to or near the BNSF rail lines being replicated form the basis for the TNR's real estate cost estimate.

In valuing the TNR right-of-way ("ROW"), it was determined that the more rural counties through which the SARR runs lack any mechanism, transactional database or process to research real estate transactions. In addition, there are no legal requirements to report sale transactions or for the public to gain access to data books or other sources to understand land pricing trends or the pace of transactional activity.

The lack of centralized land sale databases for the states and/or counties at issue presented obstacles to retrieving the needed data. Five of the six states are non-disclosure states; thus the prices paid for real estate are not disclosed in title reports or on the recorded deeds. In areas with very low population densities and vast areas of pasture

and grasslands, most of the counties have no land use or zoning regulations. In such areas, land use was determined by location, road access and terrain.

In Wyoming, Nebraska and parts of Texas, where the land prices are the lowest on the TNR system, Mr. Thorne limited his sales research efforts and relied on land brokers, active appraisers and assessors.

In the areas near the Air Force Academy located south of Denver and the military installation located northeast of Denver, tax maps indicate that the U.S. Government controls much of the land adjacent to the ROW. In those areas there are no sales adjacent to SARR.

The TNR runs through some of the highest priced land in Colorado as it goes through Denver, Colorado Springs, and Pueblo. These areas also contain the highest priced land along the entire TNR route. Mr. Thorne's efforts were especially concentrated in these localities.

Since there are no state-wide real estate transaction reporting requirements for any of the states traversed by the TNR's network, the availability of sales information and the manner in which sales are reported vary widely from one county to another within any particular state. A few counties in the more populated regions offer GIS or other imagery to help define the property sold, while others use only a street address or tax map identification number. Mr. Thorne has reported all available data from every county researched. *See* electronic workpaper file "State Data."

Land sale activity is very limited in areas of low population densities and/or economic depression. When land sales do occur in these areas, the motivation behind the transfer is typically to mine coal, cut marketable timber, conduct limited farming and/or engage in recreational activities. Topographic features often limit the land's use for any other purpose.

Almost all buyers who intend residential use of the property purchase large tracts on which to build a home or install a mobile home. While research efforts focused on land sale activity near or adjacent to the rail lines being replicated, in many areas such activity proximate to the right-of-way is limited. Due to flat or negative population growth in many of the rural states along the TNR, there is no demand for new housing construction. The agricultural economics prevailing throughout the region define the land's marketability, use, and ultimate price. Only Colorado offers greater and more profitable economic ventures with a corresponding increase in land sale activities and land prices.

ii. Application

Mr. Thorne physically inspected major segments of the right-of-way where access to the line was available by car and/or foot.[7] The low-priced right-of-way between Pueblo and just before Amarrillo was not physically inspected at grade level. Aeriel

[7] Certain remote and isolated areas were not inspected either because the location was inaccessible or topographic conditions prevented access by car or foot. In addition, rural counties with less than 15 miles of ROW and no small towns were not inspected.

photographs obtained from TerraServer, Keyhole.com, and DeLorme's Topo USA (Version 3.0) provided the necessary information to determine surface conditions. Mr. Brockman physically inspected and photographed the eastern leg of the northern section of the ROW between Donkey Creek, WY and Northport, NE.

In all cases, the purpose of the physical inspections was to assist the appraiser in determining the highest and best use of the property along the ROW, to determine the specific breaks between land use segments, and to determine the overall impression of an area relevant to value. Such inspections are inherently of more value in the populated areas than in the desolate rural areas where land patterns are consistent for long stretches.

Land sales data were gathered from a multitude of publicly available sources. *See* Exhibit III-F-2 (Mr. Thorne's appraisal report) and electronic workpaper folder "III-F-1." In counties where land transfer searches were completed, the assessors' offices provided access to raw sales data. Deed research was performed at the county land records office, and tax maps were reviewed at local offices or on the Internet. Each sales location was then determined by references in the deed and corresponding tax map. Most of the sales in the three major urban areas of Colorado were physically inspected to determine their comparability to the subject's right-of-way condition and use.

Using the above principles, the market data necessary to make the sales comparisons was obtained from local appraisers, real estate brokers, county assessment

departments, and government agencies. The comparative sales data was adjusted for factors peculiar to each parcel, such as topography, access, and utilities. Sales comparisons were based on a July 1, 2000 date. The land necessary for the TNR was valued without consideration of the ownership, ownership boundaries or any severance damages which may or may not occur by virtue of this proposed alignment. The costing analysis was performed assuming a fee simple ownership interest (encumbered by subsurface rights) in undeveloped and unimproved condition. The appraisal includes the right-of-way for the tracks, yards and other facilities shown in Exhibit III-B-1 as described in Part III-F-1-a-c.

In some rural areas, the existing BNSF rail line is adjacent to a highway. In many of these cases, the land adjacent to the highway is devoted to retail or housing while the land adjacent to the rail line is used for pasture and crops. The highway represents a barrier between the two land uses. In these circumstances, the value of the ROW property was generally determined by using a price estimate for acquisition marginally above crop land prices. *See* Exhibit III-F-2 at pp. 16-17 and electronic workpaper file "Report".

Mr. Thorne divided the ROW into valuation sections by zoning, topographic changes, current land use, and/or population densities. In small towns and villages where zoning was not available, the ROW was divided by rural or mixed-use reflecting the transition in land prices as increasing population densities affect land costs. Generally, when the ROW lies within clearly defined incorporated city limits, the land is

considered urban and cost opinions are defined by the applicable zoning across the fence. However, the transition between rural and suburban land development is not always well defined (with the exception of land in Colorado).

Within the three major cities in Colorado, the ROW was divided into half-valuation ("val") sections on either side of the line. This was done because the land use on one side of the ROW was different than that on the other side. The boundaries for changes in land use, therefore, do not occur at common lateral points for any particular val section.

Generally, the rural areas were classified into seven different groups including Agricultural, Government, Pasture (irrigated and non-irrigated), Rural Residential (as that located on the boundaries of small villages and towns), Transitional (a blend of commercial and residential land uses in rural villages), Unproductive (land not suitable for crops or grazing), and X (for poor topographic features and stream beds). In the larger cities and a few of the larger villages, the categories of Commercial, Industrial, Multi-Family and Single Family were used. In addition, the cities in Colorado, especially Denver, required additional land use allocations. For these cities, Mr. Thorne used five different classifications for residential and institutional zones, seven different business zones, three industrial zones, and two zones for open space and agricultural. The Platte River Valley Zone in Denver required a further classification. *See* electronic workpaper file "Land_Summary.xls."

iii. Costing

The purpose of the costing process herein described is to provide the most probable and hypothetical cost to acquire a fee simple interest (encumbered by mineral reservations) in the right-of-way for the railroad lines being constructed by the hypothetical TNR. Land was evaluated in its undeveloped condition, without consideration of adjacent ownership boundaries, abutting ownership, severance damages or assemblage premium, with costs determined as of July 1, 2000.

Based on an extensive review of BNSF valuation maps and easement documents provided in discovery, it was determined that numerous easements and city ordinances exist along the incumbent rail lines. *See* electronic workpaper file "TNRR Easements." Applying the length of the ROW times the width of the ROW at the locations yields total easement acres of 705. *See* electronic workpaper file "Land_Summary." The SARR is not required to purchase a greater interest than the incumbent railroad possesses. *See Carolina* at 76 and *Duke/CSXT* at 74. Therefore, the 755 acres of easements will cost a total of $49,000 based on actual BNSF easements and city ordinances.

e. Conclusions

On an overall hypothetical line basis, assuming variable right-of-way width, the following summarizes the mileage, acreage, and indicated costs for the TNR right-of-way and land for associated facilities. The cost of acquisition of the 13,111 acres of

right-of-way totals $88.3 million; the cost of the 755 acres of easements totals $49,000; the cost of acquisition of the 273 acres for yards totals $944,000; and the cost of the 61.5 acres for radio tower pad sites totals $188,001.

Based on the investigation and analysis undertaken, AEP Texas has determined that the cost of the fee simple estate and easements in the various line segments as of July 1, 2000, subject to all stated assumptions and limiting conditions described in Exhibit III-F-2, is $89.5 million.

2. Roadbed Preparation

AEP Texas' expert engineering witnesses have developed roadbed preparation costs consistent with prior Board decisions, and on the basis of a field inspection of almost all of the TNR's route, the types of terrain involved, and the types of equipment required to accomplish the necessary grading in the territory being traversed. AEP Texas' engineers note, however, that in general the construction contractors would make the specific decisions about how to proceed and which specific equipment to use. These decisions would be based on a thorough on-site review and analyses which would only be undertaken if the project were actually being constructed.

For purposes of estimating costs in a stand-alone rate proceeding, it is appropriate to make cost determinations based on well-known and highly-regarded

construction/contracting cost sources such as the Means Handbook.[8] AEP Texas' approach is a hybrid between the two approaches, in that its engineering experts have made some specific determinations about the required equipment, but have not created a highly specific schedule for each activity as a contractor might do in preparing actual bid documents.

AEP Texas also notes that in recent rail rate cases the verbiage regarding equipment selection has grown exponentially. The debate over equipment has distorted the real question the Board must answer – what does it cost to prepare the roadbed? The defendant railroads have almost universally suggested that grading costs, including clearing and grubbing, are underestimated by the shippers by factors of 2, 3 or 4 times. The rationales presented by the railroads focus almost exclusively on the notion that the shipper's equipment is inadequate, and that more and costlier equipment is needed. To this point, the Board has largely rejected such arguments, and there are at least two reasons why the Board should continue to reject them.

First, the Means Handbook is an *extremely* conservative cost guide to use for projects such as the TNR's construction. In particular, the Means Handbook bases its prices on an average of costs for projects of all sizes from around the country, and the

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[8] R.S. Means Co. produces many cost estimating handbooks, such as *Site Work & Landscape Cost Data* and *Heavy Construction Cost Data*. All of these are referred to collectively in Part III-F as the "Means Handbook," and copies of the pages relied on by AEP Texas are included at appropriate locations in AEP Texas' Workpaper volumes.

average project cost assumed by Means is $1 million. In other words, the Means Handbook does not take into consideration any economies of scale that benefit the TNR due to the much larger project size involved.

In addition, the Means Handbook assumes a unionized-style labor force, which can be considerably more expensive than non-unionized forces. For example, Means assumes that most heavy machinery is staffed by an operator and a helper (often called an oiler amongst contractors). Most non-unionized contractors do not use a second person.

Second, the Means Handbook is an estimating tool. It cannot and does not attempt to recognize all the benefits that the TNR could realize through the competitive bid process. After all, a project of this magnitude would be highly sought after – just as large road building projects usually are. In this case, the project is considerably larger than even the largest road projects in the SARR states. Consequently, the AEP Texas engineers expect that a competitive bid process would result in costs considerably lower than those submitted here, and much lower than what AEP Texas suspects BNSF will claim this project should cost.

AEP Texas' expectation is backed up by the experience of its engineering witnesses insofar as competitive bids have always been lower than their initial estimates derived using Means. For example, using the Means Handbook, AEP Texas' engineering experts developed a cost for common earth excavation of $3.42 per cubic yard. *See*

electronic workpaper file "III F 2B Earthwork Cost.xls," tab "common earth." By comparison, actual bid prices for large road projects in the TNR states, with quantities in excess of 250,000 cubic yard of *unclassified* excavation, which can include loose rock or solid rock, show that the Means Handbook costs are easily bested.

Table III-F-2
Weighted Average Cost for Unclassified Excavation Projects in 2000 for Quantities over 250,000 CY

State	Date	Quantity	Unit	Unit Price	Price
CO	04/20/00	348,614	CY	$3.90	$1,359,594.60
CO	08/10/00	617,728	CY	$3.85	$2,378,252.80
CO	09/28/00	440,100	CY	$2.60	$1,144,260.00
TX	06/07/00	294,063	CY	$1.30	$382,281.90
NE	01/13/00	499,581	CY	$1.40	$699,413.40
NE	01/13/00	685,289	CY	$0.98	$671,583.22
NE	01/13/00	289,720	CY	$2.08	$602,617.60
NE	02/17/00	278,187	CY	$1.83	$509,082.21
NE	04/27/00	1,253,710	CY	$0.83	$1,040,579.30
NE	06/29/00	1,026,223	CY	$0.77	$790,191.71
NE	06/29/00	1,073,056	CY	$0.77	$826,253.12
NE	10/19/00	628,186	CY	$0.99	$621,904.14
NE	12/07/00	268,951	CY	$0.84	$225,918.84
WY	02/10/00	751,803	CY	$2.08	$1,563,750.24
WY	02/10/00	865,967	CY	$2.74	$2,372,749.58
WY	04/13/00	298,213	CY	$1.68	$500,997.84
WY	04/13/00	260,413	CY	$1.77	$460,931.01
WY	05/11/00	816,907	CY	$4.59	$3,749,603.13
WY	05/11/00	1,204,622	CY	$1.15	$1,385,315.30
SD	NOT AVAILABLE			**WTD. AVE.**	
OK	NOT SIGNIFICANT			**$1.79**	

AEP Texas' experts even considered using such bids as the basis for the grading costs presented herein, but they decided that such a departure from the cost-estimation techniques used in previous rate cases was unnecessary. Nevertheless, the AEP Texas engineers submit that the costs from such projects demonstrate that the TNR's roadbed preparation costs are very conservative.

A summary of the TNR's total roadbed preparation costs is presented in Table III-F-3 below.

TABLE III-F-3
TNR Roadbed Preparation Costs 1/

Item (1)	Investment (Millions) Cost (2)
1. Clearing and Grubbing	$2.3
2. Earthwork - Line Segments	
a. Common	110.7
b. Loose Rock	13.5
c. Solid Rock	26.8
d. Borrow	393.6
e. Land for Waste Excavation	0.1
3. Earthwork - Yards	3.7
4. Drainage	
a. Lateral Drainage	0.2
5. Culverts	29.6
6. Retaining Walls	5.1
7. Rip Rap	4.6
8. Relocation of Utilities	1.8
9. Seeding/Topsoil Placement	1.5
10. Water for Compaction	10.7
11. Surfacing for Detour Roads	4.4
12. Environmental Compliance	0.7
13. Total	$609.3

1/ See electronic workpaper file "TNR Grading.xls"
2/ Yard drainage is included in building site development costs.

a. Clearing and Grubbing

i. Quantities of Clearing and Grubbing

Exhibit III-F-3 identifies the acres per track mile that were cleared when the rail lines being replicated by the TNR were originally constructed based primarily on the quantities developed by the ICC's Bureau of Valuation and contained in B.V. Form 561 (commonly referred to as the ICC Engineering Reports). The ICC Engineering Reports were obtained from the National Archives and Records Administration ("NARA"). For the portion of the TNR route between Las Animas Jct., CO and Amarillo, TX, the B.V. Form 561 documents were not available. However, similar ICC Bureau of Valuation documents for the valuation sections covering these line segments, containing the same type of information as the B.V. Form 561, were obtained from NARA. The clearing quantities for the valuation sections between Las Animas Jct., CO and Amarillo, TX are also shown on Exhibit III-F-3.

For the newly constructed line segments between Donkey Creek and South Logan, WY and between Eagle Butte Junction and Campbell, WY, AEP Texas relied on publicly available data for the construction of BNSF's Orin Subdivision.[9] Exhibit III-F-4 identifies the acres per track mile that were cleared for the construction of BNSF's Orin

[9] The ICC Engineering Reports and other ICC Bureau of Valuation documents, as well as BNSF's Orin Line construction documents, are discussed in detail in the next section on earthwork quantities.

Subdivision. The values obtained from all of these documents, as shown in Exhibits III-F-3 and III-F-4, are assigned to the various line segments of the TNR in Exhibit III-F-5.

The clearing quantities (acres per track mile) were then increased by the ratio of the current roadbed specifications to the original construction specifications and applied to the track miles (including yards and sidings) of the TNR's line segments in the same manner as the grading quantities discussed below. Exhibit III-F-5 details the calculation of the TNR acreage requiring clearing. Further details are provided in electronic workpaper file "TNR Grading.xls."

The acres per track mile of grubbing were also obtained from the ICC Engineering Reports, other ICC Bureau of Valuation documents, and BNSF's Orin Line construction data. These figures are also displayed in Exhibits III-F-3 and III-F-4 and applied to the TNR's line segments in Exhibit III-F-5 in the same manner as the acres for clearing.

ii. Clearing & Grubbing Costs

Based on field trips in October/November 2003 by Mr. Reistrup (AEP Texas' principal operating witness) and Messrs. Brian Bastow, Doug Ellison and Dan Swanson of AEP Texas' engineering firm, Stone Consulting & Design, AEP Texas determined that much of the route would require minimal clearing and most of the clearing would involve the removal of brush and grasses as opposed to trees. This is supported by the ICC Engineering Reports (and other ICC valuation documents) which

show minimal clearing and substantially less grubbing. *See* Exhibit III-F-3. It is also supported by many photographs taken by AEP Texas' engineering witnesses during the field trips. *See* Workpapers Vol. 20, pp. 10429-468.

In determining the appropriate cost for clearing and grubbing applicable to the TNR, AEP Texas' experts have reflected two different costs for clearing and one cost for grubbing. For the acres that were grubbed, AEP Texas has assumed that trees were also cleared. Therefore, AEP Texas' experts have used the cost per acre for clearing of $4,063.22 (cut and chip medium, trees to 12" in diameter) from the 2000 Means Handbook. This cost per acre reflects indexing of the Means Handbook unit cost to June 2000 levels[10] and the application of the Means Handbook location factors.[11] For these same acres, the AEP Texas engineers have utilized the cost per acre for grubbing of $2,557.44 (associated with cut and chip medium, trees to 12" in diameter), also obtained from the 2000 Means Handbook and including the application of the index and the Means Handbook location factors. For the remaining acres of clearing for the TNR, the

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[10] The 2000 Means Handbook unit costs represent costs as of January 2000. As the TNR begins operations in June 2000, it was necessary to index the Means Handbook unit costs from January 2000 to June 2000. *See* electronic workpaper file "TNR Grading.xls," tab "IIIF Unit Costs."

[11] All of the unit costs from the Means Handbook utilized by the AEP Texas engineers are adjusted by the Means Handbook location factors. The cost figures in the Means Handbook represent national averages. The Means Handbook city cost indexes for site construction are used to develop weighted average factors based on TNR route miles. *See* electronic workpaper "TNR Grading.xls," tab "IIIF Loc Factor."

engineers applied the cost per acre of $181.65 (including the index and location factor adjustments) for clearing with dozer and brush rake, medium brush to 4" diameter.

The TNR requires 1,120 acres to be cleared at a cost of $1.5 million and 329 acres to be grubbed at a cost of $0.8 million for a total cost of $2.3 million for clearing and grubbing at 2Q00 levels. *See* Exhibit III-F-5.

b. Earthwork

As the Board is aware, the ICC Engineering Reports provide the most accurate record of the quantities of earthwork required when most of the lines being replicated by the TNR were originally built in the late 1800s and early 1900s. Indeed, the Board has accepted the use of the ICC Engineering Reports on many occasions. As such, AEP Texas' engineering experts relied, to the extent possible, on the information contained in the ICC Engineering Reports to develop the initial grading quantities, which were then adjusted to reflect the TNR's modern roadbed. As noted in the section on clearing and grubbing, *supra*, the ICC Engineering Reports were not available for the TNR line segments between Las Animas Jct., CO and Amarillo, TX but other ICC Bureau of Valuation documents, containing similar information, were obtained from NARA. The initial grading quantities obtained from these documents were adjusted in the same manner as the ICC Engineering Report quantities to reflect the TNR's modern roadbed specifications. The following is a description of the ICC Bureau of Valuation documents utilized for this portion of the TNR:

The section between Las Animas Jct. and the CO/OK border is identified as valuation section 1A-CO of the Dodge City & Cimarron Valley Railway. Data for this valuation section was filed with the ICC on B.V. Form 643.

The section between the CO/OK border and Boise City, OK is identified as valuation section 22-OK of the Atchison Topeka & Santa Fe Railway (formerly valuation section 2A-OK of the Elkhart and Santa Fe Railway). Data for this valuation section was also filed with the ICC on B.V. Form 643.

The section between Boise City, OK and the OK/TX border is identified as valuation section 2-OK of the Elkhart and Santa Fe Railway. Data for this valuation section was filed with the ICC on B.V. Form 588-R.

The section between the OK/TX border and Amarillo is identified as valuation section 1-TX of the North Plains and Santa Fe Railway. Data for this valuation section was filed with the ICC on B.V. Form 562. *See* Workpapers Vol. 20, pp. 10362-10416 for copies of the ICC Engineering Reports and other ICC valuation documents used by AEP Texas' engineering experts.

i. History of the ICC Engineering Reports

While the Board is aware of the history of the ICC Engineering Reports, the AEP Texas engineers note that grading data was collected under the "Special Instructions for 'Road Accounts'":

Account 3. Grading

> Cross-section measurements shall be made of the roadbed as it now exists in such manner as will permit an accurate ascertainment of the quantities therein. In general, cross sections shall be made at each 100-foot station and at such intermediate points as the conditions demand for calculating the grading quantities and their classification. Station and plus of all grade points shall be noted.
>
> Horizontal distances in cross sections shall be ascertained from the base line and at right angles thereto. Vertical distances shall be ascertained from base of rail or subgrade. Ditches and channel changes constructed by the carrier, which can not properly be classed as borrow pits, shall be estimated or measured at such intervals as are necessary to obtain information as to yardage. Note shall be made of kind of ditches, and where used for other than railroad purposes give conditions governing construction.
>
> Unless otherwise instructed all material excavated shall be classified by the assistant field engineer as "solid rock," "loose rock,"or "common excavation."
>
> *Solid rock* shall comprise rock in solid beds or masses in its original position which may be best removed by blasting, and bowlders (sic) or detached rock measuring 1 cubic yard or over.
>
> *Loose rock* shall comprise all detached masses of rock or stone of more than 1 cubic foot and less than 1 cubic yard, and all other rock which can be properly removed by pick and bar and without blasting, although steam shovel or blasting may be resorted to on favorable occasions in order to facilitate the work.
>
> *Common excavation* shall comprise all other materials of whatsoever nature that do not come under the classification of "solid rock"or "loose rock."

I.C.C. Division of Valuation, "Instructions for Field Work of the Roadway Branch of the Engineering Section," 1916, page 10.

ii. Identification of Applicable Valuation Sections

The ICC's Engineering Reports and other ICC valuation documents correspond to railroad valuation sections. The railroad valuation sections cover specific rail lines and are usually confined within a state. As part of the ICC's valuation process, valuation section index maps were created which identified the boundaries of each railroad valuation section. *See* Workpapers Vol. 20, pp. 10363-369.

Based on these maps, the AEP Texas engineers identified the valuation sections corresponding to the TNR's line segments. Exhibit III-F-6 contains a listing of the valuation sections applicable to the TNR.

iii. Extraction of Data from the ICC's Engineering Reports

Once the applicable valuation sections and relevant ICC Engineering Reports (and other ICC valuation documents) were identified, AEP Texas' engineering experts extracted the data necessary to calculate the required earthwork quantities for the TNR.

First, the miles for each valuation section were drawn off in three categories: (1) main-line; (2) other main track; and (3) all other track. Next, the cubic yards of excavation were extracted by type of material – common, loose rock and solid rock. Then, the cubic yards of embankment were extracted by type of material – common, loose rock and solid rock.

As discussed *supra*, AEP Texas had to rely on ICC Bureau of Valuation documents other than the ICC Engineering Reports for the TNR line segments between Las Animas, CO and Amarillo, TX. The information from these documents varied. In some instances, actual quantities were shown with a distribution between types of material. In other instances, no distribution of the quantities by type of material was shown so the distribution from a bordering valuation section was imputed. In another instance, quantities were calculated by dividing total costs by applicable unit costs. AEP Texas has included the support for its experts' development of quantities for this portion of the TNR in its workpapers. *See* electronic workpaper file "Las Animas to Amarillo Engineering.xls."

Exhibit III-F-3 summarizes the data extracted from the ICC Engineering Reports (and other ICC valuation documents) for each valuation section applicable to the TNR. The grading quantities extracted from the ICC Engineering Reports (and other ICC valuation documents) also were used to develop a distribution of the earthwork quantities into four types of material – the three types of excavation (common rock, loose rock, solid rock) and total embankment (borrow). This distribution for each valuation section is displayed on Exhibit III-F-7.

iv. Adjustments to ICC Engineering Report Quantities to Reflect Modern Design Standards

The earthwork quantities contained in the ICC Engineering Reports (and other ICC valuation documents) are based on design specifications less stringent than those for modern day construction, and therefore need to be adjusted.

Based on a review of literature prevailing at the time, the AEP Texas engineers estimated that the ICC Engineering Report quantities for the railroads comprising the portion of the TNR to be constructed reflect average roadbed widths of 17 feet for fills and 20 feet for cuts. *See* William C. Willard, *Maintenance of Way and Structures*, McGraw-Hill Book Company, 1915, pp. 29-31, included in Workpapers Vol. 20, pp. 10418-419. Based on modern design standards required to accommodate coal unit trains, high-speed intermodal trains and other traffic, the TNR has two different roadbed widths. For the highest density line segments of the TNR, from Donkey Creek, WY to Converse Junction, WY, the TNR has single-track roadbed widths of 28 feet for fills, 44 feet for cuts (the additional 16 feet reflects 8 feet on each side required to accommodate side ditches 2 feet wide and 2 feet deep), and a side slope of 1.5 to 1, as explained further *infra*. Roadbed widths for double track (two main tracks) between Donkey Creek and Alliance, NE are 43 feet for fills and 59 feet for cuts, based on a spacing of 15-foot track centers and using a 1.5:1 sideslope. All of the remaining line segments of the TNR have single-track roadbed widths of 24 feet for fills and 40 feet for cuts and double-track

roadbed widths of 39 feet for fills and 55 feet for cuts. All passing sidings on the TNR are also spaced on 15-foot track centers.

In order to calculate the TNR's earthwork requirements, it was necessary to adjust the ICC Engineering Report quantities so that they would reflect the railroad's modern day design specifications. To do this, an Excel spreadsheet was utilized. *See* electronic workpaper file "TNR Grading.xls," tab "IIF Calc."

Exhibit III-F-8 contains the adjusted earthwork quantities per mile for single, double and passing track based on the roadbed width specifications described *supra*. Some triple track is also included in the vicinity of the Crawford to Belmont, NE, helper district.

v. Earthwork Quantities for Segments Not Covered by The ICC Engineering Reports

(a) Donkey Creek to South Logan, WY

While there are no ICC Engineering Reports for the Donkey Creek to South Logan line segment, which was constructed in the 1970's, there is publicly available data. *See* ICC Docket No. 37029, *Iowa Public Service Company v. Burlington Northern Railroad Company and Chicago and North Western Transportation Company* ("*IPS*"), included in Workpapers Vol. 20, pp. 10420-428. In the February 28, 1985 *IPS* testimony of Burlington Northern Railroad Company witness Jerry R. Masters, he provided excavation figures covering 79.37 miles of BNSF's Orin Line from Reno to Orin

Junction, which is 51.2 miles south of South Logan. *See* Exhibits JRM-3A and JRM-3B from *IPS*, which are included in Workpapers Vol. 20, pp. 10425-428.

Mr. Masters' testimony provided the cubic yards of excavation for this segment of the Orin Line (*i.e.*, the Orin Subdivision) and a wealth of other information pertaining to its construction. According to Mr. Masters' testimony, the roadbed width for the Orin Line construction equaled 28 feet for single track. Mr. Masters also stated that this portion of the Orin Line (Reno to Orin Junction) was originally constructed as 50 percent single track and 50 percent double track.

Utilizing this information, combined with the specifications for the roadbed width, side ditch and side slope geometry being utilized by the TNR, AEP Texas' experts estimated the earthwork quantities for the TNR portion of the Orin Subdivision to equal 150,555 cubic yards per mile for single track and 183,682 cubic yards per mile for double track assuming a 28-foot roadbed width. For a 24-foot roadbed width, the estimated earthwork quantities equal 141,736 cubic yards per mile for single track and 174,843 cubic yards per mile for double track. *See* Exhibit III-F-9.

(b) Eagle Butte Jct. to Campbell, WY

BNSF did not provide any earthwork quantity data for the line between Eagle Butte Jct. and Campbell. To calculate the grading quantities for this branch line, AEP Texas' experts used the per-mile quantities for the nearby Orin Subdivision

(Donkey Creek to South Logan, WY), assuming a 24-foot roadbed width, as described *supra*.

(c) Reno to Black Thunder Jct., WY

BNSF did not provide any earthwork quantity data for the line segment between Reno and Black Thunder Jct. To calculate the grading quantities for this branch line, AEP Texas' experts used the per-mile quantities for the Orin Subdivision (Donkey Creek to South Logan), with which the branch connects, assuming a 24-foot roadbed width, as described *supra*.

(d) North Wye Tracks for Antelope and North Rochelle Mines

The Antelope and North Rochelle mines on the Orin Subdivision do not currently have connecting wye tracks that allow trains to leave the mines and head in a northerly direction (geographically) toward Donkey Creek. Because the TNR originates traffic that goes in that direction, it is necessary to construct such wye tracks. For the 1.04-mile north wye at Antelope, AEP Texas' experts estimated earthwork requirements of 363,033 cubic yards of fill and 2,064 cubic yards of cut using Eagle Point engineering software. *See* Workpapers Vol. 21, pp. 10509-532. For the 0.11-mile north wye at North Rochelle, AEP Texas' experts used the per-mile quantities for the Orin Subdivision (assuming a 24-foot roadbed width) as described *supra*.

(e) Amarillo Connection

BNSF recently constructed a connection between the Boise City Subdivision and the Red River Valley Subdivision at Amarillo, TX, to facilitate north-south train movements between the two subdivisions. Although BNSF did not provide any information on this connection in discovery (notwithstanding AEP Texas' request that it do so), AEP Texas' engineering experts designed a similar connection. AEP Texas' experts estimated earthwork requirements for this 0.99 mile connecting track of 117,038 cubic yards of cut using Eagle Point engineering software. *See* Workpapers Vol. 21, pp. 10486-10508. This quantity was distributed between material types using the distribution percentages of the connecting valuation section FWD-3-TX.

(f) Arapahoe and Harrington Destination Spurs

Two of the TNR's local destinations, the Arapahoe plant near Denver, CO and the Harrington plant near Amarillo, TX, require the construction of a TNR-owned destination spur from the main line. There are no ICC Engineering Reports for these two destination spurs nor did BNSF provide any earthwork information for them in discovery. For the Arapahoe spur, AEP Texas' experts used the per-mile quantities for the adjacent valuation section, CBQ-2-CO. For the Harrington spur, they used the per-mile quantities for the adjacent valuation section, NPSF-1-TX.

vi. TNR Earthwork Quantities and Costs

Once the adjusted earthwork quantities per mile were developed, it was necessary to calculate the total earthwork requirements and costs for the TNR. This is discussed below.

(a) TNR Line Segments

Exhibit III-F-10 details the calculation of the earthwork quantities for the TNR's respective line segments. First, the TNR line segments were matched with the applicable valuation section(s) (as discussed *supra*). Next, the route miles for each segment were divided into single, double, triple, passing and other track based on the TNR's track configuration as developed by AEP Texas witness Paul Reistup. Finally, the number of tracks was multiplied by the applicable cubic yards per mile for the appropriate valuation section. For those line segments where AEP Texas'experts developed the grading quantities, those quantities were simply input into the calculation.

(b) TNR Yards

AEP Texas' experts calculated the yard grading requirements based on an assumed average fill height of one foot and either 15-foot track centers or 25-foot track centers depending on the track spacing specified by AEP Texas' operating witness (Mr. Reistrup), applied to the appropriate miles of track in each of the TNR's two yards located at Alliance and Las Animas Jct. The one-foot fill height was used for yards because an assumed fill height of one foot is used to allocate earthwork quantities to the

yard tracks involved in the original construction and reflected in the ICC Engineering Reports. *See Wisconsin* at 81.

The earthwork quantities recorded in the ICC Engineering Reports reflect the requirements for all track in the particular valuation section—single main track, double main track, other sidings and yards. There is no separation of these quantities by type of track, and no separate identification of earthwork quantities for yard track.

In order to differentiate the track types, AEP Texas' experts employed a spreadsheet program that makes the necessary adjustments to the quantities. In particular, the program determines the earthwork quantities per mile for the main line track. The earthwork quantities for yard track then need to be removed. To do this, the spreadsheet formulas calculate the number of track yard miles for each valuation section and develop the associated earthwork by assuming a one-foot fill. This amount of earthwork is then deducted from the total quantities for the particular valuation section and the remaining quantities are distributed to the main line miles. Therefore, when calculating the grading quantities for a yard that is placed in a particular valuation section, the one-foot fill has to be used in order to be consistent and avoid overstating the required earthwork quantities.

Stated differently, any earthwork quantities for yard track that may have exceeded those required for a one-foot fill were allocated to the main track. Following this logic, when calculating yard track earthwork requirements for the TNR, a one-foot

fill must be assumed for otherwise there will be a double-count in total earthwork quantities. This is a mathematical certainty, as the Board recognized in *Wisconsin*:

> [I]n using the Engrg Rpts (which contain only the combined grading for yards and lines), the parties agreed to assume that the original rail yards required a minimum amount (1 foot) of fill. This allotted the vast majority of grading work to the roadbed. Given the parties' agreement on yard fill, it would be inappropriate for UP to seek to maximize the amount of grading on the line (by assuming minimum fill in the yards) and then, after the grading requirements are established, to revise upward the amount of grading in the yards.

Wisconsin at 81. The Board has continued to support this point in more recent decisions. *See Duke/NS* at 91; *Carolina* at 79; and *Duke/CSXT* at 77.

The calculations of the TNR's yard track earthwork quantities are contained in Exhibit III-F-11.

(c) Total Earthwork Quantities

In order to properly develop the quantities for grading the TNR's roadbed, it was necessary to separate the earthwork requirements into four types of material – common, loose rock, solid rock and borrow. This was done by distributing the total quantities for the line segments developed in Exhibit III-F-10 based on the distribution percentages obtained from the ICC Engineering Reports, other ICC valuation documents (as developed in Exhibit III-F-7), and the Orin Subdivision construction documents.

AEP Texas' experts classified the TNR's yard earthwork as borrow under the assumption that the yards would be constructed in flat areas and the earthwork necessary to support the yards would come from nearby borrow pits.

The distribution of the earthwork quantities by type of material is shown in Exhibit III-F-12 and summarized in Table III-F-4 below.

Table III-F-4
TNR Earthwork
Quantities By Type Of Material Moved

	Type of Earth Moved (1)	Cubic Yards (000) (2)
1.	Common Excavation	32,350
2.	Loose Rock Excavation	2,278
3.	Solid Rock Excavation	3,360
4.	Borrow	36,853
5.	Total	74,841

Source: Exhibit III-F-12

(d) Earthwork Unit Costs

AEP Texas' unit costs are the product of equipment selections made by its engineering experts, who have extensive experience building and maintaining railroads. AEP Texas' engineering experts also made their selection based on an extensive field inspection of the BNSF lines being replicated. In particular, the entire route was divided amongst Brian Bastow, Dan Swanson and Doug Ellison of Stone Consulting & Design.

All of the lines were inspected and a variety of digital photos were taken. The Stone Consulting & Design engineers carried hand held GPS systems to determine their exact location along the route where photos were taken. Those locations were then correlated to the BNSF milepost locations. Although AEP Texas' experts were unable to hi-rail the route, they inspected it from roadsides, road crossings and other areas accessible by foot or vehicle. The photos were then labeled as to location and feature and inserted into a PowerPoint file that was converted to an Adobe Acrobat file. These photos appear in the Part III-F electronic workpaper folder "Photos."

Special details along the route were noted and these notations have been placed upon the photos in the electronic files. The notations include, but are not limited to, observations of MOW buildings, at-grade crossings, ditching, vegetation, bridges and culverts as well as observations on general topography.

Based on the field inspections, the AEP Texas engineers have made a number of general and specific observations about the territory:

- For the most part, the topography is gently sloping with long stretches of minimal excavation.
- Overall, there is very little difficult terrain to be traversed with the most difficult between Denver and Pueblo, Colorado.
- Streams and rivers are generally easy to cross and do not require significant structures. For example, the photo below shows that the longest bridge on the TNR (2,439 feet), which crosses the Red River, while long, mostly crosses over a low "dirty wash" area with little or no water.



Texas Division, Red River Valley Subdivision, MP 238.08

Given the above, AEP Texas' experts have adopted the same least-cost-but-feasible grading approach approved by the Board in other rate cases. *See e.g.*, *FMC*, where the Board held at 117:

> UP has not shown that it would be infeasible to use the equipment selected by FMC. Indeed, FMC's costs are based on a recognized source used by construction companies to estimate project costs. While the equipment UP would have the ORR use could also accomplish the required work, and may be more productive, it has higher unit cost for moving soil than the equipment FMC would have the ORR use. FMC is entitled to have the equipment that results in the overall lowest cost used. Therefore, we use FMC's unit costs for grading to determine earthwork costs.

(i) Common Earthwork

The equipment that AEP Texas' engineering experts have chosen to use in the construction of the TNR's roadbed is consistent with equipment the Board has repeatedly accepted in other Western rate reasonable cases. In particular, the TNR will use an eleven cubic yard elevating scraper, which includes a 300 HP push dozer and operator for excavation, spreading and grading. *See* Workpapers Vol. 21, p. 10581. Scrapers are particularly useful because they can haul, dump and spread the excavated material, which eliminates the need for extra equipment, such as bulldozers, to further handle the material. *See* electronic workpaper file "SW42.jpg." For compaction, AEP Texas' experts have chosen to use a combination of vibratory steel wheel rollers and sheepsfoot rollers. Using this combination provides compaction for all types of material that might be encountered during the grading process. The average cost of common earthwork is $3.42 per cubic yard indexed to June 2000.



Elevating Scraper



D8 Dozer (285HP)

Anticipating that BNSF might argue (as the defendants have done in other recent rate cases) that other types of equipment are more suitable for common earthwork, AEP Texas' engineering experts have also computed a common earthwork cost using alternate equipment consisting of a power shovel, off highway hauler, 200 HP dozer and the average of two types of rollers to show that equipment selection does not appreciably change the cost of common excavation. The cost computed for this equipment, adjusted to June 2000, is $3.79 per cubic yard.



Power Shovel Loading Off Road Truck



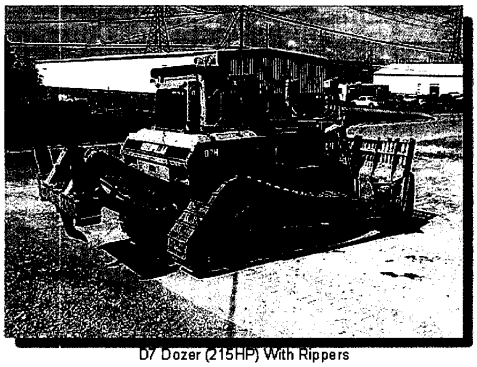
Self Propelled Vibratory Roller

Noting that using the Means Handbook for calculating construction costs is generally on the conservative side, the AEP Texas engineers have also examined actual construction bids for larger earthmoving projects conducted by the various state DOT's in the TNR's territory and found average excavation costs of $1.79/CY. *See* Table III-F-2. In their cost calculations for the TNR, the AEP Texas engineers have used a cost of $3.42 per cubic yard for common excavation.

NOTE

(ii) Loose Rock Excavation

For loose rock excavation, the AEP Texas engineers have chosen a combination of a 200 and a 300 HP dozer for ripping the loose rock and pushing it into piles, a 3CY power shovel for placing the ripped and dozed rock into the trucks, and a 42 CY off highway truck to haul the material to the fill or disposal site. Both the 200 and the 300 HP dozers are equipped with rock rippers at their rear and with large push blades in front. The 42 CY off highway truck that has been selected is capable of turning in a 27'11" foot radius. *See* Workpapers Vol. 21, pp. 10547-562.



D7 Dozer (215HP) With Rippers



D8 Dozer (285HP)

Research by the AEP Texas engineers has shown that most of the rock formations that occur throughout the area of the TNR's construction consist of striated rock, which is layered and therefore rippable. *See* electronic workpaper files "SW35.jpg," "SW36.jpg," and "SW37.jpg."

Material will be compacted in fill areas using a combination of sheepsfoot and vibratory steel wheeled rollers. The average cost for loose rock excavation is $5.93 per cubic yard. *See* electronic workpaper file "IIIF2B Earthwork Cost.xls," tab "Loose Rock."

(iii) Solid Rock Excavation

AEP Texas' engineers developed solid rock excavation costs in the following manner. First, they developed a unit cost for solid rock blasting based on an average of the Means Handbook cost for blasting rock over 1,500 cubic yards and the cost for bulk drilling and blasting. *See* Workpapers Vol. 21, p.10585. The engineers then added the costs to excavate the blasted rock, load it into trucks and haul it away, and dump it. They also included the cost to spread the wasted material, and the average compaction cost for embankment that was used for the other earthwork categories. *See* electronic workpaper file "TNR Earthwork Costs.xls," tab "Solid Rock."

When applying the unit cost to the solid rock earthwork quantities, AEP Texas' engineers used an average of the solid rock unit cost ($10.01 per cubic yard) and the loose rock unit cost ($5.93 per cubic yard). This reflects their expert opinion that half

of the quantities classified by the ICC as solid rock would be rippable (and therefore classified as loose rock) using modern equipment. This results in a cost per cubic yard of $7.97 for solid rock excavation.

AEP Texas' equipment and blasting selections, and therefore its unit costs, are consistent with those approved by the Board in previous stand-alone cases, and are sufficient for the job in the territory traversed by the TNR.

As mentioned above, AEP Texas' engineering experts assumed that 50 percent of the rock classified by the ICC Engineering Reports as solid rock – defined by the ICC as rock that cannot be excavated by a hand pick[12] – is actually rippable using modern equipment today. This approach has been used in other stand-alone cases. *See Duke/NS* at 93-94; *Carolina* at 80; *Duke/CSXT* at 78. Moreover, the equipment available during the original construction of most of the railroad lines being replicated was horse-drawn grading equipment and explosives, supplemented by hand pickaxes.

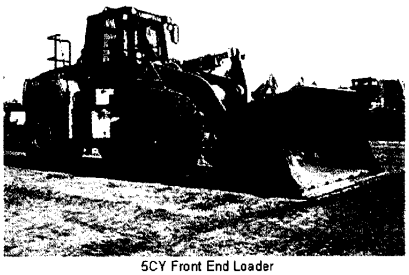
The earthmoving equipment AEP Texas' engineers have chosen to use is much more powerful than the horse-drawn grading equipment of the early 20th Century, which was not capable of ripping layered rock such as shales and sandstones – and certainly more powerful than a hand pick. The engineers have shown that most of the rock is striated and therefore much of it is rippable.

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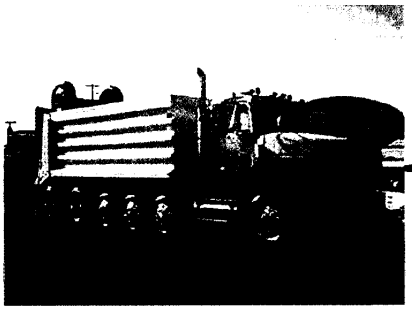
[12] *See* pp. III-F-23-24, *supra*, for the ICC definitions by material type.

(iv) Embankment/Borrow

AEP Texas' unit costs (taken from the Means Handbook) for borrow are based on a five cubic yard wheeled front end loader loading 20 CY capacity dump trucks to haul material to the construction site, and the average compaction cost for embankment that was used for the other earthwork categories. Borrow costs equal $10.78 per cubic yard at June 2000 levels.



5CY Front End Loader



20 CY On-Highway Dump Truck

NOTE

(e) Land for Waste Excavation

Not all of the excavated material is re-used as fill. AEP Texas' earthwork calculations assume a 30 percent waste ratio, which has been used in prior stand-alone cases. As this waste material needs to be placed somewhere, the TNR will acquire additional land along the right-of-way to accommodate the dumping of the waste material. AEP Texas' experts have assumed an average 15-foot depth for wasted materials, and have included the costs for the dumped material to be moved and shaped by bulldozer. The bulldozer costs have been included in the excavation unit costs. AEP

Texas has included an additional 467 acres of land at $300 per acre for a total cost of $140,227.

(f) Total Earthwork Costs

The total TNR earthwork cost, including land for waste excavation, is $545.4 million. AEP Texas' engineering experts believe this cost is conservative for at least two reasons. As noted previously, the Means Handbook unit costs are conservative in that they do not reflect the economies of scale that would apply to a project the size of the TNR. Second, experience shows that the competitive bidding process would most likely result in costs lower than those contained in the Means Handbook.

c. Drainage

i. Lateral Drainage

The linear feet of pipe per route mile for lateral drainage was obtained from the ICC Engineering Reports and applied to the TNR's line segments. Pipe quantities were also extracted from the track charts for the newly constructed segments. The cost per linear foot for installed drainage pipe, including backfill and compaction, was taken from the 2000 Means Handbook. Based on the ICC Engineering Reports and BNSF's track charts (for the recently constructed rail lines), the TNR requires 8,189 linear feet of lateral drainage pipe. Total investment in lateral drainage for the TNR equals $0.2 million at 2Q00 levels. *See* Exhibit III-F-5 and electronic workpaper file "TNR Grading.xls."

ii. Yard Drainage

AEP Texas' engineering experts inspected several of BNSF's yards along the route being replicated by the TNR in October and November of 2003, and they observed only minor yard drainage. Moreover, average rainfall for the areas of Alliance, NE and Las Animas, CO is just 12.3 to 16.5 inches per year. *See* Workpapers Vol. 21, pp. 10573 and 10578. Consequently, the yards do not require significant drainage facilities.

Nevertheless, installing such drainage in the yards is certainly prudent. In particular, AEP Texas' experts have used 24" CMP galvanized pipes for the main collector lines, which are typical for this type of application. The TNR also has 12" CMP cross-drains and a catch basin every 300' between the yard tracks – properly graded to drain to each basin.

d. Culverts

Culverts are used for minor drainage channels where large openings are not required. Culverts are reinforced concrete box or corrugated aluminized metal pipe depending upon the location and application. Culvert strength and cover would be adequate to withstand railroad loadings to a gross weight on rail of 286,000 pounds per car. Culverts typically would be sized to pass a 50 year storm event and to avoid flooding into the ballast section during a 100 year storm event. The TNR replicates the culvert

areas used by BNSF on the lines being replicated. Culverts are generally less expensive to install and maintain than bridges and therefore are preferred when appropriate.

Several criteria were used for the TNR's culvert construction. First, culverts replace any bridges less than 20 feet in length, assuming that the bridge crosses a water barrier. Second, consistent with the observations AEP Texas' engineers made during their field inspection trip in October and November 2003, and with their own construction experience, corrugated metal pipe ("CMP") culverts are used for culverts up to 144" in diameter. Third, to simplify the culvert installation process where box culverts are used, AEP Texas' engineers used corrugated pipes that match the drainage area of the box.

i. Culvert Unit Costs

(a) CMP

AEP Texas' CMP cost ($4.3 million) is based on a materials quote from Lane Enterprises, Inc. (*see* Workpapers Vol. 21, p. 10706) and installation costs were derived from the Means Handbook (*see* Workpapers Vol. 21, p. 10711-10715). AEP Texas' engineers have chosen to replace some of the reinforced concrete box culverts with corrugated metal pipes ("CMPs") which provide a similar waterway area – provided the height of the roadbed allows replacement. This was done to reduce the TNR's construction costs and time of construction.

(b) Reinforced Concrete Box Culverts

AEP Texas' reinforced concrete box culvert ("RCB") cost ($11.7 million) is based on a materials quote from Hanson Pipe Products and from South Dakota Concrete (*see* Workpapers Vol. 21, pp. 10703-10705, 10708-10710). Installation costs were derived from the Means Handbook (*see* Workpapers Vol. 21, p. 10711-715). AEP Texas' experts have chosen to replace some of the corrugated metal pipes ("CMPs") with reinforced concrete box culverts, which provide a similar waterway area. This was done when height limited the use of CMP (*i.e.,* the pipe would have been too tall to handle the waterway area).

(c) Culvert Rip Rap, Excavation, Compaction and Bedding

AEP Texas' engineers have used an excavation length equal to the length of the culvert, an excavation width equal to the diameter of the culvert plus 2 feet, and an excavation depth of 4 inches. Because the basic earthwork quantities are included in the ICC Engineering Reports, however, the AEP Texas engineers' approach to excavation is conservative. As for compaction, the amount of compaction is equal to the same volume excavated, minus the volume of the culvert. *See* electronic workpaper file "IIIF-2 "TNRR Culvert.xls" tab "Bedding & RipRap Costs." AEP Texas' engineers have also used a square rip rap area of 2 times the diameter of the culvert on each side times a depth of 2 feet. This is significantly more rip rap than was observed at any of the culverts on

the existing BNSF lines being replicated during the engineers' field inspection. Indeed, many of the culverts show no type of end treatment as shown in the following pictures:

• Pikes Peak Subdivision	Way Point 25, 35, 16 and 13
• Campbell Subdivision	Way Point 104
• Black Hills Subdivision	Way Point T4 and T12
• Boise City Subdivision	Way Point 70,81,86 and M5
• La Junta Subdivision	Way Point 59
• Red River Valley Subdivision	Way Point BT3, BT5, BT17, BT22, BW21 and BW34
• Brush Subdivision	Way Point WP034, 10 and 007

See Workpapers Vol. 21, pp. 10716-722.

ii. Culvert Installation Plans

All culverts are installed during the early stages of the preparation of the subgrade for the railroad. The sites are easily accessible, in part through the ongoing preparation of the roadbed and in part because most of the TNR's territory is relatively level terrain and often near major roads, and the culverts can be installed with a minimum of excavation. *See* electronic workpaper folder "Photos."

Work production of the crews is consistent with AEP Texas' proposed construction schedule because there are no deep trenches to excavate or work in, and by installing the culverts at this stage of the project, no waterway diversions are required. Moreover, in the few instances where water is flowing immediately adjacent to the culvert, the culvert can be installed while the water is flowing. Indeed, the area traversed by the TNR is semi-arid, and no water is present in most of the stream courses, except

following brief periods of heavy rain. The dry conditions in the area are demonstrated in AEP Texas' photographs. *See* Part III-F electronic workpaper folder "Photos." In any event, the quick placing of CMPs does not require stream diversion above and beyond the stream diversions that occur during the roadbed preparation.

More specifically, the bed for the CMP or RCB is excavated one foot wider on each side than the culvert width. The bottom of the excavation is covered with 4" of gravel to act as a cushion for the culvert and provide a level surface. The first culvert section is placed on the prepared subbase. The next section is placed adjacent to the first and a pipe band is installed to connect the two sections. This continues until all sections have been set in place. The culvert is then backfilled. After the subbase has been prepared, most culverts can be installed in less than one day.

iii. Culvert Quantities

AEP Texas' engineers used the culvert inventories provided by BNSF in discovery, which included the length and diameter of the culvert. The inventory was culled to created a list of the culverts on the lines that the TNR is replicating. AEP Texas' engineers then added additional culverts where a culvert was being substituted for a bridge shorter than 20 feet in length.

The AEP Texas engineers note that the inventory provided by BNSF does not reconcile with the culverts shown on BNSF's track charts. The engineers relied on the inventory rather than the track charts because this inventory provided more

comprehensive data, and because BNSF uses this inventory for road property investment purposes.

iv. Total Culvert Costs

The total cost of the TNR's culverts is $29.6 million. *See* electronic workpaper file "IIIFTOTAL.xls."

e. Other

i. Sideslopes

The TNR has average side slopes of 1.5:1. This side slope design has consistently been accepted by the Board. *See Duke/NS* at 90; *Carolina* at 78; *Duke/CSXT* at 76; *TMPA* at 116, n.183; *Wisconsin* at 80-81; *FMC* at 111-12. Moreover, use of 1.5:1 side slopes is supported by Hay's definitive *Railroad Engineering Manual* and AREMA, §§ 1.2.3.3.2b and 1.2.3.3.3a at 1-1-22. In addition, as the Board noted in *Wisconsin*, such slopes are in common use. *See* photos in electronic workpaper folder "photos."

ii. Ditches

The TNR has side ditches in cuts that are two feet wide and two feet deep and that are trapezoidal in section. In many cases, this size ditch is larger than the existing ditches (where there were any at all) on the antecedent BNSF lines, which were examined during the AEP Texas engineers' recent field inspection. Two-foot ditches were accepted by the Board in *Duke/NS* at 90; *Carolina* at 78; *Duke/CSXT* at 76; *TMPA* at 116, n.183 and *Wisconsin* at 82-83.

iii. Retaining Walls

Retaining wall quantities for the TNR are based on information shown in the ICC Engineering Reports under the category of "Protection of Roadway" included in Account 3, Grading. This includes cubic yards of masonry, timber walls, and walls made from timber ties and pilings. Rather than construct masonry or timber retaining walls, the TNR uses gabions (galvanized steel mesh boxes filled with rock). Gabions are suitable because they can be assembled on site and bent to fit the existing terrain.

The cost for gabions (including the rock)[13] and the cost for timber pilings were taken from the 2000 Means Handbook and indexed to 2Q00 levels. Total retaining wall investment for the TNR equals $5.1 million at 2Q00 levels.

iv. Rip Rap

AEP Texas' engineers developed rip rap quantities for the protection of the roadway from the ICC Engineering Reports and Orin Line construction documents and applied the unit cost from the Means Handbook to machine-place the rip rap. The engineers included the material portion of the unit cost because the necessary material (rock) is not readily available from the excavated rock that is wasted. This approach is conservative as BNSF's lines being replicating were observed to have very little rip-rap.

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[13] In locations where there is a substantial amount of rock material in the excavation material, it is possible to utilize the blasted rock to fill the gabions. As there is only a small amount of rock material on the TNR route, the cost for the gabions includes the cost of the rock material necessary to fill them.

See electronic workpaper folder "photos." AEP Texas has included $4.6 million for rip rap investment at 2Q00 levels.[14] *See* electronic workpaper file "TNR Grading.xls."

v. Relocating and Protecting Utilities

Most of the BNSF lines being replicated by the TNR were constructed in the 19th and early 20th centuries. Few, if any, utility lines existed at that time and would have had to be relocated. These costs were not incurred by the incumbent and thus, under the *Coal Rate Guidelines*, would constitute a barrier to entry if imposed on the TNR. *See* Part III-F-8, *infra*, for a complete discussion of this issue.

However, the TNR is replicating a few line segments that were built subsequent to the existence of utility lines. These line segments are: (1) Donkey Creek to South Logan, WY (including the Reno branch and the TNR-owned portions of the mine spurs); (2) Eagle Butte Jct. to Campbell, WY (including the TNR-owned portions of the mine spurs); (3) Las Animas Jct., CO to Amarillo, TX; and (4) destination spurs to the Arapahoe and Harrington power plants. These segments total 343.94 route miles. For these line segments, AEP Texas' experts have included a total estimate of $1.8 million for the costs to relocate and protect utilities based on the cost per route mile accepted by the Board in *West Texas Utilities* (indexed to 2Q00). *See* 1 S.T.B at 683, 703. AEP Texas'

[14] This rip rap investment does not include the rip rap used on culvert faces and for bridge pier and abutment protection. Those costs have been developed separately in the calculated culvert and bridge costs.

approach also is entirely consistent with the Board's findings in prior coal rate cases. *See Wisconsin* at 85 and *APS* at 31.

vi. Seeding/Topsoil Placement

AEP Texas' engineering experts included costs for seeding/topsoil placement in the same locations where BNSF incurred these costs. These procedures are consistent with the procedures accepted by the Board in prior cases. *See Wisconsin* at 84; *TMPA* at 121-122; and *Duke/NS* at 99. For the line segments from Eagle Butte Jct. to Campbell and Donkey Creek to South Logan (including the Reno Branch and the TNR-owned portions of the mine spurs), AEP Texas' experts based their quantity calculations on the actual quantities used in the construction of the Orin Line from Exhibits 3A and 3B of Jerry Masters' testimony in *IPS*, (*i.e.*, the same information used to develop the earthwork quantities for the Orin Subdivision discussed *supra*). *See* Workpapers Vol. 20, pp. 10425-428. For the other TNR lines, AEP Texas' experts relied on the embankment protection quantities obtained from the ICC Engineering Reports. Based on the ICC Engineering Report data, only 0.004 percent of the remaining TNR-replicated miles had embankment protection quantities.

In addition to quantities, Mr. Masters' exhibits in *IPS* show an average cost of placing topsoil (including seeding)[15] of $0.66 per cubic yard (at 1978 cost levels). *See*

[15] As noted by the Board in *Wisconsin* at p. 85, n. 159, the term "placing topsoil" in the Orin Line construction documents includes seeding. *See also TMPA* at 121-122.

Workpapers Vol. 20, pp. 10426-428. Indexing this cost to 2Q00 results in a cost of $1.86 per cubic yard. As shown in Exhibit III-F-13, total TNR investment costs for seeding/placing topsoil equal $1.5 million at 2Q00 levels.

vii. Water for Compaction

In dry areas, classified as arid or semi-arid, water is required to aid in the compaction process when developing the track roadbed on fill sections. An arid climate is defined as an area receiving between 100 and 400 mm of rainfall per year. A semi-arid climate is defined as an area receiving between 400 and 600 mm of rainfall per year. *See* Workpapers Vol. 21, p. 10631. The TNR route is classified almost exclusively as arid or semi-arid, with some small sections classified as sub-humid (between 600-1200 mm of rainfall per year). *See* Workpapers Vol. 21, pp. 10633-680.

Bill, WY receives an average of 291 mm of rainfall per year and Antelope Creek Ranch, WY receives an average of 324 mm of rainfall per year. Based on this, both of these locations are classified as arid. *See* Workpapers Vol. 21, pp. 10632-633. Both of these locations are on BNSF's Orin Subdivision in Wyoming, near the TNR's South Logan terminus. Therefore, AEP Texas' experts developed the required quantities of water based on the publicly available information for the construction of BNSF's Orin Subdivision discussed *supra*. *See* Workpapers Vol. 20, pp. 10425-428.

Using this information, the AEP Texas engineers calculated a water requirement of 20 gallons per cubic yard. This requirement was applied to all of the TNR

embankment and borrow quantities (in arid, semi-arid and sub-humid areas) to develop the required gallons. The total gallons figure was then applied to a cost per gallon of $0.009. *See* Workpapers Vol. 21, p. 10616. Total TNR costs for water for compaction equal $10.7 million at 2Q00 levels. *See* Exhibit III-F-13.

viii. Surfacing for Detour Roads

When the vast majority of the BNSF lines replicated by the TNR were originally constructed, roads were not prevalent and few, if any, were paved. As noted previously, however, several TNR-replicated line segments are of relatively recent vintage: (1) Donkey Creek to South Logan (including the Reno branch and the TNR-owned portions of the mine spurs); (2) Eagle Butte Jct. to Campbell (including the TNR-owned portions of the mine spurs); (3) Las Animas Jct. to Amarillo (including the new connection at Amarillo); and (4) spurs to destination power plants. For these line segments, the AEP Texas engineers included an estimate of $4.4 million for the costs to provide road detours during construction. *See* Exhibit III-F-13, Workpapers Vol. 21, p. 10589-607, and electronic workpaper file "TNR Grading.xls."

For each of the 119 private highway crossings on these line segments, AEP Texas' experts included costs for a 6"-deep gravel detour road estimated at 10' wide and 300' long. For each of the 116 public highway crossings on these line segments, the AEP Texas' Engineers included costs for a paved detour road estimated at 24' wide and 500' long.

AEP Texas' experts have excluded these costs for the other TNR line segments as a barrier to entry under the *Coal Rate Guidelines*. *See* Part III-F-8-b. This is consistent with Board precedent. *See Duke/NS* at 100; *Carolina* at 86; *Duke/CSXT* at 84; *TMPA* at 122-123; *Wisconsin* at 35; *FMC* at 120.

ix. Construction Site Access Roads

In general, the TNR track subgrade is used for its site construction roads. In addition, the TNR right-of-way is accessible from numerous public roadways, as well as interstate highways along almost the entire length of the replicated rail lines, thereby permitting construction access without building separate access roads. *See* Part III-F electronic workpaper folder "mapping." Further, the initial construction operation includes clearing the TNR right-of-way and creating initial site access with the heavy construction equipment. As the site is leveled by either cutting or filling the right-of-way, access roads are created for moving earth, rock and other materials to and from the construction sites.

x. Environmental Compliance

AEP Texas' engineers did not include any costs for environmental compliance for the majority of the TNR's line segments because these costs were not incurred when these lines were originally constructed by BNSF (or its predecessors), and to require such costs now would be a barrier to entry. However, a few of the line segments being replicated by the TNR were built subsequent to the advent of

environmental concerns (primarily enactment of the National Environmental Policy Act of 1969 and implementing regulations). These line segments are: Donkey Creek to South Logan (including the Reno branch and the TNR-owned portions of the mine spurs); Eagle Butte Jct. to E. Campbell (including the TNR-owned portions of the mine spurs); and destination power plant spurs. For these segments, the AEP Texas engineers included $0.7 million for environmental compliance. *See* Exhibit III-F-13.

AEP Texas' approach is consistent with the *Coal Rate Guidelines* and previous Board decisions. *See Wisconsin* at 86 (both parties agreed that environmental mitigation was only required west of Joyce, NE, *i.e.*, for only the recently constructed segments of the stand-alone railroad in and near the PRB).

3. Track Construction

a. Geotextile Fabric

The TNR is not being constructed with geotextile fabric because, as the Board is aware, geotextile fabric was not created until 1968, and all of the lines that the SARR replicates were constructed prior to that time except for the PRB lines described *supra*. *See Wisconsin* at 86. Therefore, consistent with the SAC theory of using the lowest feasible cost, costs for geotextile fabric are properly excluded in most areas. As for the small amount of other track where the predecessor tracks were constructed more recently, geotextile fabric should not be necessary in so far as most of the track on the

lines being replicated by the TNR have been in existence in the area for over 100 years, without the benefit of geotextile fabric.

AEP Texas' experts have, however, provided geotextile fabric under turnouts and at-grade crossings to be consistent with recent Board decisions in other stand-alone cases. The quantities of geotextile reflect the amount needed for turnouts only because the cost per foot for at-grade crossings already includes geotextile costs.

The total TNR geotextile costs of $43,000 are shown in electronic workpaper file "IIIFTOTAL.xls."

b. Ballast

The ballast and subballast layers serve to distribute the heavy track loads, both static and dynamic, to the subgrade at a bearing pressure that can be adequately supported by the subgrade. The ballast and subballast layers also allow water to escape from the ballast section to preserve subgrade stability. In addition, the subballast provides a filter to prevent finer grained subgrade soils from intruding into the ballast. The choice of ballast and subballast depends upon the strength of subgrade soils, the axle loads to be supported by the track, the tie spacing in the track, and the local availability and quality of materials.

AEP Texas' engineering experts assumed a subgrade bearing capacity of 25 psi, which is recognized by AREMA, Section 16-10.3.2.1 (2001 edition) (*see* Workpapers Vol. 21, p. 10755) as a standard subgrade and is adequate to the purpose. Using modern

compaction machinery, proper selection of local materials, and proper compaction techniques, the subgrade can easily support 25 psi. AEP Texas' experts selected wood ties with a tie spacing of 20.5 inches for all main track (including branch lines), consistent with railroad industry standards for heavy duty mainline track. The Board has also accepted wood tie spacing of 20.5". *See West Texas Utilities*, 1 S.T.B. at 707. Because of the lighter traffic and slower speeds, AEP Texas' experts used wood ties with 24" spacing and a 10" ballast section in yards. Mine leads and set-out tracks have 6" of subballast and 8" of ballast.

Although minimum mainline track design (AREMA Practical Guide to Railway Engineering) (*see* Workpapers Vol. 21, p.10754) indicates that 18" of total ballast and subballast below the tie is adequate to generate the required 25 psi at the subgrade level. To be conservative, AEP Texas used 20" of ballast and subballast, consisting of a 12-inch subballast layer and a 8-inch layer of clean rock ballast to generate the required 25 psi at the select material subbase level. Diagrams of the standard TNR main track cross sections (single and double) are included in Workpapers Vol. 21, pp. 10724-737.

Ballast for the TNR would be locally obtained granite, crushed to meet AREMA No. 4 size requirements (*see* Workpapers Vol. 21, p. 10753) and meeting Los Angeles and Mill Abrasion requirements. Exact sources and suppliers are discussed *infra*. An eight-inch minimum depth of ballast below the ties and a twelve-inch depth of

subballast is used for all mainline track and passing siding sections. Subballast consists of similar parent materials crushed to provide a well-graded, dense layer of crushed rock similar to road base material. *See* Workpapers Vol. 21, p. 10756.

For yards, where there is little or no dynamic loading[16] of the rail and ballast, AEP Texas' experts continue to use a ballast depth of 10" below the ties while using the existing compacted one-foot of fill in the yards as a subballast. The use of 10 inches of ballast over the compacted fill with a load exerts a pressure of 19.21 psi, or well below the 25 psi maximum recommend by AREMA. *See* Workpapers Vol. 21, p. 10758-765. Consequently, AEP Texas' experts have not included a separate layer of subballast in the TNR's yards.

Ballast and subballast quantities were developed for all sections of track based on the lengths of single and multiple track sections. As noted, *supra*, AEP Texas has included cross-sections of its track designs in Workpapers Vol. 21, pp. 10724-737. Each sheet has the volume per foot of track for all items, including the volume per foot for ballast and subballast. The quantities were calculated by multiplying the sectional area in feet by one foot in length and then dividing by 27 to obtain cubic yards.

To obtain the cross sectional area in feet, the AEP Texas engineers created a standard track section, to scale, in AutoCAD 2004. Using AutoCAD's sophisticated

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[16] Dynamic loading is a largely speed-dependent force factor that contributes to deterioration of the subgrade. *See* Workpapers Vol. 21, p. 10766.

area finding capabilities, the engineers selected the area of the ballast and subballast, yielding the square footage of each material. They then subtracted the area of ties per mile of track from the ballast, and multiplied the resulting area by 5280/27 to obtain the cubic yards of material per mile. *See* Workpapers Vol. 21, pp. 10724-737. Finally, the AEP Texas engineers created a cross section for each type of track section used on the railroad and computed volumes based on each cross section.

Ballast quantities for yards were calculated assuming each track in the yard is a single track and using the 10" ballast depth. AEP Texas' experts also used the standard conversion factor of 1.5 tons/CY in determining quantities, which is conservative versus the conversion factor of 1.325 tons/CY used by the "Track Data Handbook." *See* Workpapers Vol. 21, p. 10752.

AEP Texas' experts used prices for ballast and subballast from AFEs provided by BNSF in discovery and direct quotes obtained from suppliers. *See* Workpapers Vol. 21, pp. 10748-750. Subballast prices were derived from AFEs provided by BNSF in discovery. *See* Workpapers Vol. 21, p. 10751.

As for delivered costs, suitable subballast materials are located throughout the TNR territory. Moreover, subballast shipping is included in the AFEs. Delivered costs of ballast are based on exact shipping distances from the sources to the drop points throughout the system and multiplying the mileage by 0.035 cents per mile based on a shipping charge used for inter-railroad transportation from *Wisconsin* at 92. The supply

and shipping costs were then totaled and averaged to develop an average cost per CY delivered.

c. Ties

AEP Texas' engineering experts selected standard Grade 5 treated hardwood railroad ties, which are 7" x 9" x 8'6" for all mainline, siding and branch line track. For yard, set-out and helper tracks, the TNR uses 6" x 8" x 8'6" Grade 3 treated hardwood ties.

d. Track (Rail)

i. Main Line

As discussed in Part III-B-2-a, *supra*, the AEP Texas engineers have selected 136-pound CWR for the SARR's mainline track, with premium rail used between Donkey Creek and Alliance between Donkey Creek and South Logan and in other areas on curves 3 degrees and greater. 136-pound standard rail will be used on all other mainline, branch and destination spur tracks.

The delivered costs for 136-pound premium and standard rail were based on a quote from Pohl Corporation. *See* Workpapers 21, p. 10779. The rail is welded together into approximately 1600-foot lengths and then placed on a rail train for delivery to several different railheads along the TNR route. The rail would be distributed by the rail installation contractor. *See* Workpapers Vol. 21, p. 10738.

ii. Yard Tracks and Branch Lines

As discussed in Part III-B, AEP Texas' engineering experts have selected 115-pound CWR rail for yard, interchange and set-out tracks. The delivered unit price per foot for the 115-pound CWR rail is $7.99. The cost was based on a quote from Pohl Corporation. *See* Workpapers Vol. 21, p. 10779. As with the 136-pound rail, the price is for delivery to several railheads and the materials will be distributed by the rail installation contractor.

iii. Field Welds

The cost of labor for field welds is derived from a bid provided by Windgate Constructors. In particular, the Windgate quote states that Windgate is providing the labor to both lay and field weld CWR track sections. *See* Workpapers Vol. 21, pp. 10738-739. The cost of materials is not included in the bid, and therefore AEP Texas priced materials separately. The unit cost for the field weld materials was derived from a BNSF AFE produced in discovery. *See* Workpapers Vol. 21, pp. 10780-785.

Field welds are required to connect the 1600-foot strings of welded rail produced by the manufacturer as well as to insert insulated joints and make connections to turnouts. The calculations for the number of field welds as well as the number of compromise welds, (where 115-pound and 136-pound rail are joined together) are shown in electronic workpaper file "IIIFTotal.xls."

iv. Insulated Joints

AEP Texas' experts developed the number of insulated joints needed for the TNR by laying out the proposed CTC system on the track diagrams (Exhibit III-B-1) and then counting the number of insulated joint required. In general, insulated joints are used on both rails before and after turnouts and at intermediate points between three and five miles apart in CTC territory. The quantity calculation is shown in electronic workpaper file "CTC System and Signals.xls." The result is that the TNR needs 3,566 insulated joints.

A unit cost for insulated joints of $935 was based on a quote from L.B. Foster. *See* Workpapers Vol. 21, p. 10801.

e. Switches (Turnouts)

AEP Texas' experts included the number and size of turnouts specified in the TNR's track diagrams (Exhibit III-B-1). The total number of turnouts was developed by connecting the "stick" (track) diagram Autocad files to an Excel spreadsheet and designating each type of turnout separately. The spreadsheet automatically calculates the number of each size of turnout for the entire railroad. *See* electronic workpaper file "IIIFTOTAL.xls," tab "TNR Track Chart Counts."

As for the unit costs, prices are based on quotes from Koppers. *See* Workpapers Vol. 21, pp. 10792-796. The turnout pricing includes a complete turnout

with insulated switch rod, panelized (turnout is completely constructed and shipped as a unit) on oak/mixed hardwood switch ties, loaded and delivered by rail car.

f. Other

i. Rail Lubrication

Rail lubrication has successfully reduced rail wear on curves and is commonly used by most railroads and the utility industry. Automatic in-gauge rail lubricators are installed along the lines being replicated wherever they are shown on the BNSF track charts. The grease from the lubricators serves to reduce flange friction on the curves, leading to less rail wear and some decrease in train resistance.

Rail lubricators are used on curves 4° and greater. Grease from the rail lubricators will spread three miles along the rail according to the representative of Portec, which manufactures the lubricators.

The unit costs for rail lubricators is based on a quote from A&K (*see* Workpapers Vol. 21, p. 10805). The TNR cost for rail lubricators is detailed in electronic workpaper file "IIIFTotal.xls."

ii. Plates, Clips, Spikes and Anchors

The TNR is using wood ties with cut spikes that will be used to hold the rail to the tie plate and the tie plate to the ties, and to provide lateral restraint to hold the rail to gauge (4'-8½" inside dimension between the railheads). Two spikes per tie plate (four spikes per tie) are used on all track with timber ties and less than 3° curves. This spiking

pattern is standard practice for U.S. railroads, and is used by BNSF. *See* photos in Workpapers Vol. 21, pp. 10825-828. For curves greater than 3°, Pandrol plates and clips are used. They are attached to the ties with four screw spikes per plate or eight per tie.

Rail anchors are drive-on or spring clip-on devices that clamp under the base of the rail and bear against the sides of the timber ties. Anchorage of the rail prevents the rail from running, or moving in a longitudinal direction down the track due to thermal expansion or train acceleration/braking loads. The anchors transmit the longitudinal forces in the rail to the ties, which then transmit the forces to the ballast. Anchors are used on both sides of every other tie on main and branch lines where the curvature does not exceed 3°. Anchors are used on both sides of every tie for 200' on either end of grade crossings and turnouts. For yards and set-out tracks, anchors are used on every fifth tie. Anchors are not required where Pandrol clips have been installed.

The anchoring standard being used on the TNR is consistent with AREMA. *See* Workpapers Vol. 21, pp. 10811-812. This anchoring scheme exceeds that observed by the AEP Texas engineers on the BNSF lines being replicated during their recent field trip. For example, BNSF does not anchor every tie within 200' feet of a grade crossing. *See* Workpapers Vol. 21, pp. 10813-819.

The cost for plates, spikes, screw spikes, anchors, and Pandrol plates and clips is detailed in electronic workpaper file "IIIFTotal.xls, and in Workpapers Vol. 21, pp. 10802-804.

iii. Derails and Wheel Stops

Derails are used to keep cars from rolling through a turnout and on to the main track. Derails are included at all FED set-out track turnouts and at yard turnouts where cars are stored in Alliance. Wheel stops are used at the end of single ended tracks to keep the cars from rolling off the end of the track. The cost for derails and wheels stops has been developed from Means. *See* Workpapers Vol. 21, pp. 10799 and 10803.

iv. Materials Transportation

Specific transportation costs associated with a given item are addressed in the relevant portions of this Subpart, or in the applicable electronic workpaper files. Material quotes, where possible, include the cost of transportation to the project. Where quotes do not include transportation, it has been added into the material costs. Prices obtained from the Means Handbook include the cost of transportation to the job site. Therefore, no additional costs have been added in for those items.

v. Track Labor and Equipment

The TNR's track laying and related costs are from a quote provided by Windgate Constructors. This quote includes the following services: placing and compacting ballast and subballast, laying, fastening and welding of all track, and related items such as rail lubricators, insulated joints and switching devices. The quote also includes mobilization, de-mobilization, the unloading from railheads of necessary

supplies, and the movement of those supplies to the actual construction site. *See* Workpapers Vol. 21, pp. 10738-739.

4. Tunnels

There are no tunnels on the BNSF lines that the TNR is replicating.

5. Bridges

Bridges are constructed when other methods of protection, conveyance or separation prohibit the use of culverts or other types of crossings. The TNR has 456 railroad bridges with a total length of 54,875 linear feet and 19 highway and rail overpass bridges (on the Campbell, Reno and Boise City Subdivisions). The cost for bridges is $167.5 million and is detailed in electronic spreadsheet file "TNR Bridge List.xls."

a. Bridge Inventory

Based on a review of the bridge information provided by BNSF in discovery, the AEP Texas engineers developed an inventory by segment number and milepost, feature crossed, number of spans, structure type, and total length. The inventory is provided in electronic workpaper file "TNR Bridge List.xls." In accordance with stand-alone theory, bridges are built only across natural barriers or senior railroads because BNSF or its predecessors predate the road crossings except for more recently constructed sections of railroad. Bridges spanning 20 feet or less and crossing natural barriers have been built as culverts. For the list of bridges that have been built as culverts

see electronic workpaper file "Culvert inventory and Costing.xls," tab "Culvert Lengths" (brown highlighting).

b. Bridge Design and Cost Overview

As the Board is aware, it is common practice in stand-alone rate cases to develop several standard bridge designs (*e.g.*, Type I, II, III bridges) and then use an averaging scheme to determine the cost for building a certain amount of linear feet in each category of bridge. However, in prior stand-alone rate cases disputes have arisen as to design or costs or both.

Here, the AEP Texas engineers have tried to minimize such disputes by utilizing BNSF's own bridge designs and costs. In particular, the engineers reviewed the bid documents and related materials for the 21 bridges provided in discovery by BNSF. The bridges include a variety of sizes and lengths similar to the TNR's bridges. As such, AEP Texas' experts developed a standard cost formula using a composite of the costs from BNSF's successful bids and information contained in a published paper. Once the engineers developed a standard cost formula, they then applied it to every bridge in the inventory – indeed, each bridge is costed separately. After applying the standardized cost, the engineers then undertook a further review of each bridge to determine if any special costs might apply to that bridge. For example, if the bridge crosses a major river, the costs for the bridge were adjusted to include additional items that might be necessary under such circumstances, such as cofferdams.

From a design standpoint, using BNSF's own costs for building bridges ensures that all items necessary for building the bridge are included. The bridge bids are all-inclusive except for specific items provided by BNSF to the contractor, which are listed in the contract documents. *See* Workpapers Vol. 21, p. 10951. More importantly, because the TNR's bridges are based on BNSF's own designs and costs, they are, by definition, feasible from a design perspective.

i. Bridge Design

When the predecessor railroads were constructed, a variety of bridge types and lengths were used. This was due to the different technologies that were available at the time of original bridge construction, the proclivities of the particular railroad company involved, and the available materials. Through the years most if not all of the original structures have been replaced – some with more modern materials, some with used bridges from other locations, some exactly as they were originally constructed. Each time a structure changed, its length and number of spans could be modified.

Here, the TNR bridges will have the same lengths across the barrier being crossed as the BNSF bridges they replicate, but individual span lengths have been adjusted to provide the most economical construction package. In particular, the AEP Texas engineers have made adjustments to the individual span lengths because they have designed the-least cost, most-efficient railroad that can handle the issue traffic. BNSF has taken a similar approach when constructing new and replacement bridges. In fact, BNSF

has developed a set of standard span lengths and it even stockpiles precast concrete bridge beams and pile caps for quick and easy bridge construction. Accordingly, the AEP Texas engineers chose to standardize bridge construction in the same manner as BNSF.

Briefly summarized, AEP Texas' experts determined the number of span for each bridge as follows:

- If the existing bridge is 10' high or less, the existing span was used.
- If the bridge is more than 10' high then the span was adjusted to provide the most economical span to length ratio. No multi-span bridge was constructed as a single-span bridge.
- The data contained in the "Model Bridge Cost" electronic workpaper file did not show a strong correlation between bridge height and bridge understructure costs so no height adjustment factor was incorporated into the basic cost formula. It was noted that there was a significant cost differential for bridges above 30' in height. For bridges over 30' in height, an incremental cost has been added using the following formula: ((Bridge Height/30)-1*(column costs+abutment costs)).
- For bridges with individual spans greater than 50', an additive of $469 per linear foot of bridge was added to account for a cast-in-place deck. (*See* Workpapers Vol. 21, p. 10962).

For the new bridges constructed by BNSF in the last five years, the project specifications provided by BNSF in discovery showed that {

} The span lengths vary somewhat, but the general style of the bridges, columns (piers) and abutments remains the same. Since

the AEP Texas engineers are utilizing BNSF bridge designs, they have provided for { } as well.

Finally, the AEP Texas engineers have adjusted the costs of the piers and abutments for bridges that cross major rivers. In keeping with the approach of using actual BNSF data whenever possible, and having cost data for a major river crossing contained in the Paper recently presented by BNSF's Mr. Jennison (described on the next page), the engineers computed a correction factor to include the cost of cofferdams, special foundations, and installation techniques.

ii. Bridge Cost

The best source of information for bridge costs is BNSF itself. According to the bridge inventory spreadsheet, BNSF has constructed { } Through the discovery process, AEP Texas received quotations from successful bidders for the following bridges built in {

}

AEP Texas has also included additional railroad bridge data collected through other means, including a paper presented at the 2003 AREMA Conference, co-authored by BNSF's Assistant Director Structures Design Engineering, Kenneth H. Jennison, P.E. titled "Establishing a Solid Foundation for New Bridge Construction Replacement of Bridge 412.1 Over the South Canadian River Near Purcell, Oklahoma Burlington Northern and Santa Fe Railroad." *See* Workpapers Vol. 21, pp. 10932-947. AEP Texas' engineering experts were able to obtain a completed bid from the project discussed in that paper. *See* Workpapers Vol. 21, p. 10950. In addition, the narrative in Mr. Jennison's paper supports AEP Texas' concept of using standardized designs with pre-cast span members due to the cost benefits.

None of the bridge projects listed above had rail traffic running over the line during construction, so the costs are lower than for a bridge replacement project that might have very short work windows and other logistical problems associated with

replacing a bridge on an active line. The TNR, being built from scratch, also would not incur the higher costs of bridge replacement versus new bridge construction.

iii. Cost Development

The standardized bridge cost formula is based on the component pieces described *infra*. The average costs for the major bridge components was obtained by averaging the components cost contained in the bid data for the 21 model bridges and adding the estimated costs for the components supplied by BNSF to the bridge contractor. The electronic workpaper file "Model Bridge Cost.xls" sorts and averages the bid data in a logical way. Only three additional pieces of information were needed that were not included in the bids. They are:

- Cost of HP14X89 Pile Material ($/linear ft.)
- Average Pile Cap Cost (each)
- Pre-cast Beam Material ($/linear ft.)

The costs used are listed at the bottom of the electronic spreadsheet and linked so that all bridge cost can be updated, if needed, by merely changing these values. The methods for determining these costs are detailed in the workpapers, and also described briefly here.

The cost of the pile material was taken from R.S. Means and adjusted with the proper location factor. A cost of $27.68 per linear foot is used (*see* Workpapers Vol. 21, p. 10953).

The cost for cast in place pile caps was developed from BNSF bridges

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The deck cost is based on a figure, ${ }, (multiplied by a 14 feet bridge width) quoted in the Jennison Paper. *See* Workpapers Vol. 21, p. 10935. Transportation and handrail costs are taken from the bid data for the same project (the Canadian River Crossing near Purcell OK). *See* Workpapers Vol. 21, p. 10950. The deck costs include the cost of the precast concrete beams, transportation to the site, handrail cost and erection for a precast bridge deck cost of ${ } per linear foot. *See* Workpapers Vol. 21, pp. 10960-961. This cost is explained in the workpapers but is actually the computed and intended end result of the electronic spreadsheet file "Model Bridge Cost.xls."

The abutment and column (pier) costs were based upon the average cost of the { } *See* Workpapers Vol. 21, p. 10952. These costs are explained in the workpapers, but are also computed in the "Model Bridge Cost" electronic spreadsheet. The cost for piers, ${ } each, is developed in the "Model Bridge Costs" spreadsheet by combining the average cost of piles per pier and the cost of the pile caps. The cost for abutment pairs is developed at ${ } per pair using the same approach. *See* Workpapers Vol. 21, pp. 10956-959.

The costs of items provided to the contractor by BNSF are not included in the contractors' bids, and also are not included in any of the materials provided by BNSF. In an excerpt from the specifications of one of the BNSF projects, item { } lists the bridge components which BNSF will supply. *See* Workpapers Vol. 21, p. 10951. The cost of these components, including pre-cast concrete materials, pile material, and hand railing, were developed by AEP Texas' experts through actual bids or through Means. These costs are detailed in Workpapers Vol. 21, pp. 10953-969.

6. Signals and Communications

a. Centralized Traffic Control

As discussed in Part III-B, all of the TNR's main lines as well as the Campbell, Orin and Reno Subdivisions will be CTC-equipped. The type and quantity of signal materials are based on the TNR's track configuration (*see* Exhibit III-B-1), and are detailed in electronic workpaper file "CTC System & Signals.xls." AEP Texas' engineering experts note, however, that the hand-throw switches used for FED set-out track along the main line do not have electric locks because FRA regulations do not require this type of lock on hand-operated turnouts to sidings (*i.e.*, setout tracks) that will not accommodate at least one train length. *See* electronic workpaper file "sw40.jpg." As these sidings are all short sidings designed to accommodate bad-order cars (when a train is stopped in the signal block) or MOW equipment, they are not required to have electric

locks. Yard switches are also hand-thrown. Otherwise, AEP Texas' experts have used signal designs typical of heavily-traveled CTC territory.

Unit prices are based on quotes received from a number of suppliers in the signal and power fields. For the main power supply AEP Texas' experts have used either a power drop from power lines in close proximity or solar power to charge the signal or turnout batteries. Backup power is supplied by propane driven generators. Costs for these items are from direct quotes or Means. *See* Workpapers Vol. 21, pp. 11050-064.

For signal equipment, AEP Texas' experts obtained quotes from a number of suppliers including Alstom, L & W Industries, Safetran, National Railway Supply and SignalMaster. *See* Workpapers Vol. 21, pp. 11032-042.

The quotes include the signals, the pre-wired control boxes with software, the pre-wired control buildings with software, radio systems, wire and power. Turnouts are powered by 2-volt wet cell railroad batteries that have been wired in series to produce either 12 volts for signals or 24 volts for switch machines.

Power is provided by two independent power sources. The primary power system will be either from adjacent overhead wire where available or from solar panels where overhead power drops are not available. In the interest of simplicity, the AEP Texas engineers have used the same cost for either supply. Actually the cost for solar panels is significantly less than that for overhead connections. For backup supply, AEP Texas' engineers have selected propane fueled generators. The cost for the generators

includes the automatic transfer switches necessary to start the generators when power is lost and for the generators to pick up the load as well as for the generators to transfer the load back to the primary power system when power is restored.

The crews selected to provide the installation of the various items of equipment have been chosen with care and modified when necessary to insure that the electricians have the right equipment to make all of the installations. One crew is equipped with a backhoe-loader to enable it to put in underground wire and excavate the foundations for signals and structures. The other crew has a small crane to lift heavy equipment into place.

For installation crews, the AEP Texas Engineers used R.S. Means Electrical Cost Data for 2000. In particular, the engineers selected an R-9 Crew modified to add a backhoe loader and operator for installation of interlockings and connecting cable. *See* Workpapers Vol. 21, p. 11045. For the installation of the pre-wired bungalows and power drops, AEP Texas used an R-11 crew, which includes a 12-ton crane. *See* Workpapers Vol. 21, p. 11047. These crews were recommended by a CSXT signal installer. *See* Workpapers Vol. 21, p. 11065.

For the Alliance dispatching center, a complete system of hardware and software has been provided. This allows complete control of the CTC system from the headquarters building in Alliance.

The dispatching center was priced from Alstom. Alstom advised that a typical mainline railroad CTC office equipment and software, PC based, runs from $700,000 to $1,000,000. *See* Workpapers Vol. 21, p. 11038. To be conservative, AEP Texas's engineers have used the higher number.

The total cost for the CTC system is detailed in electronic workpaper file "System and Signals.xls."

b. Detectors

A total of 31 single track automatic roll-by failed equipment detectors ("FEDs") are installed along the TNR main line consistent with the current industry standard: AREMA 1997 Standards, Chapter 16, Section 5.3.1, Items j & k. *See* electronic workpaper file "SW37.jpg." These FEDs are located approximately every 25 miles along the main line (one for each main track in double track areas), or generally where they exist now on the lines being replicated. In any event, the detectors have been strategically located to minimize the traffic back-ups should a train be required to stop for inspection and/or to remove a bad order car. Bad order setout tracks have been sited within three miles of the failed equipment detectors in each direction to provide for train stopping distances and allow removal of bad order cars to the set out tracks. All setout tracks near the detectors will be 600-foot clear length double-ended tracks.

AEP Texas has not included any slide detectors because it was unable to find any evidence of slide detectors in the track charts or any of the other information

provided in discovery by BNSF. If any slide detectors had been found, AEP Texas' unit cost of $200, indexed, would have been applied. This cost was used by UP in the *FMC* case and accepted by the Board, *id.* at 131, and would need to be indexed to 2Q00.

c. Communications System

The TNR's railroad radio system enables communications between the dispatching center located in Alliance, NE and all line locations. At the dispatching center, dispatchers monitor the locations and movements of trains over the entire system. Dispatchers are responsible for the safe and efficient movement of all trains within their assigned territories. They communicate with train crews to coordinate train movements, fix train speed, and provide general instructions and status.

To keep trains moving efficiently, dispatchers carefully plan train movements. Fast trains must be allowed to overtake slower trains (*i.e.* between Amarillo and Oklaunion where coal and non-coal trains operate), and opposing movements must be set up and timed to allow trains to meet and pass one another on adjacent tracks. To accomplish these tasks, dispatchers utilize the TNR's Centralized Traffic Control ("CTC") system to coordinate remote-controlled track switches and activate lineside signals to control train movements. The dispatchers also monitor the FEDs.

The dispatching center located at the TNR's Alliance headquarters also monitors operational activities. To ensure smooth operations, dispatchers keep in constant touch with train crews, maintenance personnel and line side equipment by radio.

The TNR's railroad radio system enables locomotive communications, two-way radio communications, general voice communications, general data communications, and FED alerts. Microwave radio technology is used for the radio system backbone and land mobile radio technology is used to facilitate communications between end user applications and the radio system backbone. Land Mobile Radio ("LMR") technologies provide communication access (via fixed, mobile and portable radios) to the radio system backbone for operating crews, supervisory and track maintenance personnel that need to communicate with the railroad's operating headquarters and central dispatching facility at Alliance. LMR technologies are co-located with microwave radio technologies at network (tower) sites. LMR technologies operate in Very High Frequency ("VHF") mode to accommodate railroad operational frequencies assigned by the Association of American Railroads ("AAR"). These frequencies are in the range of 160.110 MHz to 161.565 MHz.

The high level design of the TNR radio system conforms with the FRA strategy for Intelligent Railroad Systems.[17] *See* Workpapers Vol. 22, p. 11307. Further, the FRA acknowledges that the fundamental technologies utilized used in Intelligent Railroad Systems are the same technologies used in Intelligent Transportation Systems, Air Traffic Control, Maritime Vessel Tracking Systems, Parcel Delivery Services,

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[17] The entire FRA report titled "Five Year Strategic Plan for Railroad Research, Development and Demonstrations", dated March 2002, is available at FRA's Internet Site.

Emergency Response Services and Military Command and Control. *See* Workpapers Vol. 22, pp. 11441-475A. Examples of these technologies utilized in the TNR radio system include microwave towers, microwave base stations, microwave antennas, microwave network management system, Land Mobile Radio (LMR) base stations, LMR antennas, and multiplexors.

The backbone of the TNR's railroad radio system spans 41 network (tower) sites along the TNR route. *See* Workpapers Vol. 22, pp. 11075-080, for a topology map of the TNR radio system. Microwave links (transmission paths) interconnect tower sites. *See* Workpapers Vol. 22, p. 11072, for a conceptual model of the TNR radio system. The radio waves that make up these microwave links tend to propagate (travel) in a line of site fashion. Receiving antennas must be "aligned in sight" with transmitting antennas for best results. Given optimal operating conditions, microwave transmission ranges of 100 miles are possible.

TNR tower locations were based either on, or in close proximity to, existing microwave tower locations provided by BNSF in discovery. *See* electronic workpaper file "Microwave Site (Shelp).xls." In some instances, BNSF microwave site locations alone did not facilitate adequate coverage for the radio system backbone; therefore, additional sites were added to the TNR radio system backbone design. The additional site locations are at Ardmore, SD, Horn, NE, US Air Force Academy, CO, Wigwam, CO,

Nepesta, CO, La Junta, CO, Ruxton, CO, Frick, CO, Kerrick, TX, Lautz, TX, and Dumas, TX. The average distance between towers is approximately 25 miles.

Site development, construction and tower installation follows the industry standard jointly adopted by the Telecommunications Industry Association ("TIA") and the Electronics Industry Association ("EIA") in accordance with the American National Standards Institute's ("ANSI") patent policy, ANSI/TIA/EIA 222-F-1996. This standard specifies a tower's structural integrity according to factors such as wind speed, ice load, and soil conditions. To account for these variables, as well as technical design characteristics, site preparation includes:

- Site surveys;
- Soil analysis;
- Feasibility study;
- Path and contour analysis;
- Frequency study;
- Frequency sweeps;
- Frequency license applications (FCC Form 601, FAA, & State);
- Site engineering design;
- Zoning approvals;
- Grading permit;
- Commission permit;
- Building permit; and
- Site plan amendment.

Each site includes a microwave tower, communications equipment enclosure, microwave base station, microwave antennas, land mobile radio base station,

land mobile radio antennas, communications multiplexors, communications support equipment, a laptop computer and battery backup.[18]

Microwave towers are self-supporting, lattice structures designed for a height of 200 feet and constructed of solid steel members with 18 feet of center to center distance between legs. Wind load capacity of the towers is 85 MPH basic wind speed per EIA/TIA-222-F. Ice load of the towers is one-half (½) inch radial ice with 25 percent load reduction. Twist and sway per EIA/TIA-222-F for eight (8) feet diameter dishes at six (6) Ghz at 50 mph with 0 inches of radial ice is at 200 feet. Standard tower features include:

- Cable-type safety climb system and harness;
- Anchor steel with full-sized template to simultaneously position anchor bolts for all legs;
- EIA grounding materials with lightning rod;
- Double T Transmission line hanger brackets; one (1) run initially for eight (8) lines with two (2) foot six (6) inch vertical spacing;
- Hot dipped galvanized sections and components;
- Solid rod construction of tower sections;
- Angular support bracing;
- Tower assembly hardware;

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[18] *See* Workpapers Vol. 22, pp. 11073-074, for TNR radio system network (tower) site external and internal configuration diagrams.

- Climbing pegs on all 3 tower legs; and
- FAA code A-1.1 red light kit with interior controller and alarms, mounting brackets, ice shields, cable and FAA code paint.

The communications equipment enclosures are sized appropriately to house radio base stations, communications multiplexors, and laptops. EIA/TIA standard, open, equipment racks will be used to vertically store communications equipment, maximize space efficiency, and provide conditioned power, surge protection and cooling. Grounded entry panels provide a cable path between radio base stations and radio antennas that are mounted on the site tower. Each communications equipment enclosure is stocked with an appropriate test kit to adjust and tune site communications equipment.

All communication grounding, power wiring, and communications wiring are installed in accordance with Motorola's R56 Standards and Guidelines for Communication Sites.

The type of microwave base station deployed at each tower site location is the Alcatel MDR-8606, which is a six (6) Ghz, high capacity radio.[19] It facilitates transmission capacity of three x DS3 <2,016 voice channels>. It also facilitates wayside capacity of one additional low speed interface DS1 per DS3 and shall conform to Telcordia TR-TSY-000499 and ANSI T1.102 standards. The MDR-8606 is configured

[19] *See* Workpapers Vol. 22, pp. 11126-127, for technical descriptions of the Alcatel MDR-8606 microwave radio base station.

for two frequency, full-duplex operation with hot standby, space diversity, robust forward error correction and adjacent channel interference rejection. The base station's system gain is referenced to a Bit Error Rate (BER) of 10^-6 and its maximum received signal level for BER 10^-3 at the antenna interface is not less than -15 dBm. The base station does not emit Radio Frequency Interference ("RFI") in any level above that permitted under FCC Part 15, subpart B for Class A devices. The base station is managed via Simple Network Management Protocol ("SNMP"), utilizing an integrated point and click Microsoft Windows graphical user interface contained on the site laptop.

The type of microwave antennas deployed at each tower site is manufactured by Hutton and the basic antenna consists of an eight (8) foot parabola with a six (6) Ghz dual polarized feed horn. The antennas come with mounting assemblies and are mounted at the top of site tower. The antennas are connected to the microwave base station with radio guide universal (RG-8a/u) superflex coaxial cable.

The type of land mobile radio base station deployed at each network (tower) site location is a rack mountable Motorola MTR2000 and conforms to EIA/TIA 603 Standards. *See* Workpapers Vol. 22, pp. 11156-210, for technical descriptions of the Motorola MTR2000 land mobile radio base station. The MTR2000 will operate in VHF (132-174 MHz) mode for transmitting and receiving. It supports 32 channels with 12.5 KHz of channel spacing. The MTR2000 is deployed with a serial port for connection to a

laptop computer. The Radio Service Software ("RSS") application will be deployed on the network (tower) site laptop for management of the base station.

The type of LMR antennas deployed at each network (tower) site is supplied by Electrocomm and is basic ground plane technology, operating in VHF (150-174 MHz) mode. The radiating element shall be made of 6063-T-832 aluminum tubing, 7/8 inch outer diameter with 1/8 inch side wall and 3/8 inch outer diameter solid rod folded radiator. The support pipe is 1 and 5/16 inch outer diameter of galvanized pipe. The antennas are mounted on the site tower, 75 feet from the tower base. The antennas are connected to the LMR base station with RG-8a/u superflex coaxial cable.

These LMR technologies, operating at each network (tower) site, facilitate VHF communications to the dispatch center by way of the radio system backbone (microwave radio technology). Operating crews, supervisory, and track maintenance personnel that need to communicate with the railroad's operating headquarters, central dispatching facility, or the Public Switched Telephone Network ("PSTN") do so with VHF-capable fixed, mobile or portable radios. LMR technologies were intentionally co-located at network (tower) site locations which are interspersed approximately every 25 miles along the TNR line. Effective LMR signal propagation enabled by ground plane LMR antennas has a coverage radius of 30 miles from origin.[20] The LMR network

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[20] Actual transmission ranges can be increased to a radius of 50 miles by increasing transmitter power, increasing receiver sensitivity and increasing antenna height.

topology assumes a LMR signal propagation coverage radius of 25 miles. When the area of LMR signal propagation coverage is overlaid onto the network (tower) site locations, signal overlap is maintained for the entire system. *See* Workpapers Vol. 22, pp. 11076-080. Further, pre-build milestones for network (tower) site accounted for in-band frequency interference by performing feasibility and frequency sweep studies and where applicable, filing for the appropriate FCC or State license to ensure operational governance.

Further, these LMR technologies facilitate VHF communications between CTC infrastructure, AEIs, FEDs, operating and maintenance crews, and the central dispatching office. CTC infrastructure that is radio-enabled (*e.g.*, AEIs and FEDs) are equipped with the Kenwood TK-762GK radio, KAP-1 switching unit and required cables. *See* Workpapers Vol. 22, pp. 11215-216, for technical descriptions of the Kenwood TK-762GK VHF radio. This mobile radio is VHF capable and operates in the 148-174 Mhz frequency range.

The type of multiplexors deployed at each site network (tower) site are the Alcatel 1518 Integrated Access Device ("AD"). The 1518 AD is rack-mountable and will convert analog RF signals from/to digital signals. The 1518 AD also interconnects with the MTR2000 LMR base station by standard Plain Old Telephone System ("POTS") four wire. The 1518 AD will also interconnect with the Alcatel MDR-8606 microwave base station by standard DS1 cable and shall conform to Telcordia TR-TSY-000499 and ANSI

T1.102 standards. The 1518 AD supports up to 24 PCM channels per digroup that are intermixed at random, providing voice frequency ("VF") trunking, special service interfaces, synchronous and asynchronous data channels, program/broadcast services and FCC registered channels in one assembly.

Investment cost for the TNR's communications/radio system is $10.8 million. *See* Workpapers Vol. 22, pp. 11067-071 and electronic workpaper file "TNR Radio System Cost Model.xls."

7. Buildings and Facilities

The TNR's major system facilities are located at Alliance, NE. These facilities include the TNR's headquarters building, a locomotive repair shop, fueling facilities, a track maintenance base and 1,500-mile inspection facilities as well as car and locomotive storage. An additional yard is also located at Las Animas Jct., CO.

a. Headquarters Building

The TNR headquarters is located at the TNR's Alliance Yard. *See* Exhibit III-B-2. AEP Texas' engineering experts have designed the headquarters building to accommodate the TNR's senior operating and mechanical staff, its clerical and dispatching staff, its customer service personnel, the CTC dispatching control center, and its general and administrative staff. The building site also includes a parking lot, but is otherwise not overly adorned (*i.e.*, landscaping has been kept to a minimum).

The building cost is based on a R.S. Means building square-foot cost for a 2-4 story office building with a total floor area of 16,000 SF. To be more accurate the costs for steel and wood framed buildings were averaged to compile a complete building square foot cost. Each of the two building floors are 8,000 square feet which is adequate to accommodate all of the previously-mentioned TNR staff. *See* Workpapers Vol. 22, pp. 11479-480.

b. Fueling Facilities

AEP Texas' engineering experts have included $7.8 million for locomotive fueling facilities at the TNR's Alliance Yard. As discussed in Part III-C, *supra*, all trains are fueled in the empty direction at the Alliance Yard. In addition, locomotives on empty coal trains are replaced with freshly serviced units at Alliance. Consequently, the fueling facilities at Alliance are not located on the main tracks, but rather on dedicated yard tracks for fueling, sanding and inspecting the locomotives. *See* Exhibit III-B-1, p. 6 and Exhibit III-B-2, p. 5.

The fueling facilities consist of eight two-crane platforms, capable of fueling 16 locomotives every six minutes. To be conservative, AEP Texas' experts used a rate of 16 locomotives every 20 minutes (assuming positioning and other activities). At that rate, the Alliance facility can fuel 1,152 locomotives every 24 hours.

The Alliance fueling facility is equipped with two 1,000,000 gallon storage tanks for diesel fuel, and a 10,000 gallon storage tank for lube oil. The AEP Texas

engineers have also included pumping facilities in the event tanker trucks or tank cars deliver fuel. Double walled piping is provided to transfer the fuel from the pumps to the storage tanks and from the storage tanks to the fuel racks. *See* Workpapers Vol. 22, pp. 11598-612 and electronic workpaper file "fuel storage 1.xls."

The Alliance facility is also equipped with eight sand towers. One tower with two hoses will be provided at each fueling station to accommodate 16 locomotives.

Water and waste water are handled by the Alliance Yard water supply and waste water treatment plant. This facility has 1,400 feet of environmental pans under the track at the fueling stations to contain any spillage of fuel or oil. Lighting and storm drainage for the fueling station are part of the yard system. The fueling area drainage will flow into a equalization tank with an oil separator and then into the storm drainage system. *See* Workpapers Vol. 22, pp. 11591-597 and electronic workpaper file "Wastewater Treatment Plant.xls."

AEP Texas' experts have not provided for any fueling facilities at the Las Animas Yard because far fewer trains require fueling at that location. Locomotives will be fueled by contractor trucks at Las Animas as described in Part III-C.

c. Locomotive Shop

The AEP Texas engineers have provided a $12.8 million, 118,000 SF, 36' high pre-engineered metal building, with minimal finishes for a covered work area, for the Alliance locomotive shop. The cost has been calculated using R.S. Means square-foot

cost for an 100,000 SF airplane hangar with cost adjustment for height and perimeter. *See* Workpapers Vol. 22, pp. 11519-520.

The building has six tracks running through it. *See* Workpapers Vol. 22, p. 11518. Each of these tracks can hold three 74' long X 15'8" high EMD SD70MAC locomotives at a time. Track "A" will be used for wheel turning and a truck/wheel drop table. Track "B" will be used for general repairs and/or overhaul work. Track "C" will be used for overhauls. Tracks "D, E, and F" will be used for 92-day and other required inspections. The floor will have six pits; three are 4' x 270' gauge pits and one is a 12' x 255' open pit. In addition, one 25' x 25' pit is used for wheel turning and one 44' x 25' pit is used for the drop table. Also, the building has a concrete floor with thickened areas for jacking. All pits are 5' deep. *See* Workpapers Vol. 22, pp. 11528-530.

The locomotive shop is large enough for some indoor storage of large components such as engine blocks, main alternators, traction motors, compressors, etc. The building also has storage areas for air brake and electrical gear/components. *See* Workpapers Vol. 22, p. 11518.

A work area with work benches provides a place to repair parts after they have been removed from the locomotives. The building also provides room for storage of small equipment such as floor jacks, compressors and supplies. The building is furnished with three top running rail overhead cranes. The furnished crane will be a 25-ton crane (for major part removal) with a 10-ton auxiliary crane for assisting the 25-ton in case an

entire power removal would be required. In addition to the overhead cranes, 48 three-ton jib cranes are equally placed along tracks "B, D, E, and F" to provide for lifting of smaller parts and components on all four corners of each of 12 locomotive spots.

The shop also contains 2,112 SF of office space, which includes a locker room, 2 large offices, a large clerical room and a lunchroom with 4 tables to seat 24 persons. The lunch room amenities include a small pantry area for vending machines, coffee service, a refrigerator, a sink, etc. This room also serves as a work room and a conference room.

The building appurtenances and tooling provided by the TNR engineers are as follows: drop table, wheel truing machine, work platforms (on both sides of 4 tracks), portable welder, tame wrench, spline gun, sets of EMD tooling, laptop computer, office furniture, Hi-Pot tester, Meggar, Fluke meter, motor generator set, air compressor, air gauge calibrator, water pressure tester, wheel gages, Porta-Power, turbocharger lifter, wheel true lathe (portable), iron hand, torque wrenches, torches, and an MU checker. *See* electronic workpaper file "All Buildings.xls." The price for the tooling is taken from an electronic workpaper file "UP - Phoenix Maintenance Cost Sheet 1 (5-28-02).xls," which was developed by the Omnitrax Mechanical Division.

AEP Texas' experts have provided all the space and equipment that the TNR is required to provide under the full-service locomotive maintenance resource agreements applicable to SD70MACs – the primary locomotive being used in TNR

service. These agreements were provided by BNSF in discovery. *See* electronic workpaper file "resources agreement.pdf." Otherwise, AEP Texas' experts have assumed that the maintenance contractor is responsible for providing any necessary equipment and supplies.

d. Car Repair Shop

Under the relevant TNR (BNSF) car maintenance agreements, the contractor is responsible for providing all necessary shops. *See* Part III-D-2, *supra*. Consequently, AEP Texas' experts have not included costs for any repair facilities. However, they have provided the necessary space and tracks for such a facility at the TNR's Alliance yard. *See* Exhibit III-B-1, p. 7 and Exhibit III-B-2, pp. 4-5.

e. Crew Change Facilities and Yard Offices

The crew change points at Donkey Creek/West Campbell, South Logan, Denver, Amarillo and Oklaunion will have small buildings that include a locker room and an office for the staff use. *See* Workpapers Vol. 22, pp. 11492-501 and 11508-515 and electronic workpaper files "All Buildings.xls" for details of the designs. At the Las Animas Yard, the facility will be larger to accommodate both train crews and car inspectors. It will also have a workspace and a garage with space for inspection vehicles. At the Alliance Yard, the facility will house the yard staff, train crews, switch crews and car inspectors. A garage will also be provided for inspection vehicles. The total cost for such buildings is $1.23 million.

f. Maintenance of Way Buildings (Roadway Buildings)

As discussed in Part III-D-4, *supra*, AEP Texas' engineering/MOW experts have provided for six major MOW districts, which are subdivided into 18 field MOW crew districts. While a number of the MOW facilities are located at the same locations as other TNR facilities, the MOW function is sufficiently different from the T&E crew change and yard functions that separate buildings have been provided to house the MOW staff and to store its equipment. Details of the designs and costs are included in Workpapers Vol. 22, pp. 11487-507 and electronic workpaper file "All Building.xls." The total cost for stand-alone MOW facilities is $1.99 million.

g. Wastewater Treatment

AEP Texas' engineers have developed a cost for a 5,000 gallon waste water treatment plant from the R.S. Means square-foot cost for a 5,000 gallon plant. Three of these plants are used. Two have been placed at the Alliance Yard to accommodate the east and south portions of the yard. A third 5,000 gallon per day plant has been constructed for the Donkey Creek crew and maintenance of way facilities. These facilities are much larger than those at the other locations along the railroad. For additional assumptions on sizing and cost, (*see* Workpapers Vol. 22, pp. 11591-597) and electronic workpaper file "Waste Water Treatment Plants.xls."

AEP Texas' experts have also provided a 400 gallon per day waste water treatment facility for each of its small to medium MOW and crew change facilities. The

facilities utilize a 1,000 gallon septic tank with sand filtration system. At these locations AEP Texas' engineers have assumed an average of 10 gallons per person per day as the employees are not at the location for a full shift. For additional description and costs. *See* Workpapers Vol. 22, pp. 11572-590 and electronic workpaper "Waste Water Treatment Plants.xls."

h. Yard Air and Yard Lighting

The AEP Texas engineers have included lighting for the TNR's yards, based on an analysis described in Workpapers Vol. 22, pp. 11568-571. The costs for that lighting are detailed in electronic workpaper file "BuildingSites.xls." Yard air is not required because the TNR's trains will not be off air supply for more than two hours, which is the maximum time the cars can be disconnected from an air supply.

8. Public Improvements

a. Fences

AEP Texas' experts have provided for 3.7 million linear feet of fencing. This fencing includes coverage for the Campbell Subdivision at 90 percent of the line length and the Orin Subdivision at 103 percent of the line length in accordance with past STB decisions. *See TMPA* at 152.

AEP Texas' experts have included fencing for 25 percent of the right-of-way on the rest of the TNR. In November 2003 and January of 2004, AEP Texas witnesses Brian Bastow, Doug Ellison and Dan Swanson inspected all of the lines being

replicated by the TNR. Hundreds of photos were taken during the site visits. Most of the railroad has a highway on one side of the track with no fence between the highway and the railroad. On the opposite side of the track AEP Texas' engineers observed that fences were installed on less than half of the right-of-way. Moreover, it was often difficult to determine if the fence belonged to the railroad at all. In particular, the fences were frequently composed of different types of fence posts with different fencing configurations for each property along the route. The fences often turned at property corners – following the property lines perpendicular to the railroad. AEP Texas' engineers concluded that such fences were installed by the property owners because if BNSF had installed the fences they would not have varied so much in type and the fences would extend across multiple property lines.

The AEP Texas engineers have concluded that less than 25 percent of the BNSF lines the TNR is replicating have railroad-constructed fences, except for the Campbell and Orin Subdivisions. However, to be conservative, the TNR is constructing fences on 25 percent of its route, except as noted above. Calculations for fencing are in electronic workpaper file "RightofWay Fencing.xls," and the final cost for fencing is $7.6 million.

b. Signs and Road Crossing Devices

AEP Texas' operating and engineering experts have included a standard package of railroad signs, including milepost and whistle post signs. AEP Texas' experts

determined that all other signs, such as speed restriction, advanced warning, yard limits and crossing signs, are unnecessary as they can be accounted for in timetables. This is consistent with the Board's recent decision in *PPL Montana* (Docket No. 42054, Decision served August 20, 2002), where the Board held that "yard limit, reduce speed and resume speed signs would not be required when appropriate instructions are included in operating timetables." *Id.* at 28. Moreover, the NORAC Operating Rules, which govern the T&E crews' required preparation, indicate that crews must know the various conditions, speeds, etc. before setting out, and therefore additional signs are not required.

As for road crossing devices, AEP Texas' experts have included the costs for such equipment on the following portions of the TNR: Campbell Subdivision, Orin Subdivision, Reno Subdivision, and Boise City Subdivision between Las Animas Jct. and Amarillo. The Campbell, Orin and Reno subdivision have all been built since 1970. AEP Texas' experts therefore assumed that the majority if not all of the roads in the area pre-date the BNSF lines. As the TNR would be the junior entrant, AEP Texas' experts included the costs for such equipment, with quantities based on BNSF's track charts for these subdivisions. *See* Workpapers Vol. 21, pp. 10850-909.

The Las Animas Jct. to Amarillo line was built in the 1930s. AEP Texas' experts suspect that the BNSF line predates many of the roads in the area, but since no ICC Engineering report data is available to confirm this, the AEP Texas engineers

conservatively assumed that the TNR would have to pay for any crossings devices and signs shown on the BNSF track charts.

AEP Texas' experts have calculated costs for, but not included, any crossing equipment and signs for other line segments of the TNR because the ICC Engineering Reports were designed to determine the replacement costs of the railroad structures at the time of the survey. *Texas Midland Railroad*, 75 I.C.C. 1, 115 (1918). The reports did not evaluate or determine whether a railroad *originally* paid for a crossing or related devices. Moreover, the rules governing their formulation allowed the railroad to count the cost of construction of a crossing, even when its contribution to the construction cost was minimal or non-existent. *Id.* at 116.

Finally, AEP Texas sought crossing payment data from BNSF in discovery. *See* electronic workpaper file "crossing discovery.pdf." BNSF has not provided any data in response to this request. Nor has AEP Texas located any public source materials that demonstrate that BNSF paid for any of the crossings listed in the ICC Engineering Reports.

It is well-established that the later entrant pays for the improvement. *See Wisconsin* at 92; *West Texas Utilities*, 1 S.T.B. at 672, 709. Except as noted above, there is no evidence that BNSF's crossings did not predate the existing crossings. Indeed, most of the lines being replicated were built between 1870 and 1902. *See* Workpapers Vol. 21, p. 10851.

c. Grade-Separated and At-Grade Crossings

The TNR is building at-grade and grade-separated crossings on the Orin, Campbell and Reno subdivisions for the reasons noted above. The TNR also is building at-grade crossings between Amarillo and Las Animas Jct. However, the TNR is not building grade-separated crossings in this territory as grade separations were very unusual in the 1930s.

9. Mobilization

Mobilization costs are incurred by the contractors when it becomes necessary to move equipment to a construction site, prepare the site with necessary facilities to support the work, obtain permits, and engage in other similar pre-construction activities. In the *Wisconsin* case, the Board adopted 2.4 percent of total construction cost (excluding land acquisition, engineering and contingencies) to reflect this cost component. *Id.* at 100.

The AEP Texas engineers believe that the 2.4 percent mobilization factor adopted in *Wisconsin* is unduly high, and that a 1.0 percent mobilization factor is more appropriate for the TNR construction project, for three specific and justifiable reasons. First, mobilization is basically a fixed cost for a project. Moving a crane to a site is a one-time cost, spread out over the entire project's scope. It can make one lift or several hundred lifts of construction material once mobilized to the job site. The larger the

project, the less significant the mobilization factor becomes. The SARR construction project is of such a scale that mobilization costs tend to move close to zero.

Second, when a contractor does quote a mobilization cost, he or she determines where the material will come from, and performs a calculation assuming that a substantial amount of equipment may have to move some distance to get to the construction site. However, the TNR is a stand-alone railroad. Real-world constraints do not apply. As the Board stated in *West Texas Utilities*, "our SAC analysis assumes the labor, material, and machinery would be available in sufficient quantity at current market prices to construct WTRR in the minimum time dictated by technological feasibility." *Id.,* 1 S.T.B. at 672. When the mobilization factor begins to reflect more than pure cost of transit and begins to represent relative scarcity of resources, it becomes an entry barrier and is inappropriate to include in a stand-alone railroad's construction costs.

Third, AEP Texas' engineering experts have obtained actual construction and material bids for the construction of many parts of the TNR. These bids include mobilization (and demobilization) in the unit prices for installation and construction. As such, these costs should be eliminated from the total construction costs to which the mobilization factor is applied. Likewise, many of the material quotes include shipping to the job site. Therefore, any mobilization factors that would normally be charged to those items should be eliminated.

Further support for low mobilization costs is found in R.S. Means, *Heavy Construction Cost Data* (16th ed). The index lists only five places where mobilization is stated as a separate item. *See* Workpapers Vol. 22, pp. 11690-11695. Page 48 of Means, under "Excavation Support/Protection" section 200, lists Cofferdams and provides a unit cost which *includes* mobilization. *See* electronic workpaper file "means1.jpg." Page 49 of Means, under "Earthwork, Equipment," provides a cost per item of equipment including overhead and profit that ranges from a low of $40.00 for small equipment to a high of $360 for a 1½ CY shovel or dragline. *See* electronic workpaper file "means2.jpg." As an example, the mobilization cost for a 15 CY self propelled scraper is shown as $330. *See* Workpapers Vol. 22, p. 11691. The hourly cost for a 14 CY self propelled scraper (the largest listed in Means) is $180/hr. *See* electronic workpaper file "means3.jpg." Therefore, the mobilization cost for this type of equipment is less than two hours of operating cost. The operating cost for a 1½ CY dragline is approximately $101.30/hr. *See* electronic workpaper file "means4.jpg." When looking at the large number of hours this equipment will be operating during the construction of the SARR, it is obvious that mobilization costs are insignificant.

In any case, a 1.0 percent factor more appropriately reflects the economies of scale inherent in construction of the TNR, while avoiding the entry-barrier constraint that a higher factor places upon the availability of equipment and personnel. Requiring a higher factor effectively undermines the principles of the *Coal Rate Guidelines*.

Demobilization costs can be applied to construction projects when equipment utilized in the work has to be transported to its home base, awaiting its next assignment. While recognizing that the Board has accepted some demobilization costs in previous SAC rate cases, the AEP Texas engineers suggest that it is appropriate to revisit this issue because these costs are inappropriate in constructing a SARR such as the TNR for two reasons.

First, equipment and facilities utilized in railroad construction, which is to take place over a two-year period, would probably not be returned to the contractor's base of operations. On most projects of this size and scope, equipment is generally disposed of at the end of the project. Contractors do not normally acquire the numbers and sizes of the equipment that are mobilized for projects of this scope, and size and build into their unit pricing the cost of the equipment less its depreciated value. Rather than inventory equipment at the end of a large project, at a great cost to the contractors, they are more likely to dispose of the equipment by selling it to dealers or other contractors. As an example, rail trains are generally leased and returned to the owner when the project is completed.

Second, demobilization charges represent a cost of scarcity, which is not otherwise allowed in SAC rate cases. This is so, because these charges are typically applied to construction work when there are no further immediate needs for the equipment at another location. A contractor does not charge one project mobilization

costs, and another project demobilization costs, when moving a piece of equipment from one job site to the next. In fact, he is able to reduce his bid prices, and is more likely to get a contract, when he can move his equipment to another job site.

The essence of SARR construction assumes plentiful supplies and equipment. No premium is applied to the cost of construction because of the difficulties in amassing all the equipment necessary to build the railroad at an accelerated pace. To require a SARR to incur demobilization costs implies the application of the same kind of premium that is deemed inappropriate at commencement of construction, because of the inability of the contractor to disperse a large contingent of construction equipment at the end of the construction project.

For these reasons, the TNR will not incur demobilization costs.

In summary, AEP Texas' experts have included a 1.0 percent mobilization factor for those construction items where mobilization was not specifically provided for already. Mobilization for the TNR project is calculated to be $12.1 million. *See* electronic workpaper file "Mobilization.xls."

Finally, performance and payment bonds are generally required on public construction projects. For private construction projects such as the TNR, bonding of contractors is at the owner's discretion. Most private projects are constructed without requiring the contractors to post performance and payment bonds. Instead, the owner receives a waiver of mechanics lien from all contractors and subcontractors to prohibit

them from placing a lien on the owner's holdings if payments are not made to sub-contractors by the contractors. This can reduce the cost of a project by several percent.

10. Engineering

To determine the appropriate cost for Engineering Services, AEP Texas' engineering experts consulted a number of well-respected, often-used sources as described below. All sources share the concept that as the size of a particular project increases, the percentage of total construction cost that is applied to the Engineering component declines. Since the TNR construction project is a much larger project than most sources generally anticipate, the AEP Texas engineers have taken the most conservative position, and adopted the value for the largest project size shown in the literature, even though the SARR project size is significantly larger than any of those shown. The percentage provided for engineering services, therefore, represents a multiple of the appropriate number for a project of this magnitude.

The AEP Texas engineers have used four sources for engineering fees. The first is Manual A of the Standards of Practice of Consulting Engineers (1975 ed.) (the most recent edition published by the American Consulting Engineers Council of PA). This volume is "intended to define the relationship between the Engineer and his client, to describe the various types of service offered by Consulting Engineers, and methods of compensation." It indicates that for projects "which are above average in complexity" such as "railways in urban and suburban areas" or "nuclear facilities," engineering

services for a $40 million project should represent 4.50 percent of the construction cost. *See* electronic workpaper file "sw25.jpg." It should be noted that these basic services, while including all services required for the construction of the SARR, do not include surveys or resident inspection.

The second source is R.S. Means Building Construction Cost Data (59th Edition). In Section 01107 ("Professional Consultant"), engineering fees are listed by discipline with a minimum and maximum range. The highest fees are for food service and kitchen equipment ranging from 8 percent to 12 percent. The lowest fees are for structural design, ranging from 1 percent to 2.5 percent. *See* electronic workpaper file "SW8.jpg."

The third source is more current and inclusive. The Rural Utilities Service of the United States Department of Agriculture ("RUS") has created a national standard engineering contract for those wishing to undertake water and sewer projects nationwide. Water and sewer projects are at least as prone to unforeseen complexity as rail projects. Similarities to rail projects include obtaining aerial survey information for the corridor in question, establishing of a horizontal and vertical alignment, and calculating cuts and fills. Complex designs for pumping stations, waste water and water treatment facilities, the crossing of rivers and other obstructions and the requirements for subsurface investigation closely parallel the complexity of a railroad design project. Management of the project during the construction phase is also similar to railroad projects as large water

and waste water projects can cover vast distances and generally require multiple contracts. The current RUS standard varies from state to state.

In Texas, RUS allows for a 5.2 percent amount for Basic Services (including preliminary study, topographic surveys, preliminary design, final design and construction observation) and has no set fee curve for inspection for projects totaling $5 million. *See* Workpapers Vol. 22, pp. 10701-11707. Colorado RUS sets a minimum fee of 5 percent for large projects. *See* Workpapers Vol. 22, p. 11711. This is consistent with the fee curve provided by Farmers Home Administration in Pennsylvania that shows 6.7 percent for Basic Services and 3.4 percent for inspection on projects of $4 million. That curve projects to fees of $25 million and shows a Basic Services fee of 5 percent and a resident inspection fee of 1.8 percent. *See* electronic workpaper file "SW15.jpg."

For a project the size of the SARR construction project, the total allowable cost for engineering services equals 5.0 percent at most. As noted above, the higher the contract value (cost), the lower the total percentage allowable for engineering services. To be conservative, however, AEP Texas's experts adopted the 5.0 percent figure for engineering services as appropriate for construction of the TNR because this is a value already recognized and adopted by the federal government for large construction projects as well as comprehensively covering all of the professional costs for the project.

The fourth source used to evaluate engineering services is "A Guide for the Engagement of Engineering Services" revised edition, published by the American Society

of Civil Engineers ("Manual 45"). Under the heading "Services for Construction Projects" the manual lists six standard phases of the construction project including:

1. Study and Report Phase (including "determination of project scope and economic and technical evaluation of feasible alternatives.")[21]
2. Preliminary Design Phase (30 percent design completion)
3. Final Design Phase
4. Bidding or Negotiating Phase
5. Construction Phase (including construction management)
6. Operation Phase

See electronic workpaper files "SW9.jpg" to "SW14.jpg."

Manual 45 shows an engineering fee for "average complexity" projects of 4.61 percent (excluding the Operations Phase), and railroads are listed under the description of "average complexity." Bridges, on the other hand, are categorized as projects with an "above average complexity," and a fee of 5.64 percent is used for projects of $100 million or greater. However, bridges represent only a small portion of the total TNR construction costs. As such, the weighted average would equal 4.66 percent, which still supports the 5 percent fee proposed by AEP Texas' experts. The

[21] The USRD engineering agreement, an agreement used throughout the country also includes such services, as it states in Section A 4 that "the ENGINEER will perform the necessary design surveys, accomplish the detailed design of the project, prepare construction drawings...." *See* electronic workpaper file "sw16.jpg."

weighted average derivation is shown in electronic workpaper files "SW13.jpg" and "SW14.jpg."

Manual 45 also points out that most construction projects have repetitive elements, and the resulting savings can be as high as one-half of the fee for design of the applicable units, when five or more units are involved. *See* electronic workpaper file "SW26.jpg." In this case, the TNR's bridge designs have been standardized. As such, the engineering additive could justifiably be even further reduced, but AEP Texas' engineers have kept it at 5 percent.

The TNR construction project is in the $2.6 billion range, not the $30 to $100 million dollar category. All indications from the various fee curves are that the curve would continue downward to some extent for larger projects. It is important to note, however, that if the "Operations Phase" is removed from the Manual 45 fee curve, the engineering fee would be in the 5 percent range. As these other two curves do not include the "Operations Phase" they are already in the 5 percent range.

a. Construction Management

The engineering fees described above include construction management services, and the AEP Texas engineers have not, therefore, included any additional fees for these services. However, the engineers recognize that in recent rate cases the Board has accepted additional costs for this service. In the Eastern cases, the Board went so far

as to recognize that the shipper's engineering fees included construction management, but it nevertheless added even more costs for this service. *See, e.g., Carolina* at 108-109.

The AEP Texas engineers believe that the Board has erred in its approach. Adding more than 10 percent to the construction costs of a project of this scale is unwarranted, and denies the economies of scale and the benefits of repetition inherent in this project. As such, AEP Texas submits that the Board should revisit this issue, and accept the 5 percent engineering additive described above. Additional reasons for excluding construction management costs are provided below.

The history of construction management is a relatively short one. None of the major railroad projects constructed in the 19th and early 20th centuries used construction management firms. As a matter of fact, in the very first paragraph of an article that appears on the web site of the "Consultants in Risk Management," entitled *New Frontiers: Undertaking Construction Management*, which can be found at (http://www.c-risk.com/Articles/sgms_newfrontiers.htm), the authors state:

> While the genesis of construction management dates back to the mid-1960's[(1)] the 1990's will inevitably be viewed as the period when construction management emerged as a frequent alternative to the traditional owner/design professional/ contractor model of project delivery.

See electronic workpaper file "SW33.jpg." End note [(1)] states:

> Reasons often cited for construction management's origin include inflation, a strong economy with a busy market, larger, more complex projects, increasingly aggressive schedule requirements, the adversarial relationships on

competitive lump sum projects, greater third party intervention and an increasingly litigious environment.

The AEP Texas engineers note that some of the main reasons for utilizing a construction manager did not exist when the original railroad lines being replicated were built, including inflation, adversarial relationships on competitive lump sum projects, greater third party intervention and an increasingly litigious environment. More importantly, the standard engineering fees, discussed above, already include project supervision. An additional increase in construction management fees is entirely unwarranted, and AEP Texas has met its burden of proof by demonstrating that common engineering fees already include a reasonable percentage for construction management.

b. Resident Inspection

AEP Texas' experts have provided 1.8 percent for resident inspection, which includes a corps of field construction inspectors. These inspectors report to the project engineers and ensure that the construction methods and practices are in accordance with the specifications and plans. They also provide material inspection in the field. This percentage additive has been recently accepted by the Board. *See, e.g.*, *Carolina* at 109.

c. Test Borings and Soils Investigation (Geotechnical)

AEP Texas' experts have included $1.3 million for test boring and soil investigation. Subsurface investigation will be conducted at each TNR bridge location. A bid from John Cernica and Associates was used to develop the costs for subsurface

investigation. *See* electronic workpaper file "SW35.jpg" and "SW36.jpg." Mobilization and soils reports are provided for each bridge as well as a 20-foot deep test boring at each abutment and for every forth pier. The test borings provide sufficient information for the construction of all of the TNR's lines. *See* electronic workpaper file "TNR Bridge List," tab "Sub surface Investigation."

Given the numerous, independent engineering authorities that support AEP Texas' engineering additive, and consistent with stand-alone principles, AEP Texas submits that the Board should accept its engineering additive of 6.8 percent.

11. Contingencies

Consistent with the Board's decisions, AEP Texas' engineering experts have used a 10 percent contingency and applied it to the construction subtotal excluding land. *See* electronic workpaper file "IIIFTotal.xls."

12. Other

a. Construction Time Period

The construction time period for the TNR is controlled by the time it takes to construct the longest bridge, which is the Prairie Dog Fork Bridge at Estelline, TX. This bridge is located at MP 238.08 on the Red River Valley Subdivision and is 2,439 feet in length.

The work begins with the start of surveying and mapping operations. A three-month period is allocated to obtain sufficient information to allow preliminary

planning and engineering design to begin. Design of the railroad and appurtenances requires a sixteen-month period including the three-month start up/surveying period.

Land acquisition takes approximately eight months to complete. It commences six months after project initiation.

By the eleventh month, sixty percent into the land acquisition phase and about sixty percent through the design phase, the multiple grading and bridge packages are initiated with special focus on access to critical sites and establishment of staging areas.

Two months after grading and bridge packages are initiated, multiple bridge and structural contracts have been set and works begin at the readily accessible locations.

Construction of all bridges and structures is anticipated to take a maximum period of fourteen months. The longest bridge is 2,439 feet and with today's construction technology can be completed within the fourteen-month time frame.

All other items to be constructed, including track laying, signal installation, and control system installations, can be completed in twelve months, commencing after grading work is complete, and about two months after bridge and structural work begins, with the exception of operational testing which will commence ten months later.

Total design and construction time for this project would be twenty-seven months with three months available at the end of construction for final operational testing.

The project would be divided into 11 track packages, 11 grading packages, 25 bridge packages, and 15 building packages. The use of multiple construction packages is consistent with stand-alone theory and has been used by shippers in prior rate cases.

Track gangs lay track at an average rate of one half mile per day, ballasted and anchored. With crews working six days per week, the rate of one half mile per day allows for the project to be completed within the established schedule.

Finally, material prices have been obtained for most track materials delivered to railheads along the TNR. Because of the numerous road access points along the lines, and interstate roads paralleling both the north and south railroad lines, materials that cannot be shipped by rail have been priced with shipping by truck to one or more of the road access points along the TNR route. The Windgate proposal to install the rail materials includes moving those materials from the various rail heads to where they are required along the route.

III-G Discounted Cash Flow Analysis

III. G. DISCOUNTED CASH FLOW ANALYSIS

The CMP methodology is designed to ensure that a captive shipper does not pay more than would be necessary to receive service from a least-cost, presumptively efficient replacement for the incumbent railroad. The framework for the SAC analysis under CMP is the theory of contestable markets.

In the contestable market framework, the incumbent railroad's rates are constrained by the threat of entry by the hypothetical stand-alone entity. If it is shown that the prospective cost of substitute service is less than the rate charged by the incumbent, there is an incentive for the new entity to enter. The presence of that incentive, in turn, is evidence that under the incumbent's rates, the shipper is paying for (or subsidizing) services it does not use or is contributing monopoly profits to the incumbent. Thus, the hypothetical SAC provides the maximum reasonable rate to be charged to the captive shipper in a regulated environment. If the incumbent's rates are above those that would be charged by the stand-alone entity (the TNR in this case), the incumbent's rates are excessive. These principles more recently were reiterated in the Board's *Carolina* decision:

> A SAC analysis seeks to determine the lowest cost at which a hypothetical, optimally efficient carrier could provide the service at issue free from any costs associated with inefficiencies or cross-subsidization of other traffic. A stand-alone railroad is hypothesized that could serve the traffic if the rail industry were free of barriers to entry or exit. (It is such barriers that can make it possible for railroads to engage in monopoly pricing absent regulatory constraint.) Under the

> SAC constraint, the rate at issue cannot be higher than what the SARR would need to charge to serve the complaining shipper while fully covering all of its costs, including a reasonable return on investment.

Decision served December 23, 2003 at 11.

Because the objective under CMP is to provide the most efficient, least-cost service to the captive shipper, application of the SAC standard must be premised on rational economic behavior by the stand-alone entrepreneur in the design and operation of the SARR. Thus, while the TNR in this case is deemed to be a replacement for BNSF to the extent of the scope of the TNR's planned services, the CMP model properly does not require that the TNR replicate BNSF's existing system. As the Board's predecessor confirmed in the *Coal Rate Guidelines*, the design of the stand-alone system and the traffic it carries are chosen to achieve the goal of least-cost service to the shipper, regardless of the actual circumstances of the incumbent railroad. *Coal Rate Guidelines*, 1 I.C.C.2d at 543-44. The SAC borne by the complaining shipper should reflect a design that will cover only those economic costs that are necessary and relevant to the on-line service needs of that shipper and the other members of the stand-alone traffic group. Partially for this reason, the Board has confirmed that under CMP, a stand-alone railroad such as the TNR is deemed to be a replacement for the relevant portions of the incumbent's system, not a rival, and must be afforded the flexibility to configure its system and service scope in a manner that maximizes efficiency and cost-effectiveness. As the ICC explained in *Nevada Power II*:

> [I]n designing a stand-alone railroad (SARR), it may be assumed that existing single-line traffic would become interline traffic that is passed on at a hypothetical interchange point. Permitting this assumption, and thus crediting a SARR with so-called "cross-over traffic", will allow shippers to make effective cases before the Commission using smaller hypothetical SARRs than would otherwise be required. Viewing a SARR's interline partners simply as additional customers of the SARR means that the captive shipper is not required to ensure that far-flung rail lines are earning their full replacement cost of capital.
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> * * *
>
> Under our Constrained Market Pricing guidelines, a stand-alone railroad is a hypothetical, efficient carrier designed to carry the traffic at issue and any other traffic necessary to achieve the benefits of economies of scale and scope. In designing a SARR, creative assumptions, such as differing operating plans, are acceptable so long as those assumptions are consistent with our *Guidelines* decision and pass certain common sense, operational and physical, tests.

10 I.C.C.2d at 280-81 (Chairman McDonald, commenting).

So long as all associated costs are properly accounted for, the routing, service scope, commodity mix and all other elements of the stand-alone system may be as selected by the proponent shipper, based on principles of maximum efficiency. These same principles guide the determination of capital costs of the TNR, as well as the proper treatment of inflation, taxes and capital cost recovery.

1. Cost of Capital

Calculation of the capital recovery charge for the TNR necessarily depends on the assumed cost of capital. Under CMP, the TNR is presumed to be the low cost

producer, which implies access to the most efficient, available sources of capital. Since the stand-alone entity always offers a return on investment equal to the opportunity cost of invested funds, it should have little trouble attracting capital.

In previous decisions applying the CMP methodology in the context of rates on long-haul, high volume unit train coal movements, the Board has determined capital costs for the stand-alone entity by reference to the general railroad industry average costs of debt and common and preferred equity, as well as their percentage mix, in forming a capital structure over the relevant construction period. *See Duke/NS* at 37; *Carolina* at 28; *West Texas Utilities*, 1 S.T.B. at 712-13. In this case, that would be the 1998-2000 time period, when the average industry cost of capital was 10.82%.[1] Over the period since the TNR was constructed, however, the rail industry's cost of capital has declined. Table III-G-1 shows the relevant costs and capital structure percentages for the most recent year available (*i.e.*, 2002), which yields an average composite cost of capital of 9.8%:

[1] *See* Exhibit III-H-1.

Table III-G-1
Railroad Industry 2002 Cost of Capital [2]

Capital Structure (1)		% Weight (2)	% Cost (3)
A.	Debt	41.2%	6.0%
B.	Common Equity	56.7	12.6
C.	Preferred Equity	2.1	6.3
D.	Total	100.0%	9.8%

The public record is replete with examples of Class I railroads refinancing debt and otherwise taking advantage of opportunities to lower their capital carrying charges.[3] As an efficient "best practices" carrier, the TNR could and would do the same, and avail itself of the lower capital costs in effect in the years immediately following its start of operations.

The 9.8% cost of capital is incorporated in the calculations beginning in 2002 and summarized in Part III-H, *infra*. *See also* Exhibit III-H-1.

2. Inflation Indices

Inasmuch as it is reasonable to assume that prices of goods and services used by the TNR will tend to rise in future years, as such prices historically have done, it is necessary to forecast a rate of inflation for application to capital assets and operating

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[2] Ex Parte No. 558 (Sub-No.6), Railroad Cost of Capital -2002, (served June 19, 2003).

[3] *See* Workpapers Vol. 23, pp. 11713-11726.

expenses over the TNR's useful life, in order to compensate for price increases. The time path of capital recovery charges for the TNR likewise must maintain the real purchasing power of those charges. Failure to include such an adjustment in the face of likely inflation would expose users of the TNR in the early years of its life to higher real rail rates than those who come along later in the DCF period. Forecasts of asset values, land values, and operating expenses are needed over the 20-year period of the DCF model.

The annual inflation forecast that is used to calculate the value of the TNR's road property assets is based on the current Global Insight forecast for rail labor and rail materials and supplies. This is the same methodology that was used and approved by the Board in *Duke/NS* (at 37) and *Carolina* (at 28).

The annual inflation forecast that is used to calculate the value of the TNR land assets is based on a weighted combination of indices that reflect rural and urban land prices in relative proportion to the mix of land types traversed by the TNR lines. *See* Exhibit III-H-1. This approach likewise was endorsed in *Duke/NS* and *Carolina*.

The proper inflation factor for stand-alone operating expenses has been a more controversial issue in recent CMP cases before the Board. The principal point of contention has been whether and to what extent the SARR – which is presumed to be an optimally efficient, low cost carrier – can be expected to realize future productivity gains that would offset the effects of price inflation on the SARR's actual operating costs. Generally, complainants in SAC cases have argued that an optimally efficient SARR

would become even more efficient over time, as productivity-enhancing innovations such as improved technology and increased asset durability become available and are adopted by the SARR operator along with the rest of the railroad industry. Complainants thus have advocated use of the productivity-adjusted Rail Cost Adjustment Factor (RCAF-A) to index stand-alone operating costs. *See, e.g., Carolina* at 37.

Predictably, railroad defendants have argued that an optimally-efficient SARR would have little or no room left for future productivity gains as contrasted with "real world" incumbent railroads. *See Duke/NS* at 37. In lieu of the RCAF-A, rail carriers advocate inflating stand-alone operating expenses using the RCAF *unadjusted* for productivity.

In it decisions, the Board has rejected the argument that because a SARR would incorporate the most modern assets and latest technology at the start, it should not be expected to realize any future productivity gains over the 20-year DCF period. *See, e.g., Wisconsin* at 106 ("It is not unreasonable to expect that an efficient railroad built today would realize future productivity gains by utilizing new technology as it developed.").[4] Most recently, in *Carolina*, the Board acknowledged that use of the RCAF-U as a forecasting tool for SARR operating expenses would lead to an overstatement of SAC. *Id.* at 28.

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[4] In *Wisconsin*, the Board suggested that the SARR would be expected to replace and upgrade its information technology and communications systems every five (5) years. *Wisconsin* at 106.

At the same time, however, the Board has been resistant to adoption of the unadulterated RCAF-A to adjust operating costs throughout the entire DCF period, principally for two (2) reasons. First, the Board has not been persuaded that the industry-wide productivity improvements measured by the RCAF-A would result primarily from the transportation of coal, by far the primary commodity handled by the SARRs proffered in most recent cases evaluated under CMP. *See TMPA* at 161; *compare Wisconsin* at 106 (where operating costs were indexed based on the incumbent's own forecast of expected changes in coal service costs). Second, the Board has accepted the argument advanced by the defendants in *Duke/NS* and *Carolina* that optimally-efficient SARRs would not share the asset replacement profiles of their industry counterparts, which "make changes incrementally as older technology assets wear out or become obsolete." *Carolina* at 27.

In this case, AEP Texas presents an approach to indexing stand-alone operating expenses that both acknowledges the obvious fact that an optimally efficient railroad still would be expected to take advantage of new productivity-enhancing innovations, just as an incumbent would, as they become available over time,[5] and addresses the concerns over the use of the full RCAF-A expressed by the Board in *TMPA*.

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[5] Of the various sources of railroad productivity improvements, technological advances uniformly increase productivity and lower the cost of providing railroad services. The most efficient railroad operating in the U.S. in the early decades of the twentieth century still had and exploited the opportunities to enhance efficiency and lower costs further, as innovations such as radio communications and diesel locomotives raised the level of available technology beyond that which had been previously known.

Sponsored by AEP Texas' witness William W. Whitehurst,[6] the approach draws on measures of coal-related railroad productivity developed by EIA as part of that agency's coal rate forecasting methodology.

a. Coal-Related Productivity in the EIA Forecast

The inclusion of a productivity adjustment in the Board's preferred coal rate forecasting tool acknowledges that it is reasonable to expect that a coal-dominated SARR would realize future productivity gains over the DCF period.[7] It is also consistent with the Board's pronouncements in recent cases, as noted above.

As noted in Part III-A, the EIA's Annual Energy Outlook presents midterm forecasts of energy supply, demand and prices extending 20+ years into the future. Coal transportation costs are a key factor in EIA's projections of coal market changes.[8] The EIA indexing factors for coal transportation rates are developed based on a statistical

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[6] Witness Whitehurst's complete analysis is summarized in a paper included as Exhibit III-G-1.

[7] It also exposes a basic flaw in the approach to stand-alone revenues and costs reflected in recent decisions. Adjusting a SARR's revenues using an index that assumes a pass-through of productivity gains while at the same time forecasting changes in operating costs using an index that ignores the same productivity gains skews the analysis toward the financial demise of the SARR. In fact, the Board's use of the EIA rate forecast for revenues and the RCAF-U for operating costs is a key reason why the DCF schedules in virtually every recent coal rate decision show SAC exceeding revenues at some point during the capital recovery period. *See, e.g., TMPA* at 34-35; *Duke* at 39.

[8] *See* Watkins, J., "Forecasting *Annual Energy Outlook* Coal Transportation Rates," *Issues in Midterm Analysis and Forecasting – 1997*, EIA (hereinafter "*Watkins*"). A copy of this paper is included as Exhibit III-G- 2.

regression model of historical data that relates national average changes in prices received by railroad companies for the transportation of coal (the dependent variable), to changes in railroad input costs found to significantly affect the cost of producing rail transportation services and the time trend of changes in railroad productivity for coal transportation (the independent variables). The EIA methodology then assumes that these historical relationships will continue in the future during the forecast horizon (the year 2025 in *AEO 2003*).

The structure of the EIA statistical regression model, and the resulting derived relationships, is a function of time period (*AEO 2003* used data from 1978 through 1998), dependent and independent variables, and the form of the regression equation. As described in *Watkins* (at 79), the dependent variable (INDEXFACTOR) is the Producer Price Index ("PPI") series for line-haul coal railroads (PCU4011#A03(N)). The independent variables are: (i) railroad labor costs (WAGE); (ii) fuel cost (PFUEL); (iii) transportation equipment cost (PEQUIP); *and* (iv) a factor reflecting the trend in productivity. EIA's historical regression equation is as follows:

$INDEXFACTOR = e^{x} * WAGE_t^{\beta_0} * PFUEL_t^{\beta_1} * PEQUIP_t^{\beta_2} * e^{y}$, where:

$x = A$
A = the coefficient (or intercept) of INDEXFACTOR
β_o = elasticity of INDEXFACTOR relative to WAGE
β_1 = elasticity of INDEXFACTOR relative to PFUEL
β_2 = elasticity of INDEXFACTOR relative to PEQUIP
$y = \beta_3 * TREND$
β_3 = the coefficient of TREND
t = trend year
e = the base of natural logarithms

INDEXFACTOR = the value of the price index (*i.e.*, the average price that shippers pay to transport coal) in historical year *t*, which is the producer price index (PPI) for coal transportation divided by the chain-weighted implicit gross domestic product (GDP) deflator.
WAGE = the real wage cost index (*i.e.*, average cost of labor in the railroad industry) in historical year *t*.
PFUEL - the real price of distillate fuel in dollars per million British thermal units (Btu) to the industrial sector (*i.e.*, the average price of fuel paid by the railroad industry) in historical year *t*.
PEQUIP = the average price of railroad equipment in historical year *t*, which is the producer price index (PPI) for transportation equipment divided by the chain-weighted implicit GDP deflator.
TREND = the year *t* and a proxy for productivity, given the stable increase in productivity and the high correlation between time and productivity.

See Exhibit III-G-1, Table 1.

Since the dependent variable being estimated in the EIA coal transportation rate index equation is rail rates for coal service, the factor that reflects changes in railroad productivity over time measures changes in productivity that are specific to coal service (as opposed to general freight) and are passed through to shippers in the rate structure. *AEO 2003* includes 21 years of data, and shows the average annual pass-through of historic productivity improvements to shippers to be 2.15%. *See* Exhibit III-G-1, at 9.

In *AEO 2003*, the historical (1978-1998) regression used a productivity value of (-)0.0215, with the negative sign reflecting the fact that when all other input variables are accounted for, productivity gains moderated the rate of increase in coal transportation prices.

The EIA productivity factor as applied to the Board-audited RCAF-U offers a valid (albeit conservative) alternative index mechanism for stand-alone operating costs

that responds to the concerns expressed by the Board in *TMPA* over use of the RCAF-A. The ICC/STB general industry productivity calculations used in computing the RCAF cover different time periods than do EIA's calculations, however, making an interim step necessary to allow a meaningful comparison.

The ICC first computed a productivity adjustment to the RCAF using data from 1981 through 1987, which produced six year-to-year changes. The Board's most recent decision in *Ex Parte No. 290 (Sub-No. 4)* used data from 1998 through 2002.[9] During the time in between, the Board and its predecessor made several refinements in the computational procedures. Exhibit III-G-3 shows the calculation of the average annual change in general railroad productivity over the 1982-2002 time period, carrying back to earlier years any data refinements adopted by the Board or its predecessor in the interim. Exhibit III-G-4 shows a similar calculation of the historic average annual EIA productivity factor for coal, using updated input data through 2002. A comparison of the two shows an average annual STB general railroad productivity factor over the 1982-2002 time period of 4.2%, and an EIA coal-specific annual productivity factor over the same period of 2.4%, or 57% of the general industry factor. The difference in part reflects the greater efficiency inherent in modern coal service, which moderates the

[9] Ex Parte No. 290 (Sub-No. 4), *Railroad Cost Recovery Procedures – Productivity Adjustment*, Decision served January 12, 2004.

potential for productivity improvements as compared to general freight service.[10] As the EIA data shows, however, meaningful productivity gains specific to the coal sector still are to be expected.

In terms of selecting an appropriate index for changes in stand-alone operating costs for the TNR, the foregoing analysis confirms the Board's acknowledgments in *Wisconsin* and *Carolina* that reliance on the RCAF-U alone will overstate SAC. AEP Texas submits that the Board should use a variant of the RCAF that reflects the productivity gains for coal service reflected in the EIA analysis. Such an approach is responsive to the concern expressed by the Board in *TMPA* that productivity gains for a coal-based SARR should correlate to productivity gains that "would result primarily from the transportation of coal."[11] It also brings into balance the Board's treatment of stand-alone revenues and operating costs, and casts the SARR as a more rational economic actor, consistent with CMP theory.

Exhibit III-G-5 shows the derivation of an index for TNR operating expenses that adjusts changes in the RCAF-U using the historical relationship between EIA's annual productivity factor specific to the transportation of coal and the Board's own industry factor. This adjustment methodology is incorporated in the SAC calculations summarized in Exhibit III-H-1.

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[10] As noted *infra*, it also reflects the fact that the EIA factor is a measure of the *share* of productivity gains that rail carriers pass through to their coal customers.

[11] *TMPA* at 161.

It should be noted that the EIA-based indexing approach discussed above provides a conservative productivity adjustment for the RCAF, which is clearly preferable to the distortion that results from application of 100% of the RCAF-U. However, over time this approach will continue to overstate the actual effects of inflation on the TNR's operating costs. This is because the EIA approach limits the productivity gains available to the TNR to those which are passed along by Class I railroads to coal shippers generally in the form of rate reductions or moderated increases, the dependent variable measured by the EIA formula. As it is undisputed that rail carriers only *share* productivity gains with their customers, an indexing methodology that incorporates the EIA data necessarily will understate the true effect of productivity enhancements on the TNR's cost of service.

b. The Board's "Age of Assets" Concern is Misplaced

In *Duke/NS*, the Board accepted the defendant's argument that the productivity gains reflected in the RCAF-A result from acquisitions and changes that existing railroads make "incrementally as their older technology assets wear out". *Duke/NS* at 37. As a new railroad, the Board reasoned, a SARR would not have a comparable asset profile (at least in terms of age), thereby making full application of the RCAF-A inappropriate. *Id. See also Carolina* at 27. AEP Texas submits that the Board's concern in this area is misplaced. For a number of reasons, some of which are enumerated below, the entering SARR would experience productivity gains over time

similar to these experienced by the rest of the industry, and asset age at most is a tertiary factor in a railroad's pursuit of productivity gains.

First, as shown in detail in Exhibit III-G-6, the actual differences in the ages of coal-related assets between a SARR and a modern Class I railroad are not nearly so profound as to justify ignoring productivity for the former while fully recognizing it for the latter. Using the Annual Reports Form R-1 for the Class I railroads whose data and experience underly the Board's productivity factor and the RCAF-A, the lives of assets and average remaining useful lives of the assets for the constituents of the RCAF-A can be calculated. Exhibit III-G-6 shows these computations of asset lives and remaining lives, based on the data recorded in Schedules 332 and 335 of the R-1. As of 2002 the average life of railroad assets was approximately 29 years, and the average remaining life was approximately 22 years. Stated differently, as of 2002 the average age of railroad assets in service was only seven years.

Second, the "age of assets" argument accepted in *Duke/NS* assumes, without supporting analysis, that railroads only take advantage of the opportunity to place more efficient and productive assets in service if the assets they would replace have reached the end of their accounting lives. However, a railroad (be it a SARR or a modern Class I carrier) would be expected to opt for the more productive asset whenever it determines that positive economic value would be realized as a result. If that point is reached before the end of the accounting life of the asset being replaced, that asset can

and would be sold, salvaged, or shifted to an alternate use (*e.g.*, a road locomotive might be switched to yard or helper service). Even if a SARR starts operations with new assets (which may not be optimally efficient), it still would behave similarly to its Class I counterparts to take advantage of available opportunities to realize asset-based productivity gains whenever economic value would be added and profits enhanced, regardless of whether the asset(s) being replaced are at the end of their accounting lives. To the extent that there are properly functioning secondary markets for railroad assets, the ability of a railroad, whether it be a SARR or an incumbent, to change over to newer, more efficient technologies will not be impaired by the remaining accounting life of the assets. Similarly, to the extent that a railroad's assets are leased (*e.g.*, locomotives, rolling stock), "trading up" to newer, more efficient technologies will not be constrained by the accounting age or remaining life of the asset.

Finally, the "age of assets" argument incorrectly assumes that all or even most productivity gains are asset-driven. In fact, as the Board's own *Ex Parte No. 290 (Sub-No. 4)* procedures reflect, productivity improvements also are derived from changes in labor practices and improvements in traffic volumes and/or densities, neither of which have to await the end of the life cycle of existing assets to be implemented.

c. Differences In the Nature of Operations Do Not Discount SARR Productivity Gains

The railroad productivity factor developed by the Board is a composite measure that blends data from each of the individual Class I railroads. It then is assumed that this composite result can be applied to each of the constituent railroads individually. If these railroads, which have varying patterns of operations, also have productivity experiences that fluctuate about the composite value, the Board's determination that it nevertheless is appropriate to apply a single composite measure to each carrier supports a similar treatment of the SARR. An analysis of publicly available data show that is precisely the case.

As outlined by the Board in the Appendix to its periodic decisions in *Ex Parte No. 290 (Sub-No. 4),* the annual rate of productivity change used for the RCAF-A is calculated by dividing an output index by an input index. The input index consists of freight expenses, fixed charges and contingent interest drawn from the Annual Report Form R-1 data.[12] The output index is developed using the costed waybill sample as a base, with each movement assigned to one of 189 segments or categories. Segmentation is based on: (a) three mileage blocks; (b) seven car types; (c) three weight brackets; and (d) three shipment sizes. The output index is a composite of the year-to-year change in

[12] *See* Decision served January 12, 2004 at 3-4.

ton-miles for each of the 189 segments (*3*7*3*3) weighted by each segment's base-year share of total revenues.

Replicating the input index portion of the annual rate of productivity change at the individual railroad level is straightforward, as all of the inputs come from the publicly-available R-1.

To replicate the output index portion, a surrogate is needed for a segmented costed waybill sample, which is not publicly available. For this function, AEP Texas' witness Whitehurst computed a first-order approximation using the change in revenue ton-miles as the proxy for the output index. Revenue ton-mile data by railroad are included in Schedule 755 of the R-1. Exhibit III-G-7 shows a comparison of the results of this approximation and the actual output indices published by the Board in *Ex Parte No. 290 (Sub-No. 4)* over the 1982-2002 time period. As demonstrated in this Exhibit, the correlation easily is close enough to allow the approximation to be used in comparing relative rates of productivity change among railroads over time.

The wide range in operating characteristics of the individual railroads that make up the overall composite on which the STB computes productivity changes can be demonstrated by considering the segmentation parameters used in the STB's output index. The four segmentation categories, the first-order approximation for each based on public data for 2002, the composite value for all Class I railroads, and the range of individual

carriers' values about this composite are shown in Table III-G-3. Source data and computations are set out in Exhibit III-G-8.

Table III-G-2
STB Costed Waybill Sample Output Index
Movement Characteristics for Individual Class I U.S. Railroads

Line No.	Segmentation Measure and Proxy (1)	Composite All Class I U.S. Railroads (2)	Individual Railroad Highest (3)		Individual Railroad Lowest (4)		Ratio Highest To Lowest (5) (3) / (4)
	Mileage Blocks						
1	Average Haul (miles)	858	982	BNSF	304	KCS	3.2
	Freight Car Types						
	% of total Loaded Car-Miles						
2	Box, Refrig, & All Other	15.6%	26.6%	GTW	11.6%	UP	2.3
3	Gondola	12.7%	16.0%	NS	3.7%	KCS	4.3
4	Open Hopper	10.8%	14.8%	CXT	2.7%	KCS	5.6
5	Covered Hopper	17.8%	30.6%	SOO	12.8%	NS	2.4
6	Flat, except TOFC	13.6%	25.2%	SOO	5.7%	KCS	4.4
7	Tank	8.2%	18.0%	KCS	0.8%	SOO	22.8
8	Flat - TOFC/COFC	21.3%	28.9%	BNSF	13.6%	GTW	2.1
9	Total	100.0%					
	Lading Weight Brackets						
10	Average Lading (tons)	93.7	132.7	BNSF	77.0	CSXT	1.7
	Shipment Size						
	Cars per train by train type						
11	Unit	105.2	112.7	KCS	85.4	CSXT	1.3
12	Through	62.5	87.5	IC	46.6	BNSF	1.9
13	Way	27.1	39.1	KCS	21.4	BNSF	1.8

Using annual R-1 data for 1981 through 2002, witness Whitehurst also has computed an input index; a first-order approximation output index; and an annual rate of productivity change for each Class I railroad. To replicate the same multi-year smoothing

that the Board uses in its productivity determinations, five-year moving average changes in productivity are calculated for each railroad for 1986 (based on 1981-1986 data) through 2002 (based on 1997-2002 data). The resulting patterns of productivity change are presented graphically on Exhibit III-G-9, with the accompanying numerical data shown on Exhibit III-G-10.

Exhibit III-G-10 shows that the 5-year average productivity experience of individual railroads has varied over time from the overall average by about 10 percentage points on the low side and over 20 percentage points on the high side. Further, the productivity change performance of each individual railroad fluctuates from time period to time period, with each railroad spending some time in above-average territory and some time in below-average territory. These wide-ranging results demonstrate that the composite productivity change factors that the STB calculates for the Class I U.S. railroads as a whole blend together very different individual railroad productivity experiences, in addition to different operating characteristics. *See also* Exhibit III-G-1, Table 4. The Board's Congressionally - approved policy nevertheless applies the composite factor individually to each carrier through the determinations of the RCAF-A. AEP Texas submits that this analysis demonstrates that there is no rational or empiric support for the proposition that a single index reflecting coal-related productivity should not be applied to the operations of a SARR such as TNR.

3. Tax Liability

Federal taxes payable by the TNR have been calculated in a manner consistent with the approaches followed by the Board in prior coal rate cases. *See, e.g., FMC* at 178-80; *West Texas Utilities*, 1 S.T.B. at 714. The TNR is assumed to pay federal taxes at the corporate rate of 35%, with payments for debt interest, depreciation expense and state income taxes treated as deductibles.

The TNR also will be subject to income taxes in the six(6) states in which it operates: Wyoming, South Dakota, Nebraska, Colorado, Oklahoma and Texas. Consistent with Board-approved procedures, the taxes applicable to railroads in each of these states were weighted together based on the number of TNR route-miles in each state. As detailed in Exhibit III-H-1, the weighted rates for Wyoming (0%), South Dakota (0%), Nebraska (7.81%), Colorado (4.63%), Oklahoma (6.0%) and Texas (0%) produce an effective state tax rate of 3.09% for the TNR. *See* Exhibit III-H-1.

4. Capital Cost Recovery

The Board's DCF methodology uses economic depreciation to calculate the capital recovery cost of the stand-alone entity's property. This reflects the principle that the value of an asset at any point in time is equal to the discounted present value of the earnings that it will produce over its remaining useful life. Economic depreciation effectively represents an asset's loss of earning power as it approaches the end of its life and/or replacement date. Under CMP as applied by the Board and its predecessor, a 20

year base period is used to benchmark the stand-alone railroad's asset value. However, it is acknowledged that the stand-alone entity will not be retired at the end of the 20-year DCF period; rather, it is assumed that continuing investments will be made in the SARR, and that the railroad will continue to operate in perpetuity. In its calculation of SAC, AEP Texas has accounted for the costs and revenues associated with the renewed investments in and continued operation of the TNR in the "out years," *i.e.*, the years after 2020, using the methodology endorsed by the Board in previous cases.[13] *See* Exhibit III-H-1.

Recovery of the SARR's capital carrying charges is a key determinant of the reasonableness of freight rates under the CMP standard. Historically, the Board executed the DCF model using an assumption that the freight rates charged by the stand-alone railroad to the shippers in its service group would remain constant in real terms over the 20-year period. The total capital carrying charges would be fully covered over this period, with the measure of recovery in any given year determined by the volume of traffic projected to be handled by the stand-alone railroad. This methodology was used, *inter alia*, to fashion the maximum rate prescription ordered in *Arizona Public Service*.

However, in its May, 2000 decision in *FMC* (and subsequent cases), the Board changed its method so that the capital carrying charge recovery is equal in each year of the DCF period, regardless of the volume of traffic handled. Under this

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[13] *See, e.g., West Texas Utilities*, Appendix E.

assumption, it is the maximum reasonable freight rates that fluctuate with annual changes in volume, with the SAC rate per service unit being inversely proportionate to the level of traffic (*i.e.*, the lower the volume of traffic, the higher the maximum allowable rate). AEP Texas' computations use this time-based method of capital recovery first adopted by the Board in *FMC*.

5. Percentage Reduction Methodology

a. Stand-Alone Revenues Exceed Costs

The SAC analysis summarized in Parts III-A through G (4), and the accompanying Exhibits, demonstrates that over the 20-year DCF period the revenues generated by the TNR substantially exceed its attributable capital and operating costs. Table III-G-4 below shows the magnitude of the excess of revenues over SAC at various intervals.

Table III-G-4
Excess of Stand-Alone Revenues
Over Stand Alone Costs
(Millions of dollars)

Quarter	Revenues[1]	SAC[1]	Overpayments[2]
(1)	(2)	(3)	(4)
3Q00	188.4	130.4	$58.0
3Q05	207.7	139.2	$68.5
3Q10	242.5	155.3	$87.2
3Q15	266.0	172.9	$93.1

[1] Source: Exhibit III-H-1, Pages 27 and 28.
[2] Column (2) minus Column (3)

b. The Percentage Reduction Method

Where, as here, stand-alone revenues are shown to exceed costs, rates for the members of the relevant traffic group--including AEP Texas in particular--must be adjusted to bring revenues down to the SAC constraint level. Generally speaking, the Board's preferred approach for allocating SAC rate relief is the "percentage reduction" method first employed in *Coal Trading* and used subsequently in *Arizona Public Service*, *FMC, TMPA* and following cases. The percentage reduction method determines the percentage difference between total stand-alone revenue and total SAC in each quarter (or year) of the DCF period, and applies that percentage reduction to the rates of all shippers in the stand-alone group.

The Board's preference for the percentage reduction method has been justified on grounds of consistency with Ramsey pricing principles. It has been asserted that applying the same percentage reduction in rates across all customers of the SARR preserves the differential pricing of the pre-reduction rate structure and, thus, recognizes varying demand elasticities. *See Coal Trading* 6 I.C.C. 2d at 380. As explained in *Arizona Public Service,* "this method assumes that the comparative rate levels of the various shippers in the group reflect their relative levels of demand elasticity, so that maintaining the existing rate structure implicitly preserves the carrier's demand-based differential pricing." 2 S.T.B. at 392. A footnote to the decision specifically links the percentage reduction method with Ramsey pricing: "This method is consistent with *Coal Rate Guidelines*, 1 I.C.C.2d at 546 (ideally the comparative revenue contributions of the shippers in the traffic group should be based on Ramsey pricing principles)." *Id.*, 2 S.T.B. at 392 n. 75.

c. The Percentage Reduction Method Is Flawed and Subject to Distortion

While the percentage reduction method remains the Board's preferred methodology, from the outset the agency's predecessor signaled a willingness to deviate from it when "it is demonstrated that the pattern is seriously flawed." *Coal Trading,* 6 1.C.C. 2d at 435. Most recently, in *Carolina,* the Board acknowledged that the methodology is subject to manipulation and distortion, *e.g.*, by a rail carrier seeking to "pre-ordain an outcome to its liking by setting the challenged rate at a higher level than it

otherwise would, so that when the percent reduction is applied the challenged rate will be reduced to the desired level." *Carolina* at 31. Noting that the defendant in that case had not denied the complainant's basic claim, the Board concluded:

> The parties have shown that the percent reduction method is susceptible to manipulation by parties: by a defendant railroad in setting a challenged rate at an artificially high level to limit the impact of a SARR over-recovery, and by a complaining shipper in grouping a challenged rate with non-issue traffic that is much higher rated to generate a larger rate reduction. That is sufficient to warrant a change; the maximum reasonable rate that can be charged to a complaining captive shipper should be determined by the Board, not by parties' litigation tactics.
>
> Accordingly, the Board is receptive to another approach for determining the appropriate extent of rate relief in SAC cases.

Id. at 32.

Plainly, the Board already has recognized the practical flaw in the percentage reduction methodology. However, the approach suffers from a theoretical defect as well: it is inconsistent with a proper interpretation of Ramsey pricing principles.[14]

Optimal pricing occurs at the point where price is equal to marginal cost. When price is equal to marginal cost, the optimal quantity of a good or service is transacted as its value to consumers is just equal to the cost of producing additional units

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[14] This portion of AEP Texas' Opening Evidence is sponsored and attested to by Drs. Douglas Caves, Kelly Eakin and Mark Meitzen of Christensen Associates.

of the good or service. At prices greater than marginal cost, quantities transacted are less than the optimal quantity. This is economically inefficient because, when price is greater than marginal cost, the value of the good or service to consumers is greater than the cost of producing additional units, indicating that more units should be produced and sold. In fact, economic efficiency dictates that quantity should be increased to the point where price is equal to marginal cost. Conversely, at prices below marginal cost, quantities transacted are greater than the optimal quantity because the value of the good or service to consumers is less than the cost of producing additional units.

There is a consensus among economists that fixed cost recovery poses a regulatory dilemma. Setting rates at marginal cost is economically efficient, in that it maximizes the value resulting from the production and consumption of the goods or services in question. However, marginal cost pricing will not always allow the vendor to recover all of its fixed and/or overhead costs. Raising rates above marginal cost results in revenues in excess of operating costs to provide a contribution to fixed costs, but these prices are inefficient in that they will act as a disincentive to maximum economic activity among some customers. The essence of Ramsey pricing is that it sets prices differentially across markets to allow additional revenue recovery while minimizing the inefficiency that results from pricing above marginal cost by minimizing the deviation from optimal quantities. It does this by setting prices such that the *markup of price over marginal cost* is inversely related to the elasticity of demand. Because Ramsey pricing deviates from

optimal or "first-best" marginal cost pricing but does so in a manner that minimizes deviations from optimal quantities, Ramsey pricing also is referred to as "second best" pricing.

With true Ramsey pricing, the ratio of price markups for any two markets is equal to the ratio of the inverse elasticities for those markets.[15] The result is that the burden of fixed cost recovery falls on all market participants, but in a non-proportional manner, with greater percentage markups for those with less elastic demands. Similarly, however, *decreases* in the revenue needed to cover all costs provide price relief in a non-proportional manner, with the participants with less elastic demands that absorbed the greater increases receiving greater rate relief. Put another way, under Ramsey principles, the inelastic demand participant whose prices diverge the most from the optimally efficient marginal cost level when revenues rise should see a proportionately greater price retraction when costs decline and revenues are reduced.

Because it bases pricing differentials on inverse demand elasticities, Ramsey pricing often has been characterized as a "demand-based" approach as opposed to a "cost-based" approach. However, Ramsey pricing also has a "cost-based" side, as the foundation for Ramsey pricing is marginal cost pricing, with markups being determined by what is necessary to recover fixed cost in a manner that minimizes quantity distortions. Thus, Ramsey pricing both blends and transcends cost-based and demand-based pricing.

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[15] Specifically, with Ramsey pricing $[(P_i - MC_i)/P_i] / [(Pj - MCj)/Pj] = \varepsilon_j/\varepsilon_i$.

The determinants of the Ramsey prices are the elasticities of demand, operating costs, fixed costs, and market-specific costs.

The percentage reduction method departs from Ramsey principles by focusing on the maintenance of price level relationships. In an apparent effort to move toward demand-based pricing, the percentage reduction method abandons the basic foundation of Ramsey pricing – *i.e.*, the markup of price over marginal cost. The rationale for supporting an equal percentage reduction in rates to maintain relative prices as exemplified in *TMPA* and *APS* is fundamentally flawed because it focuses on the wrong concept – the ratio of prices. As explained above, the proper focus should be the relative markups above marginal cost that characterize the various participants in the market under scrutiny. Moreover, price changes produced by the percentage reduction method are not consistent with price changes that would result from Ramsey pricing, because under true Ramsey pricing changes would be disproportionate and responsive to demand elasticities, not equal in percentage across the customer spectrum.[16] And since price levels in the first instance are determined by the same entity whose rates are under regulatory scrutiny, the equal percentage reduction methodology creates a loophole

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[16] In addition, under Ramsey pricing, changes in cost result in changes in prices and price ratios. Again, pursuing a percentage reduction approach will go astray of Ramsey pricing principles. Exactly how Ramsey prices and price ratios change depend upon the nature of the cost change (*e.g.*, fixed, variable, market-specific) and the elasticities of demand in each market.

through which the undesirable "gaming" incentive already acknowledged by the Board in *Carolina* is introduced.

d. A Generalized Percentage Reduction Methodology is Superior to the Equal Percentage Reduction Methodology

Following Ramsey principles, a rate reduction or rate relief allocation methodology should attempt to maintain price markup ratios across the market in question. Herein, AEP Texas proposes and applies an alternative formula – called the "generalized percentage reduction" rule – that allocates relief based on the maintenance of the ratios of price markups over marginal cost. The end result is that, consistent with the "second best" pricing principles embodied in Ramsey pricing, relief is allocated in the same manner as prices above marginal cost were set in the first place: the less elastic a shipper's demand, the greater the percentage price change.

The generalized percentage reduction rule advanced by AEP Texas solves for the following equation:

$$\%\text{ price decrease shipper i}/\%\text{ price decrease shipper j} = (P_i/P_j)(MC_j/MC_i)\,E_{ji}$$

where P_i and P_j are the original Ramsey prices, MC_j and MC_i are shipper-specific marginal costs and E_{ji} is the ratio of shipper j's elasticity of demand to shipper i's elasticity of demand. Exhibit III-G-11 presents the derivation of the generalized percentage reduction method and describes its practical implementation. As with the equal percentage reduction method, the overall decrease in revenues (rates) is

approximately equal to the overall percentage by which SARR revenues exceed SAC.[17] However, the individual percentage reductions vary across shippers, with the less price responsive (*i.e.*, inelastic demand) shippers receiving the greater percentage reductions.

e. The Generalized Percentage Reduction Method Addresses the Gaming Problem

As discussed above, the equal percentage reduction method is flawed because it focuses solely on price levels rather than markup ratios, and provides incentives for false disturbances (gaming) that the Board acknowledged in *Carolina*. However, if the SAC relief allocation method used by the Board is truly founded on Ramsey principles, as with the generalized percentage reduction method, the property of returning prices to their original balance is maintained and the gaming incentive is mitigated. This is because the greatest relief will be provided to those shippers who are at risk for the largest increase in rates. In essence, the generalized percentage reduction method undoes what the attempt at gaming tries to accomplish. By contrast, because it applies the same percentage reduction to all traffic in the stand-alone group, the equal percentage reduction method does not sufficiently reduce rates subject to gaming. The result is that the "gamed rate" is higher than it would be under optimally balanced rates using Ramsey principles. This surplus of the "gamed rate" over the Ramsey optimal rate goes to the incumbent railroad. By eliminating this potential surplus, the generalized

[17] The fact that demand is price responsive will make the overall percentage reduction differ from the percent by which revenues exceed costs.

percentage reduction method reduces the incumbent's incentive to game captive shipper rates while remaining true to the Ramsey principles that infuse the *Coal Rate Guidelines*.

f. Application of the Generalized Percentage Reduction Formula

As a practical matter, the evidentiary record in a coal rate proceeding such as this is inadequate to permit the specific calculation of marginal service costs for each member of the SARR traffic group. Moreover, requiring the assembly of such a data base would not be advisable as a matter of regulatory policy, as both the production and administrative burdens could be oppressive. These record limitations are not consequential, however, as the task at hand is not to compute the actual marginal cost of a particular movement as an absolute matter. Rather, it is to measure the markup of that movement's rate over a determined cost level *relative to the comparable markups on rates to other member of the SARR group.* So long as all of the traffic group members' rates are measured against a consistent cost standard, these relative markups (and, thus, demand elasticities) can be determined and used as the basis for allocating the excess of SARR revenues over SAC.

Using publicly-available Phase III URCS data for BNSF for the year 2001 (the base year for the SAC analysis), AEP Texas' witness Whitehurst calculated the average marginal cost for a typical BNSF western unit coal train movement at four (4) separate distances: 300 miles, 600 miles, 900 miles and 1200 miles. These calculations and the source data used by witness Whitehurst are described in Exhibit III-G-12 and the

accompanying workpapers. The SARR revenues per ton attributable to each member of the TNR traffic group then were compared to the appropriate marginal cost figure based upon distance (*e.g.*, the marginal cost for a movement that travels 450 miles on the TNR was set midway between the 300 mile cost level and the 600 mile level). The resulting percentage markups for each movement for each year of the DCF period[18] are reflected in Exhibit III-H-1. For each year in which the total TNR revenues exceed total SAC (which is every year), the resulting rate relief is allocated on the basis of percentage reductions correlated to each TNR customer's markup over marginal cost, with the greatest reductions going to the movements showing the greatest markups. The results of these calculations are detailed on Exhibit III-H-1.

[18] 2001 base year marginal costs per ton were indexed using the same adjustment index used for TNR operating expenses.

III-H Results of
SAC Analysis

III. H. RESULTS OF SAC ANALYSIS

1. Results of SAC Analysis

AEP Texas has calculated SAC in the alternative, using both the generalized percentage reduction method described in Part III-G-5(d) and the equalized percentage reduction method employed by the Board in recent cases. The results of applying these different calculations are shown in Exhibit III-H-1.

The calculations shown in each table in Exhibit III-H-1 are summarized below.[1] Each Exhibit contains the same tables.

a. Cost of Capital

The cost of capital for the TNR reflects the Board's current cost of capital for 1998 through 2001. In 2002, the TNR refinances its remaining investment using the Board's 2002 current cost of capital for both debt and equity. The 2002 cost of capital values are used through the remaining years of the DCF model.

b. Road Property Investment Values

The calculation of road property investment costs is summarized in Table C. The investment cost incorporates hiring and training costs and one-time fees paid for land easements.

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[1]The cost of capital (Table A) and inflation indices (Table B) are addressed in Parts III-G-1 and III-G-2, respectively.

c. Interest During Construction

Interest During Construction (IDC) accrues on the assets of the TNR. Table D shows the total IDC amount and the portion that is debt-related. IDC is calculated based on the investment values in Table C, the composite cost of capital from Table A, and the length of the finance period for each account. The construction schedule described in Part III-F-12 was used as the basis for the length of the finance period. The portion of IDC that is debt-related is calculated by multiplying the investment by the length of the finance period, the TNR's debt percentage, and the cost of debt. Debt-related IDC is shown as an interest deduction during the construction period.

d. Amortization Schedule of Assets Purchased With Debt Capital

The amortization schedule calculates the annual interest payment required for the debt-related portion of the TNR's investment, and is included in Table E. The debt-related portion of the investment base (referred to as "principal") is developed by multiplying the appropriate Table A debt percentage by the sum of total investment and IDC. The quarterly annuity payment is then calculated based on the principal, the debt rate from Table A, and the life of the individual assets.

The amount of interest included in the quarterly payment is calculated by multiplying the beginning balance (the principal in the first period) by the interest rate. This interest stream is recalculated in 2002 when the TNR refinances its remaining investment.

e. Present Value of Replacement Cost

Table F shows the additional investment (on a present value basis) that the TNR would have to make if the hypothetical railroad replaced each asset indefinitely at the end of each asset's life. The 2002 cost of capital values are used to calculate the infinite life replacement value. This additional investment is added to the initial investment in Table I prior to determining the quarterly cash flows.

f. Tax Depreciation Schedules

Table G displays the tax depreciation required under the Federal Tax Code as currently in effect.[2] Investment in communications (Account 26), signals and interlockers (Account 27), and the track accounts (Accounts 8-12) were depreciated over seven (7) years employing a 200 percent declining balance methodology switching to straight-line depreciation when the straight line percentage exceeds the declining balance percentage. Investment in bridges and culverts (Account 6), public improvements (Account 39), fences and roadway signs (Account 13), station and office buildings (Account 16), roadway buildings (Account 17), fuel stations (Account 19) and shops and engine houses (Account 20) were depreciated over 15 years using a 150 percent declining balance method switching to straight-line depreciation. Investments in grading (Account

[2]The mandatory method for depreciating most tangible property placed in service after December 31, 1986 is the Modified Accelerated Cost Recovery System ("MACRS"). In addition, Business Start-Up Costs, such as Engineering and Training Costs, have been amortized over a 60 month period, starting with the month in which the business begins.

3) and tunnels (Account 5) were amortized over 50 years using straight-line amortization. Investments in engineering (Account 1) and training and hiring costs were amortized over five (5) years using straight-line amortization.

g. Average Annual Inflation In Asset Prices

Table H computes the average annual inflation rate by which the capital recovery charge in Table I is indexed. The weighted average inflation rate was used because Table H calculates the required capital recovery necessary to return the investment. All road property accounts are indexed at the quarterly rates shown in Table B. The weighted average inflation rates are based on the inflation indexes discussed in Part III-G-2.

h. Discounted Cash Flow

Table I displays the calculation of the capital carrying charge and associated flow of funds required to recover the total road property investment. Inputs to this spreadsheet were taken from the tables described above. Table I calculates the quarterly capital carrying charge required over 82 quarters[3] after consideration of the applicable tax liability.

The total start-up investment is comprised of the road property investment shown in Table C, the IDC calculated in Table D, and the present value of replacement

[3]As noted in Part III-A-2, the TNR is assumed to commence operations in the Third Quarter of 2000. Thus, the DCF period in this case actually extends to 20 years and 6 months.

investment calculated in Table F. The result equals the total investment to be recovered from the quarterly capital recovery stream over the life of the TNR. The quarterly capital recovery stream reflects the tax benefits associated with interest on the investment financed with debt from Table E and the road property tax depreciation from Table G.

The cash flow shown in Column (8) of Table I is the amount remaining each quarter after the payment of federal and state tax liabilities. This cash flow is used for payment of return on and return of total investment in the TNR. This quarterly figure is then discounted by the fourth root of the composite annual cost of capital from Table A, adjusted to reflect the assets being placed in service on July 1, 2000. The present value cash flow is then summed for each quarter along with the future cash flow and the total equals the total cost that must be recovered. The future cash flow is the residual value of the unconsumed assets and remaining tax liabilities (remaining interest and depreciation) of the TNR and serves to reflect the cash flow required to account for the value of the assets not consumed during the 20.5 year life of the DCF model.

The development of the quarterly levelized capital carrying charge requirement is a relatively simple calculation, *i.e.*, starting capital carrying charge requirement times the quarterly tonnage volume, times the quarterly index factor from Table H which will recover total investment during the 20.5 year DCF model period. The starting capital carrying charge requirement which recovers the total investment is developed through an iterative process. The DCF model begins with a specified amount

and then runs through the calculation described above to develop the cumulative present value of the cash flow. If this cumulative number does not equal the total costs to be recovered from the quarterly revenue flow (start-up investment plus the present value of the replacement investment), the starting cost per ton is adjusted upward or downward as necessary and the DCF model runs through the calculations again. This process is repeated until the starting quarterly charge yields a cumulative present value cash flow which equals the required investment to be recovered from the quarterly capital recovery flow.

i. Computation Of Tax Liability – Taxable Income

Table J - Part 1 displays the calculation of the TNR federal tax liability. The procedures followed to develop the federal tax liability are those discussed in Part III-G-3. Table J - Part 2 displays the calculation of the TNR state income tax liability, which also is discussed in Part III-G-3.

j. Operating Expenses

Table K displays the operating expenses incurred in each year of the TNR's operation based on the traffic levels described in Part III-A. Table K states the annual operating costs on a quarterly basis, and indexes them to reflect inflation over the life of the TNR based on the inflation rates shown in Table B.

k. Summary of SAC

The total SAC for the TNR based on investment and operating costs is summarized in Table L of Exhibit III-H-1. The capital requirement from Table I and the annual operating expenses from Table K are presented and summed in Table L for each year that the TNR operates.

2. Reparations

In this subpart, AEP Texas compares the BNSF rates at issue in this case to the jurisdictional threshold prescribed by 49 U.S.C. § 10707(d)(1)(A) and the calculation of stand-alone costs attributable to the transportation of coal from PRB origin mines to the Oklaunion Station in carrier-supplied railcars. Because the challenged rates exceed both the jurisdictional threshold and SAC in each quarter of the 2000-2020 DCF period, AEP Texas is entitled to relief in the form of a maximum rate prescription and an award of reparations for coal shipments that moved while the challenged rates were in effect.

a. Maximum Rate Calculations

The maximum lawful rate for the transportation of coal from PRB origins to the Oklaunion Station equals the greater of the jurisdictional threshold or stand-alone costs. Table III-H-1 compares BNSF's rate levels (Column (2)) to the jurisdictional threshold calculation (Column (4)) and the stand-alone cost (Column (5)). BNSF's rates for the AEP Texas movement are greater than both the jurisdictional threshold and stand-

alone cost for all relevant time periods. The maximum reasonable rates equal the greater of the jurisdictional threshold or stand-alone cost and are summarized in Column (6) of Table III-H-1.

Table III-H-1
Summary of Maximum Rate Calculations for Issue Traffic- 2Q00 through 1Q04

Time Period (1)	BNSF Rate Per Ton [1] (2)	BNSF Variable Cost Per Ton [2] (3)	Jurisdictional Threshold Per Ton [3] (4)	Stand-Alone Cost Per Ton [4] (5)	Maximum Rate Per Ton [5] (6)
Buckskin Mine Originations					
2Q00	$13.68	$6.70	$12.06	$10.59	$12.06
3Q00	15.78	6.77	12.19	10.27	12.19
4Q00	15.78	6.91	12.44	10.27	12.44
1Q01	15.78	6.75	12.15	10.89	12.15
2Q01	15.78	6.95	12.51	10.89	12.51
3Q01	15.78	7.01	12.62	10.89	12.62
4Q01	15.78	6.90	12.42	10.89	12.42
4Q03	18.04	6.88	12.38	9.70	12.38
Eagle Butte Mine Originations					
1Q03	$17.25	$6.97	$12.55	$9.70	$12.55
2Q03	18.04	6.59	11.86	9.70	11.86
3Q03	18.04	6.67	12.01	9.70	12.01
4Q03	18.04	6.68	12.02	9.70	12.02
1Q04	18.83	6.61	11.90	9.68	11.90
Jacobs Ranch Mine Originations					
2Q00	$13.68	$6.10	$10.98	$10.59	$10.59
3Q00	15.78	6.53	11.75	10.27	11.75
1Q01	15.78	6.52	11.74	10.89	11.74
2Q01	15.78	6.74	12.13	10.89	12.13
3Q01	15.78	6.77	12.19	10.89	12.19
4Q01	15.78	6.84	12.31	10.89	12.31
1Q02	15.78	6.14	11.05	10.23	11.05
3Q02	17.25	6.38	11.48	9.50	11.48
4Q02	17.25	6.83	12.29	10.23	12.29
Black Thunder Mine Originations					
1Q01	$15.78	$6.20	$11.16	$10.89	$11.16
3Q01	15.78	7.01	12.62	10.89	12.62
4Q01	15.78	6.72	12.10	10.89	12.10
2Q02	15.78	6.39	11.50	9.50	11.50
3Q02	17.25	6.38	11.48	9.50	11.48
4Q02	17.25	6.84	12.31	10.23	12.31
4Q03	18.04	6.70	12.06	9.70	12.06
1Q04	18.83	6.69	12.04	9.68	12.04
Caballo Rojo Mine Originations					
2Q00	$13.68	$6.74	$12.13	$10.59	$12.13
3Q00	15.78	6.71	12.08	10.27	12.08
4Q00	15.78	6.88	12.38	10.27	12.38
1Q01	15.78	6.65	11.97	10.89	11.97
2Q01	15.78	6.96	12.53	10.89	12.53

3Q01	15.78	6.87	12.37	10.89	12.37
4Q01	15.78	6.77	12.19	10.89	12.19
2Q03	18.04	7.37	13.27	9.70	13.27
North Antelope Mine Originations					
3Q03	$18.04	$6.71	$12.08	$9.70	$12.08
Caballo Mine Originations					
2Q02	$15.78	$6.81	$12.26	$9.50	$12.26
3Q02	17.25	6.24	11.23	9.50	11.23
4Q02	17.25	6.95	12.51	10.23	12.51
2Q03	18.04	6.94	12.49	9.70	12.49
Cordero Mine Originations					
2Q03	$18.04	$6.58	$11.84	$9.70	$11.84
North Rochelle Mine Originations					
3Q02	$17.25	$6.85	$11.23	$9.50	$11.23
4Q03	18.04	6.67	12.01	9.70	12.01
Antelope Mine Originations					
4Q03	$18.04	$5.71	$10.28	$9.70	$10.28
1Q04	18.83	5.98	10.76	9.68	10.76

1/ The Pricing Letters.
2/ Exhibit II-A-81.
3/ Column (3) x 180 percent.
4/ Exhibit III-H-1.
5/ Greater of jurisdictional threshold (Column (4)) or stand-alone cost (Column (5)).

The maximum reasonable rates for PRB coal shipments to Oklaunion are lower than the rates established and sought to be charged by BNSF from the Third Quarter of 2000 through the end of the DCF period in 2020. Therefore, the issue of reparations must be addressed.

b. Reparations Calculation

As described in Part I, *supra*, since the Fall of 2000 AEP Texas has been paying BNSF $13.68 per ton for coal transportation service from non-Rawhide mine origins to Oklaunion, pending a final ruling by the Board on the merits of AEP Texas' challenge (now presented in this docket) to the reasonableness of the rates that BNSF

otherwise has established and sought to charge.[4] For purposes of SAC and the determination of rate reasonableness, AEP Texas' calculations use the BNSF-established rates. For purposes of determining reparations, however, the actual amounts paid by AEP Texas during the pendency of this dispute are used to compute the reparations principal.

Under the *Guidelines,* the SAC analysis identifies impermissible cross-subsidies as the amount by which total revenues attributable to the SARR traffic group exceeds the total costs of serving that group. As demonstrated in Parts III-A through H, the stand-alone analysis presented by AEP Texas shows that the TNR traffic group is cross-subsidizing other BNSF traffic. The total BNSF revenues attributable to the TNR group beginning July 1, 2000 greatly exceed the SAC associated with that traffic. Table III-H-2 summarizes the differences and the aggregate annual TNR customer group overpayments for the period July 1, 2000 through December 31, 2003.

[4]As noted at *supra,* this payment practice initially was employed by agreement of the parties, and subsequently was upheld by the rulings of two federal courts.

Table III-H-2
Aggregate Savings Of Constructing,
Operating and Maintaining TNR - 2Q00 though 4Q03
($ In Millions)

Quarter	Aggregate Revenues [1/]	Aggregate Stand-Alone Costs [1/]	Aggregate Overpayments [2/]
(1)	(2)	(3)	(4)
2Q00	30.7	21.4	9.3
3Q00	188.4	130.4	58.0
4Q00	188.4	130.8	57.6
1Q01	191.8	136.0	55.8
2Q01	191.8	135.7	56.1
3Q01	191.8	136.1	55.7
4Q01	191.8	135.7	56.1
1Q02	193.1	129.8	63.3
2Q02	193.1	128.4	64.7
3Q02	193.1	127.7	65.4
4Q02	193.1	129.4	63.7
1Q03	196.0	130.2	65.8
2Q03	196.0	133.7	62.3
3Q03	196.0	134.0	62.0
4Q03	196.0	134.0	62.0

[1/] Source: Exhibit III-H-1.
[2/] Column (2) minus Column (3).

i. Stand-Alone Costs

As discussed in detail in Part III-G-5, true adherence to Ramsey pricing principles requires that rate relief (and, thus, reparations) in the form of an allocation of the excess of stand-alone revenues over costs be determined by reference to a legitimate measure of demand elasticity; that is, in inverse relation to each TNR customer's mark-up of rates over marginal costs. Exhibit III-H-1 details the derivation of the maximum SAC rate for the Oklaunion movement using this methodology.

ii. Jurisdictional Threshold

If the SAC-based rate reduction and reparations calculation produces results lower than the STB jurisdictional threshold, adjustments are needed to bring the rate ceiling up to the threshold level. Exhibit II-A-79 shows the variable costs (and resulting jurisdictional threshold) for the Oklaunion movement on a quarterly basis from the Second Quarter of 2000 through the First Quarter of 2004. Table III-H-3 shows the principal amount of reparations due through December 30, 2003.

Table III-H-3
Principal Amount of Reparations Due AEP Texas
From June 16, 2000 Through December 30, 2003
($ in Millions)

Quarter	Amount
(1)	(2)
2Q 2000[1]/	$0.2
3Q 2000	1.4
4Q 2000	1.0
1Q 2001	1.1
2Q 2001	0.6
3Q 2001	0.6
4Q 2001	0.9
1Q 2002	0.6
2Q 2002	0.8
3Q 2002	0.7
4Q 2002	0.4
1Q 2003	0.1
2Q 2003	0.4
3Q 2003	1.1
4Q 2003	1.2
Total	$11.1

1/ Begin June 16, 2000.
Source: Exhibit III-H-2 and electronic workpaper "AEP Texas Reparations2.123."

Table III-H-3 above shows for the period from June 16, 2000 through December 30, 2003, that BNSF owes AEP Texas $11.1 million in principal reparations payments.

iii. Interest

AEP Texas is entitled to interest on all reparations, calculated from the date that the first unlawful charge was paid. Interest calculations and the resulting award should be made pursuant to 49 C.F.R. Part 1141.1. *et seq.*

iv. Reimbursement of Filing Fee

Finally, AEP Texas respectfully requests that the Board order BNSF to reimburse AEP Texas in the amount of $61,400.00, the amount of the filing fee paid by AEP Texas with the submission of its Complaint.

While the filing fee is calculated by reference to the internal costs incurred by the Board in processing a rate case brought under the SAC methodology, its assessment results directly from a shipper's challenge to an allegedly unlawful common carrier rate. Where the shipper's challenge is successful; *i.e.*, when the defendant rail carrier is shown to have violated the law, it is appropriate that the shipper should be made whole for the fee that was a mandatory prerequisite to commencement of the rate action. Simply put, a shipper whose claims are vindicated should not have to bear part of the Board's administrative costs in addition to its own costs of securing relief.

Unlike attorneys' and expert witness fees – which AEP Texas submits should remain the responsibility of the party that incurs them – the filing fee is an amount paid to an independent third party to hear the case, and it is inappropriate to require that the shipper bear this burden where, as here, the railroad defendant is the culpable party.

AEP Texas respectfully requests that the Board include the filing fee as part of the reparations principal awarded in this case.

IV Witness Qualifications and Verifications

PART IV

WITNESS QUALIFICATIONS AND VERIFICATIONS

This Part contains the Statements of Qualifications of the witnesses who are responsible for the Narrative portions of AEP Texas' Opening Evidence (and the exhibits and workpapers referred to therein) identified with respect to each witness.

1. TIMOTHY P. STANLEY

Mr. Stanley is the Director of Transportation & Marketing, American Electric Power Service Company. His address is 155 West Nationwide Boulevard, Columbus, OH 43215. Mr. Stanley is sponsoring the evidence related to qualitative market dominance, Part II-B, and the evidence related to AEP car costs in Part III-C-1-a-ii.

Mr. Stanley was named Director of Transportation and Marketing in 2001. As Director of Transportation & Marketing, Mr. Stanley is responsible for the commercial development and management of a portfolio of transportation agreements (including rail, barge, terminal, and railcar contracts) for the AEP and OVEC System power plants. Each year these power plants require the delivery of 80 million tons of coal. Mr. Stanley is responsible for the optimization of AEP's fleet of approximately 8,500 railcars and for the development and execution of the marketing strategy for Cook Coal Terminal (a rail/water transloading facility on the Ohio River near Metropolis, IL), the alliance and Metropolis railcar maintenance (RCM) facilities, as well as third party coal and transportation marketing. Mr. Stanley is directly responsible for the procurement of transportation of coal to the Oklaunion Station, and is personally familiar with the past and current arrangements for that station's fuel supply.

From 1995 until 2001, Mr. Stanley served as Manager, Transportation and Marketing. From 1993 to 1995, Mr. Stanley served as assistant to the Vice President of Coal Procurement. In this position, Mr. Stanley was responsible for assisting with the development and implementation of the procurement strategy. In addition, he assisted in the negotiating and drafting of new coal supply agreements. Mr. Stanley also monitored and managed inventory and delivery matters.

Mr. Stanley joined AEP in 1980 and held various accounting positions prior to joining the coal contract administration group in 1987.

Mr. Stanley holds a Bachelor of Arts degree in Business Administration and an Associate Degree in Accounting, both from Ohio University.

VERIFICATION

I, Timothy P. Stanley, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Timothy P. Stanley

Executed on: February 24, 2004.

2. JOSEPH PLAISTOW

Mr. Plaistow is a Vice President and principal of L. E. Peabody & Associates, Inc., an economic consulting firm whose principal office is located at 1501 Duke Street, Suite 200, Alexandria, VA 22314. The specific evidence Mr. Plaistow is sponsoring relates to quantitative market dominance, and specifically the defendant railroads' variable cost of transporting the Complainant's traffic (Part II-A-1 through II-A-5) and revenue to variable costs ratios (II-A-6).

Mr. Plaistow graduated in 1967 from Michigan Technological University with a Bachelor of Science Degree in Metallurgical Engineering. In 1972, he graduated from the University of Minnesota with a Masters Degree in Business Administration. He is a member of Tau Beta Pi (the national honorary engineering fraternity), Alpha Sigma Mu (the national honorary metallurgical fraternity), Phi Eta Sigma (a national academic honor society), and Phi Kappa Phi (a national academic honor society). He is also a member of the Association for Transportation Law, Logistics and Policy, and is a past President of the Washington Chapter of the Cost Analysis Chapter of the Transportation Research Forum.

In 1998, Mr. Plaistow joined L. E. Peabody & Associates, Inc., where he advises clients on transportation economics, rate structures, and rate reasonableness determinations. He came to L. E. Peabody & Associates, Inc. after serving as Vice President of Snavely King Majoros O'Connor & Lee, Inc. where from 1988 to 1998 he provided economic consulting services in the transportation field. In 1987 and 1988, he was Vice President, FMI, Inc., managing the efficient operation of refrigerated boxcars. From 1972 to 1987, Mr. Plaistow was employed by the Burlington Northern Railroad

("BN") (now "BNSF") as Director of Costs and Economic Analysis in the Finance Department, as Director of Equipment and Service, and as Director of Planning and Equipment in the Food and Manufactured Products Business Unit of the Marketing Department. From 1967 to 1970, Mr. Plaistow was a metallurgical engineer for Pickands Mather designing processing facilities in the iron mining region of northern Minnesota.

While at BN, Mr. Plaistow determined the variable cost of operations using both internal management and regulatory costing procedures. In the late 1970's and early 1980's, he directed the team that designed a complete replacement of BN's management costing systems, including the institution of separate and distinct systems for the costing of coal, intermodal, and general freight.

The management costing system renovation at BN preceded the replacement of Rail Form A with URCS for regulatory costing in the railroad industry. Mr. Plaistow participated on behalf of BN in industry meetings evaluating the early versions of URCS components as they went through their developmental stages. He also testified on behalf of BN in numerous ICC proceedings regarding the economic principles underlying the implementation of maximum-rate principles including the proper application of cost of capital and capital investment analyses and procedures.

Throughout his 32-year career in transportation, Mr. Plaistow has become thoroughly familiar with the economic analysis of railroad operations and service from the perspective of both the shipper and the transportation provider. He has testified before the Board and its predecessor many times on cost and economic issues, including the presentation of evidence on transportation costs in maximum rate reasonableness cases. He has also made public presentations and written published articles in the areas of

transportation economics, maximum rate regulation, corporate investment policies, competitive effects of mergers and the competitive access issue.[1]

[1] *See, e.g.*, "A Layman's Guide to Economic Terms in Stand-Alone Costing," *Transportation Practitioner's Journal*, Summer 1994; "Regulation as a Substitute for Competition," College of St. Thomas, St. Paul, MN, May 5, 1980; "Are Internal Rate of Return and Other Investment Analyses Misleading?" Railroad Capital Investment Conference, St. Charles, Illinois, November 5, 1979; "Analyzing Large Incremental Investments," Cost Analysts Organization Meeting, Lexington, KY, May, 1978; and "Railroad's Opportunity to Earn a Fair Return," *ICC Practitioner's Journal*, March-April, 1976.

VERIFICATION

I, Joseph Plaistow, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Joseph Plaistow

Executed on: February 25, 2004.

3. ROGER C. PRESCOTT

Mr. Prescott is an economist and Executive Vice President of L. E. Peabody & Associates, Inc. The specific evidence Mr. Prescott is sponsoring relates to variable maintenance-of-way costs (Part II-A).

Mr. Prescott is a graduate of the University of Maine, from which he obtained a Bachelor's degree in Economics. He has been employed by L. E. Peabody & Associates, Inc. since June, 1978. L. E. Peabody & Associates, Inc. specializes in solving economic, marketing and transportation problems. As an economic consultant, Mr. Prescott has participated in the direction and organization of economic studies and prepared reports for railroads, shippers, shipper associations, and state governments and other public bodies dealing with transportation and related economic problems. Examples of studies which he has participated in organizing and directing include traffic, operational and cost analyses in connection with the transcontinental rail movement of major commodity groups. He has also analyzed multiple car movements, unit train operations, divisions of through rail rates and switching operations throughout the United States. The nature of these studies enabled him to become familiar with the operating and accounting procedures utilized by railroads in the normal course of business.

In the course of his work, Mr. Prescott has become familiar with the various formulas employed by the ICC and the Board in the development of variable costs for rail common carriers with particular emphasis on the basis and use of Rail Form A and its successor, the Uniform Railroad Costing System ("URCS"). In addition, he has participated in the development and analysis of costs for various short-line railroads.

Over the course of the past twenty-five years, Mr. Prescott has participated in the development of cost of service analyses for the movement of coal over the major eastern, southern and western coal-hauling railroads. He has conducted on-site studies of switching, detention and line-haul activities relating to the handling of coal. He has developed the carrier's variable cost of handling various commodities, including coal, in numerous proceedings before the Board and its predecessor.

Mr. Prescott has calculated line specific maintenance of way costs based on the SFGT formula and presented the results to the agency in written testimony as part of the variable cost evidence in several maximum rail rate cases before the Board. These include Docket No. 42057, *Public Service Company of Colorado D/B/A Xcel Energy v. The Burlington Northern and Santa Fe Railway Company*; Docket No. 42059, *Northern States Power Company Minnesota D/B/A Xcel Energy v. Union Pacific Railroad Company*; Docket No. 42056, *Texas Municipal Power Agency v. The Burlington Northern and Santa Fe Railway Company*; Docket No. 42054, *PPL Montana LLC v. The Burlington Northern and Santa Fe Railway Company*; Docket No. 42051, *Wisconsin Power & Light Company v. Union Pacific Railroad Company*; Docket No. 42022, *FMC Wyoming Corporation, et al. v. Union Pacific Railroad Company*; and Docket No. 41191, *West Texas Utilities Company v. Burlington Northern Railroad Company*.

In October 1993, Mr. Prescott presented the history and use of the SFGT formula at a conference attended by shippers, railroads, association members and ICC staff. The conference, titled "Maintaining Railway Track-Determining Cost and Allocating Resources," examined the methodologies used to determine maintenance of way costs over freight and passenger rail lines.

Mr. Prescott has also developed and presented evidence to the ICC and the Board related to maximum rates and "Long-Cannon" factors, the proper determination of the Rail Cost Adjustment Factor; and the traffic, cost and operating data, as well as requests for conditions designed to address anticompetitive impacts, in major rail merger proceedings. In addition, he developed and presented evidence to the Postal Rate Commission in several proceedings related to the development of proposed rate structures and mailing services.

VERIFICATION

I, Roger C. Prescott, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Roger C. Prescott

Executed on: February 25, 2004.

4. PAUL REISTRUP

Mr. Reistrup is an expert on rail operations and engineering matters. His address is 8614 Brook Road, McLean, VA 22102. Mr. Reistrup is sponsoring AEP Texas' evidence with respect to the stand-alone railroad ("SARR") system, operating plan and operating expenses (Parts III-B, III-C and III-D) except for the equipment lease costs, information technology expenses and compensation for Operating and General & Administrative personnel presented in Part III-D. Mr. Reistrup collaborated with (and supervised) AEP Texas witness Walter Schuchmann in applying the computerized Rail Traffic Controller Simulation ("RTC") Model to verify the SARR's capacity and develop certain operating statistics used in determining annual SARR operating expenses for purposes of the DCF model. Mr. Reistrup also assisted AEP Texas' maintenance-of-way experts, William L. Krestinski and Alan J. Blackwell, in developing the maintenance-of-way plan and annual maintenance-of-way operating expenses for the SARR.

Mr. Reistrup has 45 years of experience in railroad operations, engineering and management, largely with CSX Transportation, Inc. ("CSXT") and its predecessors. Mr. Reistrup has served as President of two railroads, the Monongahela Railway (a large regional coal-carrying railroad) and Amtrak. He has also served as a consultant on rail operations and management matters, including service with R. L. Banks & Associates, Inc. and as Vice President of the rail division of Parsons Brinckerhoff, an international engineering firm.

Mr. Reistrup's railroad career began in 1959, following his graduation from the United States Miliary Academy at West Point, NY with a B.S. in Civil Engineering and service in the United States Army. He started as an Assistant Division Engineer with

Baltimore & Ohio Railroad ("B&O"). In that position, he was initially responsible for track inspections and maintenance on B&O's Monongah Division, based in Grafton, WV. B&O hauled large volumes of coal in all directions from Grafton. He was also detailed by the Chief Engineer to assist an emergency track upgrade east of Grafton through Newburg, down the Cheat River and up Cranberry Grade; after this upgrade was completed, no derailments on account of track conditions occurred on Mr. Reistrup's watch. Mr. Reistrup also served as Assistant Division Engineer for the Akron Division, where he was responsible for the track between Akron and Chicago which included priority "Hot Shot" trains, crack passenger trains moving at up to 79 mph, and coal trains.

Mr. Reistrup served with B&O and C&O for a total of ten years. He was also General Yardmaster at Fairport Harbor, OH (a large, 1000-car yard supporting lake coal, grain and chemicals traffic, as well as interchanges with NYC, NKP and FP&E); Trainmaster at Pittsburgh, PA (with many coal trains moving in every direction many requiring helper engines); Superintendent Car Utilization and Distribution (a new position), Director of Passenger Service for the B&O/C&O, and Assistant to Vice President – Executive Department.

In 1967, Mr. Reistrup became Vice President Passenger Services for Illinois Central Railroad ("IC") with the understanding that he would "fix" the IC's passenger problem and then move on to other opportunities. In 1969, Mr. Reistrup moved into the commercial area as IC's Vice President Intermodal Services (a new position as container business was just developing). In 1970, his responsibilities were expanded to include the entire IC traffic department culminating as Senior Vice President and a Director of the Illinois Central Gulf Railroad in charge of marketing, sales, pricing, piggyback, coal and

industrial development. During Mr. Reistrup's tenure at IC, that carrier was the largest rail originator of Midwestern coal, and it terminated large quantities of Western coal originated by the Union Pacific and Burlington Northern.

From early 1975 until 1978, Mr. Reistrup served as Amtrak's second President and Chief Executive Officer. During his tenure, Amtrak was transformed from primarily a contracting entity to an operating railroad that had the highest-density mix of freight, commuter and inter-city passenger trains in the nation, in what is known as the Northeast Corridor between Washington, DC and Boston through New York City. Amtrak acquired the Northeast Corridor from Conrail in 1976.

From 1978 to 1988, Mr. Reistrup was Vice President of R. L. Banks & Associates, Inc. of Washington, DC ("RLBA"), a transportation consulting firm. There he directed a wide variety of railroad projects related to operations, engineering, marketing and costing for a number of private clients and government entities. He directed the firm's coal transportation work on behalf of the Intermountain Power Project ("IPP") from 1980 to 1988, during which period IPP constructed a large coal-fired, rail-served power plant near Lynndyl, UT. Mr. Reistrup designed the highly successful railcar unloading and handling systems at the IPP plant, which consumes 4.5 million tons of western coal annually. He also designed IPP's car inspection/maintenance facilities at the Springville, UT interchange between the originating carriers (DRGW and the Utah Railway) and the terminating carrier (UP).

Another RLBA project in which Mr. Reistrup was heavily involved was an analysis for the Colorado Department of Transportation of numerous scenarios to facilitate the movement of coal from the Powder River Basin, which was beginning to

move in large quantities over the "Frontier Range" lines from Wendover, WY through Boulder and Denver, CO to Pueblo, CO. When Mr. Reistrup embarked on this multi-year project in the early 1980's, there were three lines along the Frontier Range, one owned by ATSF, one owned by DRGW, and one owned by the Colorado & Southern ("C&S," a BNSF predecessor). Options considered ranged from consolidation of the three routes into one, and a possible by-pass of the Denver area using the BN, C&S and other lines (including the Chicago, Rock Island & Pacific ("CRIP")) from Wendover, to Sterling, CO, and construction of a new line segment between Brush and Limon, CO, using CRIP between Limon and Colorado Springs. Ultimately, the three routes south of Denver were consolidated into one joint, multiple-track route which was placed in a large ditch through Littleton, CO, to eliminate numerous grade crossings. Mr. Reistrup recalls approximately nine trips to the area during the course of this project, during which he became thoroughly familiar with the Frontier Range lines. The present route largely follows Mr. Reistrup's recommendations (except for the alternative route from Wendover to Colorado Springs via Brush and Limon), and today it is BNSF's primary route for Powder River Basin coal moving to Texas destinations.

In 1982, while still at RLBA, Mr. Reistrup was engaged to be Chief Traffic Officer of the Monongahela Railway ("MGA"). MGA was a regional coal-hauling railroad in southwestern Pennsylvania and northern West Virginia originating approximately 23 million tons of coal annually, and at the beginning of Mr. Reistrup's tenure there it was owned jointly by Conrail, CSX Corporation and the Pittsburgh & Lake Erie Railroad. In 1988, Mr. Reistrup was elected President of the MGA and continued to serve in that position until 1992, when the MGA was merged into Conrail. While at

MGA, Mr. Reistrup became familiar with all aspects of MGA's coal transportation services and the operation of MGA's coal trains, most of which were handled in interline service with other railroads. During his Presidency of the MGA, Mr. Reistrup was NORAC Rules-qualified and ran as a conductor on MGA coal trains ten times during strike situations. As a conductor, Mr. Reistrup handled brake tests and on at least one occasion, loaded a coal train in the engineer's stead.

Also in the 1980's, Mr. Reistrup served as a principal witness for the Rail Public Counsel during the Interstate Commerce Commission ("ICC") proceedings involving the abandonment of the bankrupt Chicago, Milwaukee, St. Paul and Pacific Railroad's transcontinental line to the Pacific Northwest. He testified on behalf of the public at several hearings with respect to the potential abandonment of this line (which ultimately was approved by the ICC and by the bankruptcy court).

From mid-1992 to mid-1994, Mr. Reistrup served as Principal of the Railroad Development Corporation, a Pittsburgh-based railway investment and management company, and was General Manager of the firm's project to privatize two railroads consisting of 5,000 route-miles in Argentina. Those railroads routinely handled solid petroleum coke trains. In 1994, Mr. Reistrup joined Parsons Brinckerhoff as a Vice President. Mr. Reistrup was responsible for all of Parsons Brinckerhoff's activities involving railroad operations and worked closely with Mr. Robert Pattison on rail engineering matters.

On July 1, 1997, Mr. Reistrup left Parson Brinckerhoff and joined CSXT as Vice President-Passenger Integration, with offices in Washington, DC. In this position Mr. Reistrup was responsible for overseeing CSXT's relations with all public and quasi-

public rail transportation agencies (including but not limited to Amtrak, VRE, MARC, SEPTA and MBTA and Metro North) that operate passenger and commuter trains on CSXT's lines and vice versa. He was also responsible for negotiating settlements with these entities on behalf of CSXT during the Conrail Control proceeding, and for the successful integration of CSXT's freight and passenger operations on the Northeast Corridor (which was new passenger territory for CSXT) following consummation of the acquisition of Conrail by CSXT and Norfolk Southern.

Mr. Reistrup retired from CSXT at the end of February 2003, and returned to his consulting work. At that time, he embarked on a six-month consulting arrangement with CSXT, under which he was on call to furnish consulting services relating to passenger/commuter and freight integration issues and to provide advice as requested by CSXT's CEO and other senior officers. That consulting agreement terminated on August 31, 2003.

Mr. Reistrup was an active member of the Transportation Research Board ("TRB"), a unit of the National Research Council of the National Academy of Sciences, from 1980 to 1998, and is presently a Member Emeritus of the TRB. In 1981, Mr. Reistrup was appointed a member of the TRB's Committee A2M02, which dealt with electrification and Train Control systems (signals, grade crossing protection, etc.). From 1987 to 1992, Mr. Reistrup served as Chairman of the A2M02 Committee, focusing on Train Control systems including Positive Train Control evolving from ATS/Cab Signals/ATC/speed control, etc.

Mr. Reistrup is the author of an article in the Fall 2002 issue of the *Journal of Transportation Law, Logistics and Policy* (Vol. 70, Number 1, p. 57), entitled

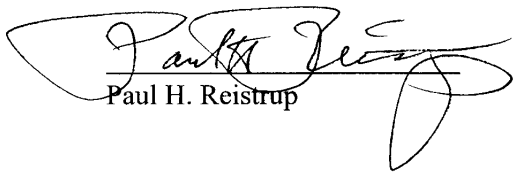
"Passenger Trains on Freight Railroads: A View From Both Sides of the Track" in which, *inter alia*, he discusses freight/passenger train use of the same lines during his entire career including his recent tenure as Vice President-Passenger Integration at CSXT.

While he was at Parson Brinckerhoff, Mr. Reistrup developed the system configuration and operating plan and system configuration for the SARR presented by APS/PacifiCorp and largely accepted by the Board in *Arizona Public Service Co. and PacifiCorp v. Atchison, T. & S. F. Ry. Co.*, 2 S.T.B. 367 (1997). Mr. Reistrup also developed the system configuration and operating plan for the SARR presented by the shipper in Docket No. 41989, *Potomac Electric Power Co. v. CSX Transportation, Inc.*, which was settled in mid-1998 shortly before the decision on the merits was due to be issued.

Mr. Reistrup is personally familiar with the BNSF lines being replicated by the SARR in this case. He has visited the Powder River Basin on several occasions and observed the train loading operations at various PRB mines. As indicated above, Mr. Reistrup is intimately familiar with the Frontier Range line between Denver and Pueblo. Mr. Reistrup recently spent six days (October 30 to November 2, 2003 and February 24-25, 2004) on two field trips in which he inspected and directly observed BNSF operations in the PRB; BNSF's lines between Donkey Creek, WY and Denver, CO via Alliance and Northport, NE and Sterling, CO; BNSF's yard operations at Alliance; and BNSF's lines and operations between Pueblo, CO and Amarillo, TX (via La Junta and Las Animas Jct., CO) and between Amarillo and Oklaunion, TX. He also observed the coal unloading facilities and operations at AEP Texas's Oklaunion power plant.

VERIFICATION

I, Paul H. Reistrup, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas North in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



Paul H. Reistrup

Executed on: February 27, 2004.

5. WALTER H. SCHUCHMANN

Mr. Schuchmann is a Director, Rail Operations at R. L. Banks & Associates, Inc. ("RLBA"), with offices at 1717 K Street N.W., Suite 1010, Washington, DC 20006-1515. Mr. Schuchmann is co-sponsoring, with Mr. Reistrup, the portion of AEP Texas' evidence relating to the configuration and capacity of the SARR system (Parts III-B and III-C) and the development of certain peak-year service units/operating statistics used in developing the SARR's annual operating expenses shown in Part III-D. Specifically, Mr. Schuchmann assisted Mr. Reistrup with the development of the inputs used in the RTC Model, and ran the Model for purposes of developing the SARR's track and yard configuration and confirming the SARR's capacity to handle its peak-period traffic efficiently.

Mr. Schuchmann is responsible for rail operations and service planning at RLBA. During his fifteen-year tenure at RLBA, Mr. Schuchmann has directed or participated in numerous rail service planning and implementation studies involving both freight and passenger service. He has performed a freight rail capacity study on behalf of the Port Authority of New York and New Jersey, and conducted operations and cost analyses involving coal, intermodal and solid waste operations. He has also participated in rail passenger service implementation projects on behalf of Metrolink, Virginia Railway Express, Baltimore's Central Light Rail Line and New Jersey Transit's Southern New Jersey Light Rail Transit System. He has advised public bodies evaluating the initiation or expansion of intercity passenger or commuter rail services in Kansas City, Nashville, Fort Worth, Orlando, Seattle, and the San Francisco Bay area with respect to

service planning, operations planning and minimizing conflicts between existing/planned passenger operations and existing/planned freight operations and requirements.

Mr. Schuchmann has over twenty years' experience in the railroad industry, including eight years in the Operating Department of Norfolk Southern Railway. Mr. Schuchmann was a Superintendent of Safety for Norfolk Southern's Pocahontas Division from 1985 to 1987. In this position, he worked with department heads to develop and administer effective programs to reduce accidents and employee injuries. Mr. Schuchmann participated in the Norfolk Southern's first application of Voice Block Authority, which controls train movements. He also served as Trainmaster and Assistant Trainmaster at Lynchburg, VA Chicago, IL and Fort Wayne, IN. Mr. Schuchmann supervised NS' commuter, intermodal and merchandise freight operations in Chicago. As an operating officer, he was responsible for service to local shippers, as well as road and terminal operations.

Mr. Schuchmann is thoroughly familiar with the computerized RTC Model, and has used that Model on numerous occasions to assess rail infrastructure capacity and develop recommendations for infrastructure improvements, such as additional track capacity. Specific RTC Model engagements include Washington, DC to Richmond, VA, the Kansas City I-35 Corridor, and a review of the model's use in Southern California. In addition, Mr. Schuchmann has worked with and reviewed other rail capacity simulation models.

Mr. Schuchmann has a Masters of Business Administration degree from Indiana University and a Bachelor of Science degree in Industrial Management from Purdue University. He is a Certified Member of the American Society of Transportation

and Logistics, a member of the American Association of Railroad Superintendents and a member of the National Defense Transportation Association.

Mr. Schuchmann has authored and co-authored a number of publications, including "Is Your Railroad Leaving Town? New Transportation Challenges and Opportunities for Coal Producers and Users," invited and distributed by the Utility Data Institute, and "Shortline Railroad Owner/Operator Groups – Empire Builders of the 1980's," American Society of Transportation and Logistics. Mr. Schuchmann's presentations include "Lessons Learned in Performing Shortline Due Diligence," AASHTO Standing Committee on Rail Transportation, Indianpolis, 1997; "How Can Short Lines Obtain Better Cooperation from Major Railways," Canadian Shortline Railroad Conference, Toronto, 1993; and "Railroads for Non-Railroaders," sponsored by Railroad Financial Corporation, 1989.

VERIFICATION

I, Walter H. Schuchmann, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Walter H. Schuchmann

Executed on: February 25, 2004.

6. THOMAS D. CROWLEY

Mr. Crowley is an economist and President of L. E. Peabody & Associates, Inc., an economic consulting firm that specializes in solving economic, marketing and transportation problems. The specific evidence Mr. Crowley is sponsoring relates to the selection of the SARR traffic group and identification of base year traffic and revenues (Part III-A-1 to 3); identification of the SARR peak traffic period and peak period loaded train counts (part of Part III-B-1); development of the peak year traffic density by line segment and identification of movements in railroad-owned cars (part of Part III-C-1); the SARR operating statistics peaking factor (part of Part III-D-9), the SARR cost of capital and road property indices (Part III-G-1 to 2); and the DCF analysis and reparations (Part III-H).

Mr. Crowley holds a Bachelor of Science degree in Economics from the University of Maine. He has also taken graduate courses in transportation at George Washington University in Washington, DC. He spent three years in the United States Army and has been employed by L. E. Peabody & Associates, Inc. since February 1971. He is a member of the American Economic Association, the Transportation Research Forum, and the American Railway Engineering and Maintenance of Way Association.

As an economic consultant, Mr. Crowley has organized and directed economic studies and prepared reports for railroads, freight forwarders and other carriers, shippers, associations, and state governments and other public bodies dealing with transportation and related economic problems. Examples of studies in which he has participated include organizing and directing traffic, operational and cost analyses in connection with multiple car movements, unit train operations for coal and other

commodities, freight forwarder facilities, TOFC/COFC rail facilities, divisions of through rail rates, operating commuter passenger service, and other studies dealing with markets and the transportation by different modes of various commodities from both eastern and western origins to various destinations in the United States. The nature of these studies enabled Mr. Crowley to become familiar with the operating and accounting procedures utilized by railroads in the normal course of business.

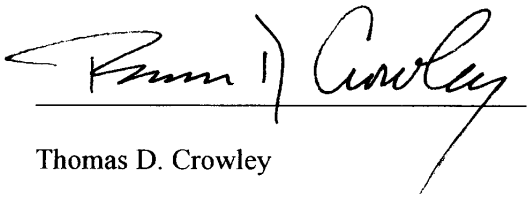
Additionally, Mr. Crowley has inspected both railroad terminal and line-haul facilities used in handling various commodities, and, in particular, unit train coal movements from the Powder River Basin to various utility destinations in the midwestern and western portions of the United States. These field trips were used as a basis for the determination of the traffic and operating characteristics for specific movements of coal and numerous other commodities handled by rail.

Mr. Crowley presented testimony before the ICC in Ex Parte No. 347 (Sub-No. 1), *Coal Rate Guidelines – Nationwide*. He has submitted evidence applying the the Board's stand-alone cost procedures in numerous rail rate cases involving BNSF and other carriers. He has also developed and presented numerous calculations utilizing the various formulas employed by the Board and its predecessor (both Rail Form A and URCS) to develop variable costs for rail common carriers, including BNSF. In this regard, Mr. Crowley was actively involved in the development of the URCS formula, and presented evidence to the ICC analyzing the formula in Ex Parte No. 431, *Adoption of the Uniform Railroad Costing System for Determining Variable Costs for the Purposes of Surcharge and Jurisdictional Threshold Calculations*.

As a result of his extensive economic consulting practice since 1971 and his participation in maximum-rate, rail merger and rulemaking proceedings before the ICC and the Board, Mr. Crowley has become thoroughly familiar with the operations, practices and costs of the rail carriers that move coal over the major coal routes in the United States.

VERIFICATION

I, Thomas D. Crowley, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



Thomas D. Crowley

Executed on: February 26, 2004.

7. DOUGLAS W. CAVES, PH.D.

Dr. Caves is a Vice Chairman at Laurits R. Christensen Associates, Inc. ("Christensen Associates"), an economic research and consulting firm for the electric utility industry, located at 4610 University Avenue, Suite 700, Madison, WI 53705. The specific evidence Dr. Caves is co-sponsoring (along with Dr. Meitzen and Dr. Eakin) relates to the proper method of indexing stand-alone operating costs (Part III-G-2) and the proper methodology for allocating rate reductions to account for the excess of stand-alone revenues over stand-alone costs (Part III-G-5).

Dr. Caves has a Bachelor of Arts degree in Biochemistry from Oklahoma State University, a Masters degree in Economics from Oklahoma State University, and a Doctorate in Economics from the University of Wisconsin-Madison. Dr. Caves wrote his doctoral thesis on "Measuring Productivity Growth in the U.S. Railroad Industry with an Estimate of Losses Resulting from Economic Regulation."

Dr. Caves has directed Christensen Associates' research and consulting practice for the electric utility industry since 1978. He had been actively engaged in studying and analyzing capital costs, market entry factors and influences, inflation impacts and related economic issues as they apply to a number of industries, including railroads, airlines, electric utilities, telecommunications service providers and water and truck transportation firms. His studies and analyses have provided methodological and data foundations for measurements of changes in industry productivity determinations of reasonable and compensatory rates, and a range of other regulatory functions and related issues.

He has made numerous improvements in the methodology and application of economic principles to all major aspects of the industry. He has been active in the design and evaluation of a wide range of competitive service offerings including real-time pricing, priority service and interruptible/curtailable service. He has also been active in utility regulatory reform and incentive legislation.

Dr. Caves has testified in numerous jurisdictions, and his scholarly work has been published in a number of prestigious journals, including *American Economic Review, Journal of Political Economy, Econometrica,* and *The Review of Economics and Statistics*. He has undertaken more than 65 projects for the utility industry and written more than 45 articles and papers dealing with various economic aspects of energy and the energy and utility industries. Several of his published papers are based on is estimates of capital costs and input price inflation for U.S. and Canadian railroads. Dr. Caves has also published papers that focus on the improvements of methodologies for measuring capital costs, price impacts, and productivity.

In addition to his academic research, Dr. Caves was actively involved in the development and implementation of the productivity measure that the ICC adopted in 1989 in its *Ex Parte No. 290 (Sub-No. 4)* docket, to modify the quarterly Rail Cost Adjustment Factor ("RCAF"). Dr. Caves has submitted written testimony before the ICC on this subject on eleven separate occasions. He also submitted expert testimony before the agency on issues related to capital costs, inflation forecasts and entry barriers under the stand-alone cost ("SAC") standards in Docket No. 41191, *Texas Municipal Power Agency v. The Burlington Northen and Santa Fe Railway Company*, and in the

predecessor to this case, Docket No. 41191, *West Texas Utilities Company v. Burlington Northern Railroad Company*.

VERIFICATION

I, Douglas W. Caves, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



Douglas W. Caves

Executed on: February 24, 2004.

8. B. KELLY EAKIN, PH.D

Dr. Eakin is a Vice President at Laurits R. Christensen Associates, Inc. ("Christensen Associates"). His address is 4610 University Avenue, Suite 700, Madison, WI 53705-2164. The evidence Dr. Eakin is co-sponsoring (along with Dr. Meitzen and Dr. Caves) relates to the proper method of indexing stand-alone operating costs (Part III-G-2) and the proper methodology for allocating rate reductions to account for the excess of stand-alone revenues over stand-alone costs (Part III-G-5).

Dr. Eakin joined Christensen Associates in 1994. He worked as a Senior Economist until 1997 when he became a Vice President. Dr. Eakin is an expert in the economic and financial aspects of competitive product pricing. In addition, he has expertise in the organization and regulation of industries, cost and productivity analysis, and environmental economics. His major projects in the energy industry have included the development of innovative pricing and service designs, and the assessment of customer price responsiveness and product choice.

At Christensen Associates, Dr. Eakin assisted in developing a comprehensive pricing strategy for a retail energy provider in a deregulating Canadian market. He created new strategies for electric product development and wholesale pricing for a public power entity. He also provided expert testimony before the Postal Rate Commission in "Experimental Changes to Implement to Capital One Negotiated Service Agreement," Docket MC2002-2, February - March, 2003.

From 1992-1994, Dr. Eakin developed expertise in environmental and resource economics while working as an Economist at the U.S. Department of Agriculture ("USDA"). Dr. Eakin was on the faculty of the University of Oregon for

seven years prior to his work at the USDA. At the University of Oregon, Dr. Eakin was active in the graduate programs for the Economics Department and the College of Business.

Dr. Eakin's scholarly writing has been published in a number of prestigious journals including *The Review of Economics and Statistics, Journal of Productivity Analysis, Journal of Human Resources,* and *Southern Economic Journal.* He also co-edited two books: *Pricing in Competitive Electricity Markets* (Kluwer Academic Publishers, 2000) and *Electricity Pricing in Transition* (Kluwer Academic Publishers, 2002). Dr. Eakin has also co-authored articles in the trade publications *The Electricity Journal* and *Public Utilities Fortnightly.*

Dr. Eakin holds a Bachelor of Arts degree from the University of Texas at Austin and a doctorate in Economics from the University of North Carolina at Chapel Hill. His doctoral dissertation was "Estimating Allocative Inefficiency with a Non-Minimum Cost Function: An Application to U.S. Hospitals."

VERIFICATION

I, B. Kelly Eakin, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

B. Kelly Eakin

Executed on: February 24th, 2004.

9. MARK E. MEITZEN, PH.D

Dr. Meitzen is a Vice President at Laurits R. Christensen Associates, Inc. ("Christensen Associates"), an economic research and consulting firm for the electric utility industry, located at 4610 University Avenue, Suite 700, Madison, WI 53705. The specific evidence Dr. Meitzen is co-sponsoring (along with Dr. Caves and Dr. Eakin) relates to the proper method of indexing stand-alone operating costs (Part III-G-2) and the proper methodology for allocating rate reductions to account for the excess of stand-alone revenues over stand-alone costs (Part III-G-5).

Dr. Meitzen earned a Bachelor of Science degree in Economics from the University of Wisconsin-Oshkosh in 1976, a Masters degree in Economics from the University of Wisconsin-Madison in 1979, and Doctorate from the University of Wisconsin-Madison in 1982.

Dr. Meitzen has been associated with Christensen Associates since 1990. He has worked with both Dr. Caves and Dr. Christensen in their analyses of the railroad industry. Dr. Meitzen has studied and written about the economic principles of efficient pricing, including regulatory methods of achieving competitive outcomes in noncompetitive markets. This includes extensive analysis and developed expertise in the areas of contestability theory and SAC principals. He has substantial experience with various pricing and rate regulation methods, including price caps and performance-based regulation such those found in the telecommunications and electric power industries. On behalf of private clients, he has experience with application of the Surface Transportation Board's ("STB") Constrained Market Pricing standards and, in particular, the Board's current SAC methodology.

Prior to joining Christensen Associates, Dr. Meitzen served as Regulatory Economist and Regional Economist for Southwestern Bell Telephone Company from 1986 to 1990. From 1987 to 1990, he was also Adjunct Professor at Saint Louis University. He was Visiting Assistant Professor of Economics at the University of Wisconsin-Milwaukee from 1984 to 1987, and Assistant Professor of Economics at Eastern Michigan University from 1981 to 1984.

Dr. Meitzen has utility experience in the areas of incentive regulation, incremental cost analysis, pricing and service quality. He has directed productivity, cost and pricing analyses for several telecommunications companies and analyzed options for the Peruvian government in regulating Peru's newly privatized telecommunications industry. In addition, he has directed Christensen Associates' analysis of cost proxy models in the Federal Communications Commission's universal service proceeding. He has testified as an expert witness in several telecommunications and electricity industries, and has published numerous articles on the subjects of shared costs, stand-alone costs, and deregulation of those industries.

VERIFICATION

I, Mark E. Meitzen, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



Mark E. Metizen

Executed on: February 24, 2004.

10. GARY VICINUS

Mr. Vicinus is a Vice President at Pace Global Energy Services, LLC ("Pace Global"), an energy consulting company. The offices of Pace Global are located at 4401 Fair Lakes Court, Suite 400, Fairfax, VA 22033. The specific evidence Mr. Vicinus is co-sponsoring (along with Mr. Holland and Mr. Meyers) relates to projections of future SARR coal traffic volumes and revenues (Part III-A).

At Pace Global, Mr. Vicinus is responsible the firm's Utility Programs practice. He leads business development for the utility sector and is senior advisor to the CEO. He has extensive experience in the energy business as a management consultant, and as a fuel and power expert. His consulting experience is focused on power and fuel market assessment, corporate strategy, resource planning and asset positioning.

Mr. Vicinus has experience in coal and fuel markets and procurement, both in the United States and internationally. He performed an analysis of world coal markets and has conducted numerous market price determinations and fuel supply availability assessments. He drafted supply plans and performed fuel procurement and fuel inventory studies. In addition, he evaluated mine take over and mine closing studies, as well as environmental compliance strategies. He valued captive coal mines and fuel contracts, and managed energy outlook services, including power and fuel assessments of markets in the United States.

Mr. Vicinus also has testified or acted as an arbitrator in over 14 states and before the Federal Energy Regulatory Commission.

Mr. Vicinus has 26 years of experience in the energy business and 22 years experience in the consulting business. Prior to joining Pace Global, Mr. Vicinus was the

President of Vicon Energy Consultants, Inc. from 1999 to 2001. From 1980 until 2001, Mr. Vicinus was associated with ICF Resources, where he served as Executive Vice President, President, Senior Vice President, Vice President, and Project Manager. Prior to working as a consultant, Mr. Vicinus was a Senior Fuel Analyst at Carolina Power and Light Company.

Mr. Vicinus has a Masters degree in Economics from North Carolina State University and a Bachelor of Arts degree in Economics from Virginia Tech.

VERIFICATION

I, Gary Vicinus, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Gary Vicinus

Executed on: February 23, 2004.

11. ARTHUR HOLLAND, JR.

Mr. Holland is a Director at Pace Global Energy Services, LLC ("Pace Global"), an energy consulting company. The offices of Pace Global Energy Services, LLC, are located at 4401 Fair Lakes Court, Suite 400, Fairfax, VA 22033. The specific evidence Mr. Holland is sponsoring (along with Mr. Vicinus and Mr. Meyers) relates to projections of future SARR coal traffic volumes and revenues (Part III-A).

Mr. Holland has over thirteen years of experience in the electric power industry, specializing in electricity price forecasting, due diligence support for project financing, power project screening, power system modeling, and power asset valuation. Mr. Holland is responsible for supervising the daily operations of the power market assessment and modeling team. He is directly involved in evaluating regional regulatory and legislative initiatives, analyzing supplier competitiveness, and developing competitive intelligence for market participants.

Mr. Holland has developed market price forecasts for a number of proposed and existing power projects throughout the United States. Many of these forecasts were provided on a monthly and time-of-day basis. These forecasts often included the development of a projection of all relevant fuel costs, a projections of hourly demand, detailed plant level information on power supply resources, as well as transmission transfer capacities. These forecasts take into account new technology, the regulatory climate, and transmission considerations.

Mr. Holland began working at Pace Global in 1997 as a Project Manager in the Power Services Division. In 1999, he became an Account Manager in that division. He was promoted again in 2001 to Director of the Power Services Division in 2001.

Prior to joining Pace Global, Mr. Holland was a member of the forecasting team at the U.S. Department of Energy's Energy Information Administration, where he developed and published intermediate term (20 year) electricity price forecasts. He served as the project manager and principal author of the published study, *Electricity Prices in a Competitive Environment, Marginal Cost Pricing of Generation Services and Financial Status of Electric Utilities*, (August 1997), and played a key role in developing EIA's competitive electricity price forecasting capabilities.

Mr. Holland has testified as an expert witness in support of energy asset valuation and has presented workshops on competitive power price and price volatility forecasting. He has published articles on various energy related subjects, including the fundamental analysis of energy commodities (Pennwell, *Energy Futures Trading Opportunities, 3rd Edition*, December 2000) and power plant valuation in competitive power markets (*Public Utility Fortnightly*, "Did Power Plant Purchasers Pay Too Much?" November 1, 1999).

Mr. Holland holds a Masters of Business Administration in Finance and Management Services from Virginia Polytechnic Institute and State University.

VERIFICATION

I, Arthur Holland, Jr., verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Arthur Holland, Jr.

Executed on: February 27, 2004.

12. PAUL MEYERS

Mr. Meyers is a Vice President of the Power Practice at Pace Global Energy Services, LLC ("Pace Global"), an energy consulting company. The offices of Pace Global Energy are located at 4401 Fair Lakes Court, Suite 400, Fairfax, VA 22033. The specific evidence Mr. Meyers is sponsoring (along with Mr. Holland and Mr. Vicinus) relates to projections of future SARR coal traffic volumes and revenues (Part III-A).

Mr. Meyers' primary expertise is in utility operations, production costing, resource planning, and power marketing. Mr. Meyers provides global strategic and transactional support to energy companies, including oil and gas companies, investor owned utilities, independent power producers, fuel suppliers, pipelines, large industrial consumers, project developers, financial institutions and lenders. The Power Practice at Pace Global is responsible for fuel supply and transportation plan development, power market simulations, market price forecasting, regulatory monitoring, competitor assessments, project due diligence support, financing services, market assessments, and restructuring and strategic business plan development.

Since joining Pace Global in 1992, Mr. Meyers has held the titles of President, Assistant Vice President, Director of Power Services, Account Manager, Senior Analyst, and Analyst. Prior to joining Pace Global, Mr. Meyers worked as an Analyst at Resource Dynamics Corporation from 1989 until 1990.

Mr. Meyers has many years of experience in the power industry, particularly in the areas of fuel supply and costs. At Pace Global, Mr. Meyers has performed forecasts of power plant operational budgets as part of providing financial due diligence. He has simulated utility operation and productions costs for over 1,800 MW of

independently owned power plants, and has worked with three private power developers to alter the calculation of tariffs. In developing Market Assessment and Strategic Plans, Mr. Meyers analyzed fuel and power market fundamentals to develop forward pricing estimates and generation technology penetration levels by region.

Mr. Meyers developed a U.S. operational database of utility generating units, fuel costs, transmission constraints and hourly native load for use with Pace Global's utility-grade production simulation model. This model is used to simulate utility operations, production costs, marginal costs, reliability, market clearing and other operational variables.

Mr. Meyers received a Bachelor of Arts degree in Economics with a concentration in Finance and Operations Research from Rutgers University. He has taken Continuing Education Units (CEU) related to Public Utility Regulation.

VERIFICATION

I, Paul Meyers, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Paul Meyers

Executed on: February 23, 2004.

13. WILLIAM W. WHITEHURST, JR.

Mr. Whitehurst is the President of W. W. Whitehurst & Associates, Inc., an economic consulting firm specializing in financial analyses, cost accounting, and other economic regulatory issues involving the railroad industry. His address is 12421 Happy Hollow Road, Cockeysville, MD 21030. The specific evidence Mr. Whitehurst is sponsoring relates to the indexing of SARR operating expenses (Part III-G-2) and the proper methodology for allocating rate relief among members of the SARR traffic group (Part III-G-5).

Mr. Whitehurst is a graduate of Princeton University with a Bachelor of Arts degree in Mathematics. He holds a Masters degree in Economics, with distinction, from Carnegie Institute of Technology (now Carnegie-Mellon University). While at Carnegie, in addition to fulfilling the requirements for a Masters degree in Economics, he studied industrial administration, operations research, statistics, and the cost principles of business enterprises. In addition, he has five years of experience in applied computer research at the National Security Agency.

Since 1963, Mr. Whitehurst has been continuously engaged in business as an economic and transportation consultant. For over three years, he was associated with McKinsey & Company, Inc., an international management consulting firm engaged in advising business enterprises and public agencies in resolving problems involving economic policies, marketing, finance, and organizational structure. For twenty years, he was associated with L. E. Peabody & Associates, Inc., an economic consulting firm specializing in transportation issues, where he held the positions of partner and, after the

firm's incorporation, Executive Vice President and President and Chairman of the Board. In mid-1986, Mr. Whitehurst founded W.W. Whitehurst & Associates, Inc.

While at McKinsey & Company, Inc., Mr. Whitehurst specialized in transportation issues, serving public agencies, railroads, and rail equipment manufacturers. Since 1966, he has conducted studies, prepared reports, and testified for state governments and other public bodies, individual railroads, railroad associations, individual shippers, and shipper associations. He has analyzed rail operations and changes in railroad costs with changes in service. He has organized and directed detailed traffic analyses and traffic diversion studies to assess special handling characteristics of particular commodities. He has participated in negotiations and in litigation before various federal and state courts and regulatory bodies on matters related to the bases for, components of, and amount of trackage rights compensation applicable to various rail service and tenant-landlord relationships. He has served as an expert witness in prior STB stand-alone cost cases. He has also analyzed operations and costs related to rail activities in terminal areas.

While engaged in economic and transportation studies, Mr. Whitehurst has spent considerable time in the operating and accounting departments of various railroads and is familiar with operating and accounting methods and procedures used by railroads in the normal course of business. In addition, he has studied the restructuring of rail operations and accounting practices.

Mr. Whitehurst is a member of the Association for Investment Management and Research and the American Railway Engineering Association.

VERIFICATION

I, William W. Whitehurst, Jr., verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

William W. Whitehurst, Jr.

Executed on: February 27, 2004.

14. JOSEPH A. KRUZICH

Mr. Kruzich is President of J&A Business Consulting, Inc., a firm specializing in information technology and global market opportunities. His business address is 209 Violet Drive, Sanibel, FL 33957. The specific evidence Mr. Kruzich is sponsoring relates to the SARR's information technology capital (hardware) and personnel requirements and other expenses for the SARR (Part III-D-3-d).

Mr. Kruzich graduated from Northeast Missouri State University (Truman University) in 1962 with a Bachelor of Science degree in business. In 1984, he received a Masters of Business Administration in Finance from Keller Graduate School of Management in Chicago, Illinois. He has 38 years of experience in railroad accounting, executive administration and information technology.

Mr. Kruzich began his railroad career with the Chicago, Burlington and Quincy Railroad ("CB&Q") in 1963 as a tax accountant and was promoted to an internal auditor in 1965. In June of 1968, he joined the Atchison, Topeka and Santa Fe Railroad ("ATSF") as a manager of work control procedures. His job responsibilities included reviewing various work procedures and providing recommendations on how the work processes could be improved to achieve a high degree of efficiency. This position provided him an opportunity to become very familiar with various work processes involved in running a railroad.

From 1973 through 1994, Mr. Kruzich held various positions of increasing responsibility at ATSF and its parent, including Acting Controller of Santa Fe Air Freight Company, responsibility for industrial engineering at ATSF (where he performed various efficiency studies in the operating, engineering and mechanical departments), Director of

Budgets for the entire ATSF operating department (including the engineering, mechanical, transportation and all support groups), where he was also responsible for coordination of all information technology issues with the Information Systems Department that related to the Operating Department; General Director of Administration responsible for all the administration duties related to the Vice President of Operations office; Assistant to the President of ATSF; and Assistant Vice President of Administration in the Information Technology Group, where he was responsible for all budget, administration, special studies and the corporate measurements systems. These positions provided him with the opportunity to manage a complete process in developing new systems from beginning to end.

In 1995, Mr. Kruzich joined the Kansas City Southern Railway ("KCS") as Vice President of Administration where he designed profitability, corporate measurement, revenue forecasting and corporate policy systems. In January 1997, he was promoted to Vice President Telecommunications and CIO. As CIO, Mr. Kruzich led the effort in developing the state-of-the-art railroad transportation system known as MCS ("Management Control System"). This system uses some of the most advanced technology such as MQ workflow, Citrix Metaframe, the latest version of Visual Basic and many other technologies. This entire system is designed around the business processes.

In January 2000, Mr. Kruzich left KCS and formed a company called Forging Ahead Associates, LLC. This company provides state-of-the-art services in the areas of strategic planning and the development of web sites and e-business initiatives,

evaluates the benefits of outsourcing information technology and business processes, and works with clients to make the initial contacts in developing global market opportunities.

VERIFICATION

I, Joseph A. Kruzich, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



Joseph A. Kruzich

Executed on: February 20, 2004.

15. WILLIAM L. KRESTINSKI

Mr. Krestinski is a railway engineering consultant, and proprietor of the firm of W. L. Krestinski & Associates. His address is 729 Cameron Court, Mississauga, ON (Canada) LC5 3B8. Mr. Krestinski is co-sponsoring (with AEP Texas witnesses Blackwell, Stone and Reistrup) AEP Texas's evidence with respect to the stand-alone railroad's annual maintenance-of-way costs (Part III-D-4).

Mr. Krestinski has 30 years of experience in railway engineering and maintenance-of-way with the Canadian Pacific Rail System ("CP Rail"). Most recently, from 1993 until his retirement from CP Rail in 1996, he served as General Manager, Engineering Services based in Toronto. In that position, Mr. Krestinski was one of two General Managers responsible for infrastructure maintenance system-wide, including the CP Rail lines in the United States.

Mr. Krestinski began his railway career with CP Rail in 1966 as a Junior/Assistant Engineer at Saskatoon, Saskatchewan. In this position, he performed office design and field layout of trackage serving six new potash mines. Subsequently, Mr. Krestinski occupied the following engineering-related positions with CP Rail:

> 1969 - 1973 Assistant Division Engineer, Brandon, Manitoba. Supervised engineers and technicians in construction and maintenance of railway facilities.
>
> 1973 - 1974 Construction Engineer, Montreal. Organized the relocation of Quebec City Terminal facilities to the outskirts of the city including the design and construction of new facilities and close-out of the old.
>
> 1974 - 1977 Division Engineer, Montreal and Toronto. Managed and maintained the railway's infrastructure throughout the Province of Quebec except for the Montreal Terminals, and subsequently in the Toronto Terminals.

1977 - 1979 Assistant Engineer-Track, Montreal. Guided the determination of engineering priorities for track, system-wide.

1979 - 1981 Deputy Regional Engineer, Vancouver. Managed major construction/maintenance projects in British Columbia and Alberta.

1981 - 1987 Regional Engineer, Toronto. Managed engineering activities on the Eastern Region (all of Ontario) and guided the successful amalgamation of the disparate CP engineering organizations in the Eastern and Atlantic Regions.

1987 - 1993 Chief Engineer, IFS, Toronto. Appointed as an Executive of the Company having responsibility for all engineering matters on the CP Rail network from Thunder Bay in western Ontario to the East Coast. Had staff responsibility for 2,100 direct/indirect employees with a payroll in excess of $70 million, and budget responsibility for more than $195 million. Also consulted to the Central Railway Group (London, England) regarding the feasibility of a joint venture with CP and others to inaugurate a new freight service from the English Channel Tunnel to London and the Midlands.

1993 - 1996 General Manager, Engineering Services, Toronto (see above).

After retiring from CP Rail in 1996 and establishing his own consulting firm, Mr. Krestinski consulted with various railways and other entities concerning track construction and maintenance projects. His projects have included contracts with CP Rail to conduct engineering analyses and design with respect to track connections/revisions linking CP and CN properties in southwest Ontario; evaluations of maintenance practices and proposed work programs to increase track speed on property leased to a short line in Quebec; and the coordination of efforts by CP and CN to effect infrastructure changes on CN's line from Hamilton to Niagara Falls, enabling CP to remove its trackage through the City of Niagara Falls. Mr. Krestinski has also consulted with the Ontario Northland Railway, where he conducted a review of the rail infrastructure maintenance standards and procedures on an 850-mile network in northern Ontario.

Mr. Krestinski received a Bachelor of Science in Civil Engineering from the University of Saskatchewan in 1966. He is a member of the Professional Engineers Ontario, the Engineering Institute of Canada, and the Toronto Railway Club, of which he is a former President.

VERIFICATION

I, William L. Krestinski, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

William L. Krestinski

Executed on: February 27, 2004.

16. ALAN J. BLACKWELL

Mr. Blackwell is the founder and President of Blackwell Consulting, Inc., a railroad consulting firm located at 2601 Lynn Court, North Platte, NE 69101. The specific evidence Mr. Blackwell is sponsoring (jointly with AEP Texas witnesses Krestinski, Stone and Reistrup) relates to maintenance-of-way expenses for the SARR (Part III-D-4).

Mr. Blackwell started his consulting practice in 1998. It focuses on areas such as track structures/track appliances, and maintenance thereof, safety training, compliance with FRA trade safety regulations, highway grade crossings, bridge work, and derailment investigation. Prior to becoming an independent consultant, Mr. Blackwell worked for both Union Pacific Railroad and Missouri Pacific Railroad for nearly 24 years.

From 1979 through 1995, Mr. Blackwell was employed by Union Pacific Railroad in a number of different capacities. Starting in 1991, Mr. Blackwell worked as a Track Inspector at North Platte, NE, where he performed inspections of the North Platte yard tracks and main tracks extending west to O'Fallons, NE, pursuant to FRA safety regulations and Union Pacific track maintenance and construction standards. This trackage was (and is) heavily utilized by unit coal trains originating in the Powder River Basin.

From 1987 to 1991, Mr. Blackwell occupied the position of Manager Track Maintenance (Roadmaster) on UP's Nebraska Division, based at Grand Island, NE. In this position Mr. Blackwell managed and oversaw all aspects of engineering operations and maintenance-of-way for over 300 miles of double mainline track, 200 miles of branch

line track and 200 miles of yard and industry track. The mainline track included a 20-mile portion (between Kearney and Gibbon) of UP's main line between North Platte and Gibbon, NE. This line, which is now triple-track, carries approximately 150 trains per day (including approximately 50 coal trains) and is the highest density rail freight corridor in the world (according to UP). During Mr. Blackwell's stewardship of this trackage it was heavily utilized by Powder River Basin unit coal trains. As Manager Track Maintenance, Mr. Blackwell also served as a Trainer and Examiner of the Union Pacific safety rules and regulations for the Nebraska Division maintenance of way employees.

From 1983 to 1987, Mr. Blackwell worked for UP as an Assistant Roadmaster (1983-1984) and as a Relief Roadmaster 1984-1987). In these positions, Mr. Blackwell managed the installation, inspection, maintenance and repair of track structures and appliances. He managed rail welding and grinding operations, new construction, and detector car operations. He oversaw the activities of section forces, system gang and private contractors to ensure productivity and safety. Mr. Blackwell also worked for UP as a General Foreman from 1981 to 1983 and as a Track Inspector/Section Foreman from 1979 until 1981.

Prior to joining Union Pacific, Mr. Blackwell worked for the Missouri Pacific Railroad for eight years as an Assistant Foreman/Section Foreman (1972-1979) and as a Section Laborer/Machine Operator (1971-1972).

Mr. Blackwell is a member of the American Railway Engineering and Maintenance of Way Association ("AREMA") and the National Association of Railroad Safety Consultants and Investigators ("NARSCI"). Until his departure from Union Pacific at the end of 1995, Mr. Blackwell was an FRA-certified track inspector. Since

leaving Union Pacific Railroad, Mr. Blackwell has received a certificate of completion from an AREMA FRA Track Safety Standards workshop that was presented in April 2001.

VERIFICATION

I, Alan J. Blackwell, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Alan J. Blackwell

Executed on: February 16, 2004.

17. HARVEY H. STONE

Mr. Stone is founder and President of Stone Consulting & Design, Inc., with offices at 324 Pennsylvania Avenue West, Warren, PA 16365. Stone Consulting & Design is a consulting firm providing comprehensive engineering design services to railroad and other industries on a nationwide basis. Prior to forming Stone Consulting & Design, Mr. Stone spent 28 years with a regional engineering firm, fifteen years as President. He has also worked as an engineer for the Army Corps of Engineers and in the construction sector. The specific evidence that Mr. Stone is sponsoring relates to maintenance-of-way (Part III-D-4) and road property investment (Part III-F)[2] for the SARR.

Mr. Stone and his firm have handled large projects involving railroad freight and passenger feasibility studies, railroad track and structure design, and civil works projects in more than 20 states. He is frequently called upon to prepare preliminary engineering feasibility studies for industrial development and rail construction projects involving federal and state grants; most of the projects he has recommended as feasible have been funded and constructed.

Mr. Stone has a Bachelor of Science degree in civil engineering from Rensselaer Polytechnic Institute. He is a registered Professional Engineer in 31 states. He is a member of the American Society of Civil Engineers ("ASCE"), the American

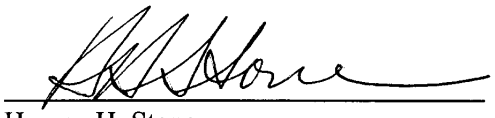
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[2] The maintenance-of-way evidence in Part III-D-4 is being co-sponsored by AEP Texas witnesses Krestinski, Blackwell and Reistrup. The road property investment evidence in Part III-F is being co-sponsored by AEP Texas witnesses Oakleigh Thorne (land valuation), John Mullan (microwave communications system) and Brian Bastow, Douglas Ellison and Daniel Swanson (inspection of BNSF lines and facilities being replicates by the stand-alone railroad).

Council of Engineering Companies ("ACEC"), the American Railway Engineering and Maintenance of Way Association ("AREMA") and the National Council of Examiners for Engineering & Surveying ("NCEES"). He is a past member of the American Society of Highway Engineers and the National Society of Professional Engineers. These professional affiliations have provided invaluable exposure to the many changes in engineering technology and standards over the years. Mr. Stone is the former chairman of ACEC's Quality Management Committee, a current member of the Professional Development/Licensure Committee and a past president of the Bucktails Chapter of the Pennsylvania Society of Professional Engineers.

VERIFICATION

I, Harvey H. Stone, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



Harvey H. Stone

Executed on: February 16, 2004.

18. BRIAN N. BASTOW

Mr. Bastow is Vice President, Rail Design of Stone Consulting & Design, Inc., with offices at 324 Pennsylvania Avenue West, Warren, PA 16365. Stone Consulting & Design is a consulting firm providing comprehensive engineering design services to railroads and other industries on a nationwide basis. Mr. Bastow is co-sponsoring (along with Mr. Stone, Mr. Ellison and Mr. Swanson) the evidence related to road property investment (Part III-F) for the SARR.

Prior to joining Stone Consulting & Design in 1998, Mr. Bastow was employed by a regional engineering firm where he worked on design, preparation of specifications and inspection of numerous rail projects. He has also worked as a lead field engineer with ECI, Eichly, Inc. and with the prime contractor of a major Texas Department of Transportation project in 1988.

Mr. Bastow has 20 years of experience in handling large projects involving construction management, freight and trolley railroad line design, and field engineering, inspection, and design. He is frequently called upon to provide detailed analysis of track conditions, cost estimating, contract drawings and technical specifics for industrial, shortline and tourist railroads.

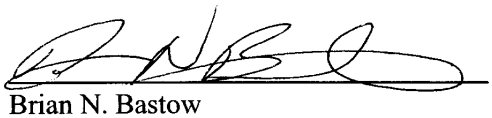
Mr. Bastow studied civil engineering at Texas A&M from 1978 to 1980. He is a member of the American Railway Engineering and Maintenance of Way Association ("AREMA").

Mr. Bastow, along with Mr. Ellison and Mr. Swanson, took a field trip in November 2003 to inspect all of the BNSF lines and facilities being replicated by the TNR. Mr. Bastow performed an engineering survey of the lines from Boise City to

Oklaunion and from Donkey Creek to Alliance. Mr. Ellison performed an engineering survey of the lines from Denver to Boise City and examined the BNSF locomotive shop in Denver as well as other facilities in Denver, Pueblo and La Junta, CO. Mr. Swanson examined the rail lines from Denver, CO to the Powder River Basin.

VERIFICATION

I, Brian N. Bastow, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



Brian N. Bastow

Executed on: February 18, 2004.

19. DOUGLAS J. ELLISON

Mr. Ellison is Vice President, Strategic Rail Projects at Stone Consulting & Design Inc., with offices at 324 Pennsylvania Avenue West, Warren, PA 16365. Stone Consulting & Design is a consulting firm providing comprehensive engineering design services to railroads and other industries on a nationwide basis. Mr. Ellison is co-sponsoring (along with Mr. Stone, Mr. Bastow and Mr. Swanson) the evidence that relates to road property investment (excluding land valuation and microwave communications) (Part III-F) for the SARR.

Mr. Ellison has over twenty years of experience with the railroad industry in mechanical, operations, maintenance-of-way, and management. Prior to joining Stone Consulting & Design in 2003, Mr. Ellison was Director of Strategic Rail Projects for OmniTRAX in Denver, Colorado. At OmniTRAX, Mr. Ellison was responsible for strategic financial planning initiatives related to all functional areas of internal rail operations and analysis and development of new acquisitions.

Before working at OmniTRAX, Mr. Ellison was the Executive Director and General Manager of the Adirondack Railway Preservation Society. In this position, Mr. Ellison was responsible for management of all departments and functions including operations, planning scheduling, financial, human resources, staffing, safety and training programs, and government compliance. Mr. Ellison's duties included marketing studies and forecasting, resource planning and allocation, capital projects financing and management, and government liaison.

As Managing Partner at Freight Management System, Mr. Ellison was responsible for freight and product scheduling, rate negotiations, sales and marketing, and

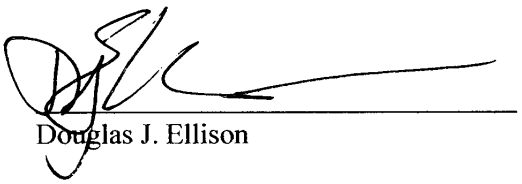
technical consulting for transportation equipment, common carriers and international and domestic routings. Mr. Ellison spent several more years in the railroad industry working as Vice President Administration at Rome Locomotive Works.

In these positions, Mr. Ellison performed studies involving rail operations feasibility, profitability and marketing analysis. He was involved in the conceptual planning of transportation systems and intermodal interfacing. Mr. Ellison developed business plans for technical projects, mechanical studies, and engineering applications for user specific motive power for freight, commuter and transit applications. In addition, Mr. Ellison's experience includes working directly with vendors and suppliers and performing equipment inspections and appraisals. Mr. Ellison was also involved in writing FRA-approved engineers training programs and operational rulebooks, and supervised construction and engineering projects.

Mr. Ellison, along with Mr. Bastow and Mr. Swanson, took a field trip in November 2003 to inspect all of the BNSF lines and facilities being replicated by the TNR. Mr. Ellison performed an engineering survey of the lines from Denver to Boise City and examined the BNSF locomotive shop in Denver as well as other facilities in Denver, Pueblo and La Junta, CO.

VERIFICATION

I, Douglas J. Ellison, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



Douglas J. Ellison

Executed on: February 20, 2004.

20. DANIEL P. SWANSON

Mr. Swanson is a Construction Specialist at Stone Consulting & Design, Inc., with offices at 325 Pennsylvania Avenue West, Warren, PA 16365. Stone Consulting & Design is a consulting firm providing comprehensive engineering design services to railroads and other industries on a nationwide basis. Mr. Swanson is co-sponsoring (along with Mr. Stone, Mr. Bastow and Mr. Ellison) the evidence that relates to road property investment (excluding land valuation and microwave communications) (Part III-F) for the SARR.

Mr. Swanson joined Stone Consulting & Design in 2000 and works as a FRA Qualified Track Inspector. As an inspector for rail projects, Mr. Swanson attends training programs to ensure compliance with industry standards. He has received certificates in the following courses:

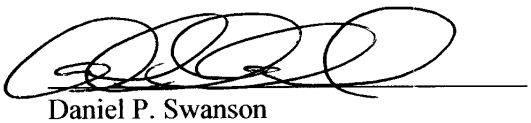
- Basic Principals of Track Maintenance – Railway Education Bureau, Omaha, Nebraska,
- Roadbed and Rails – Subgrade, Ballast and Rail Problems, Track Maintenance and Inspection – Institute for Railroad Engineering, Wilmington, Delaware,
- Railroad Tracks – Evolution of Tracks, Design Analysis, Track Buckling and Maintenance – Institute for Railroad Engineering, Wilmington, Delaware, and
- Fundamentals of Railroad Engineering – University of Wisconsin, Madison College of Engineering.

In addition, Mr. Swanson prepares and submits PA Rail Freight Grant Applications and assists owners in determining the use of funding.

Mr. Swanson, along with Mr. Bastow and Mr. Ellison, took a field trip in November 2003 to inspect all of the BNSF lines and facilities being replicated by the TNR. Mr. Swanson examined the rail lines from Denver, CO to the Powder River Basin.

VERIFICATION

I, Daniel P. Swanson, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



Daniel P. Swanson

Executed on: February 18, 2004.

21. CHARLES A. STEDMAN

Mr. Stedman is a Vice President of L. E. Peabody & Associates, Inc., headquartered in Alexandria, VA. The specific evidence Mr. Stedman is co-sponsoring, along with Mr. Stone, relates to the roadbed preparation/earthworks component of the road property investment cost of the SARR, exclusive of culverts, roadbed specifications and yard drainage (Part III-F-2).

Mr. Stedman is a graduate of the University of Maryland where he obtained a Bachelor of Arts degree in Political Science with a minor in Business Transportation. He has been employed by L. E. Peabody & Associates, Inc. since October 1981. Prior to joining L. E. Peabody & Associates, Inc., he was employed by the United States Railway Association ("USRA") where he monitored the effectiveness of the operating plan of Consolidated Rail Corporation ("Conrail") using a computer model, participated in data manipulation, and analyzed results in order to make projections about Conrail's future operations. He also worked as chief research assistant on a transportation project for the Maryland Department of Transportation and was the co-author of the resulting Report "International Air Cargo Potential at Baltimore-Washington International Airport." Recommendations in this Report were used to increase international air cargo shipment volumes through Baltimore-Washington International Airport. He also worked as a research assistant for the ICC, studying the effect of selected railroad mergers on the national railroad system using a computer model to aid in determining shifts in traffic patterns caused by specific rail mergers.

As part of Mr. Stedman's work for L. E. Peabody & Associates, Inc., he has performed and directed numerous extensive projects and analyses undertaken on behalf of

utility companies, short line railroads, state and local governments and entrepreneurs. These projects include: (a) participation in the development of variable cost evidence presented to the ICC and the Board in numerous cases; (b) the development of variable costs contained in numerous reports and other analyses presented to clients; (c) the development of stand-alone cost evidence presented to the ICC and the Board in numerous cases; (d) the development of evidence in abandonment cases before the ICC; (e) the development of net liquidation values and rehabilitation costs for interested parties in abandonments and acquisitions; and (f) the preliminary design (including route layout), construction and maintenance costs associated with the construction of a new rail line.

Mr. Stedman has attended numerous railroad construction and maintenance seminars across the country. He is a Certified Track Foreman and a member of the American Railway Engineering and Maintenance-of-Way Association.

Mr. Stedman has conducted several field inspections of eastern and western carriers' rail lines in order to develop and determine the existing and potential operating and economic conditions of these lines. He has also conducted and directed detailed research into the valuation records of major eastern and western railroads. This research entailed, among other things, detailed reviews of both ICC and railroad valuation maps, land acquisition records (including title status and market value) and the ICC's Bureau of Valuation B.V. Form No. 561, commonly referred to as the ICC Engineering Reports.

VERIFICATION

I, Charles A. Stedman, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Charles A. Stedman

Executed on: February 26, 2004.

22. OAKLEIGH J. THORNE

Mr. Thorne is a principal of Thorne Consultants, Inc., a firm that provides real property counseling consulting and appraisal services. The offices of Thorne Consultants, Inc. are located at 10605 Concord Street, Suite 420, Kensington, MD 20895. The specific evidence Mr. Thorne is sponsoring (along with Mr. Brockman) relates to the appraisal and determination of unit-land prices for the acquisition of the right-of-way for the SARR (Part III-F-1-a-d).

Mr. Thorne is a Certified General Real Estate Appraiser in the states of Maryland and Virginia and in the District of Columbia. For purposes of his assignment in this case, he was granted temporary license permits by the states of Nebraska, South Dakota, and Texas.[3] He is a member of the Appraisal Institute ("MAI"), The Counselors of Real Estate ("CRE"), and the Urban Land Institute ("ULI").

Mr. Thorne has nearly forty years of experience in the real estate industry in a vast array of activities including valuation of real property, counseling clients on real estate market economics, site acquisition, construction bidding and management, long-term corporate strategic planning, and financing. He has performed appraisals on numerous properties, including (but not limited to) apartment complexes, condominium projects (residential, commercial, and industrial), hotels, industrial facilities, office buildings, planned unit developments, retail facilities, shopping centers, and vacant land (raw and developed). Mr. Thorne has completed valuation appraisals, as well as

[3] Mr. Thorne also valued property for the SARR in Wyoming and Colorado, however, these states do not required appraisers to be licensed.

evaluation assignments (market studies, feasibility analyses, etc.), on existing, partially completed, and proposed development projects.

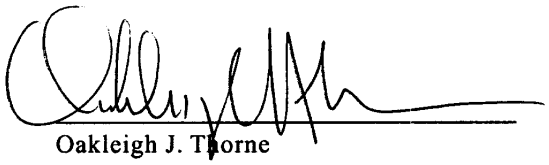
In addition to other appraisal assignments, Mr. Thorne was engaged by the U.S. Railway Association from 1978 to 1980 to coordinate and review land-use, feasibility and appraisal reports involving the real properties of the Penn Central and six other bankrupt railroads that became part of Consolidated Rail Corporation ("Conrail"). He has also testified as a real estate expert witness in various state and federal district courts. Mr. Thorne served as a expert witness in recent STB coal rate cases, including Docket No. 42069, *Duke Energy Corporation v. Norfolk Southern Railway Company*; Docket No. 42070, *Duke Energy Corporation v. CSX Transportation Inc;* and Docket No. 42072, *Carolina Power & Light Company v. Norfolk Southern Railway Company*.

Mr. Thorne has a Bachelor of Arts degree from the State University of New York at New Paltz, and has taken graduate courses in Urban Real Estate Development at American University in Washington, DC.

In this proceeding, Mr. Thorne assumed the lead role in the costing of the subject property. He was assisted by Mr. Craig Lichter, an employee of Thorne Consultants, Inc., Mr. Robert J. Brockman of Keyhole Land Company, and Mr. Philip Burris of L. E. Peabody & Associates, Inc. The objective of the appraisal was to determine a hypothetical market price (using a representative "price per acre" as the basic unit of measure) by land segment along the proposed SARR rail corridor based on generic land-use categories and on geographic location. Land prices for the hypothetical acquisition were calculated as of July 1, 2000.

VERIFICATION

I, Oakleigh J. Thorne, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



Oakleigh J. Thorne

Executed on: February 19, 2004.

23. ROBERT J. BROCKMAN

Mr. Brockman is the President of Keyhole Land Company, a firm that provides real property counseling, consulting and appraisal serves. Mr. Brockman also serves as a Broker and an Appraiser for Keyhole Land Company. Keyhole Land Company's offices are located at 805 10th Street, PB Box 155, Wheatland, WY 82201. The specific evidence Mr. Brockman is sponsoring (along with Mr. Thorne) relates to the appraisal and determination of unit-land prices for the acquisition of the right-of-way for the SARR (Part III-F-1-a-d).

Mr. Brockman is an Accredited Rural Appraiser ("ARA") and is a Member of the American Society of Farm Managers & Rural Appraisers ("ASFMRA"). Accredited Member status is award by the ASFMRA to those members who have significant experience, are technically trained, have passed a rigid examination and subscribe to a high code of ethics. In addition, Mr. Brockman is the President of the ASFMRA State Chapter, and previously served as the Secretary/ Treasurer of the State Chapter. He is a licensed Wyoming Real Estate Broker and a Past Member of the Regional Ethics Committee of the ASFMRA.

Mr. Brockman has over twenty five years of experience in the real estate industry. At Keyhole Land Company, Mr. Brockman serves as President, Appraiser and Broker. His clients include the federal, state and local government agencies, such as the Natural Resource Conservation Service (part of the USDA), the Bureau of Land Management, the National Forest Services, the State of Wyoming Land Board, and the Federal Aviation Administration. In addition, Mr. Brockman has performed appraisals for numerous banks and law firms.

In addition to working at Keyhole Land Company, Mr. Brockman was also the President of Properties Unlimited, Inc. in Torrington, Wyoming from 1995 through 1999. At Properties Unlimited, Mr. Brockman performed brokerage services, appraisal services and asset management to clients throughout the State of Wyoming.

Prior to working at Keyhole Land Company, Mr. Brockman was a Vice President and Project Manager at Jones Development Company in Hanna Wyoming from 1976 until 1982. Mr. Brockman also worked at F&M Associates, Inc. in Real Estate Sales and as a Fee Appraiser from 1973 until 1976.

Mr. Brockman served as a court appointed appraiser for Carbon and Platte Counties in Wyoming District Court and as an expert witness in numerous jurisdictions. He served as an expert in partition actions in Platte County, Albany County and Goshen County, Wyoming, and was involved in eminent domain actions. Mr. Brockman was an expert in several Wyoming Department of Transportation Projects and in Wheatland R.E.A projects. On a federal level, Mr. Brockman has valued real property in Federal Bankruptcy Court and has reviewed appraisals for the Department of Interior for compliance with USPAP and UASFLA.

In addition to his valuation experience, Mr. Brockman attended Chadron State College from 1968 to 1971, where he studied Business Administration and Agricultural Economics. He has taken courses in Uniform Standards of Federal Land Acquisitions, Easements (legal aspects and valuation), Ranch Appraisal, Standards of Professional Practice, Real Estate Law, Eminent Domain, and Rural Appraisal.

VERIFICATION

I, Robert Brockman, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



Robert Brockman

Executed on: February 23, 2004.

24. PHILIP H. BURRIS

Mr. Burris is a Senior Vice President of L. E. Peabody & Associates, Inc., an economic consulting firm with offices in Alexandria, VA. The specific evidence Mr. Burris is sponsoring relates to the development of locomotive lease, maintenance, fueling and servicing cost (Part III-D-1); development of rail car lease and maintenance costs and rail car mileage costs for foreign and private cars (Part III-D-2); development of compensation levels for the SARR train and engine crews, other operating employees, nonoperating (General and Administrative) personnel, development of material and supplies expenses for operating, nonoperating personnel training and recruiting costs for all TNR employees (Part III-D-3); development of leased facilities costs (Part III-D-5); development of loss and damage cost (Part III-D-6); development of insurance cost (Part III-D-7); development of Ad Valorem taxes (Part III-D-8); the location and valuation of easements along right-of-way of the SARR (Part III-F-1); and the development of the land value index for use in the DCF model (Part III-G-2).

Mr. Burris received a Bachelor of Science degree in Business Administration from Virginia Polytechnic Institute and State University in 1971 and a Masters of Business Administration from the American University in 1978, specializing in transportation economics. Mr. Burris has worked in the consulting industry for a period of 25 years. In addition to his current position as a Senior Vice President of L. E. Peabody & Associates, Inc., Mr. Burris has been an employee of the following consulting firms: A. T. Kearney, Wyer Dick & Associates, Inc. and George C. Shaffer & Associates.

Mr. Burris has extensive experience in the field of transportation economics as it pertains to transportation supply alternatives, plant location analysis, regulatory policy and dispute resolution before regulatory agencies as well as state and federal courts. He has designed, directed and executed analyses of the costs of moving various commodities by different modes of transportation including rail, barge, truck, pipeline and intermodal. He has also performed economic analyses of maximum reasonable rate levels for the movement of coal and other commodities using the Board's CMP methodology, and specifically, the stand-alone cost constraint. Mr. Burris has submitted evidence regarding maximum reasonable rate levels using the stand-alone cost constraint to the Board and its predecessor. He has also testified before the Railroad Commission of Texas, the Colorado Public Utilities Commission, the Illinois Commerce Commission, the Public Service Commission of Nevada and various state and federal courts and arbitration panels.

In addition to his consulting work for private clients, Mr. Burris has performed studies and written draft reports for the Railroad Accounting Principles Board, an independent body created by Congress to establish cost accounting principles for use in implementing the regulatory provisions of the Staggers Act of 1980.

VERIFICATION

I, Philip H. Burris, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Philip H. Burris

Executed on: February 26, 2004.

25. JOHN A. MULLAN

Mr. Mullan is Vice President, Telecommunications Practice, of L. E. Peabody & Associates, Inc., an economic consulting firm that specializes in solving economic, marketing and transportation problems. The specific evidence Mr. Mullan is sponsoring relates to the SARR's microwave communications and radio system and its costs presented in Parts III-B-4-c and III-F-6.

Mr. Mullan is one of the founding members of the Telecommunications practice for L. E. Peabody & Associates, Inc. During his 16 years in the industry, he has gained expertise in network design and engineering, business analysis, market research, market plan development, product finance, product management, product marketing, sales channel development, and network security.

Mr. Mullan designed network products and services that employed a wireless, broadband point-to-multipoint microwave technology called local multipoint distribution service ("LMDS"). LMDS uses millimeterwave signals in the 28 Ghz Spectrum to transmit voice, video and data signals within cells 3 to 10 miles in diameter. Mr. Mullan concentrated on issues that regulated product and/or service cost such as cell size selection, cell overlap, subscriber penetration, traffic capacity, quality of service, link budget and capital cost per cell.

Prior to joining L. E. Peabody & Associates, Inc., Mr. Mullan served as Director of Metro and Long-Haul Private Data Networks at XO Communications, Inc. from 2000 to 2001. He was responsible for the product management of a portfolio whose products included Private Line Services (Wavelength, SONET, Digital TDM), Ethernet Services (Gigabit Ethernet, Fast Ethernet and Ethernet) and IP VPN. Mr. Mullan's work

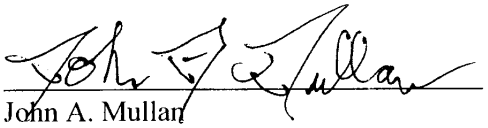
included recommending service infrastructure, profit/loss tracking, managing external/internal stakeholders, tracking revenue commitment, directing market research and media campaigns. He also tracked and reported installation intervals, rollout schedules, customer volumes, network utilization, special design requests, billing and invoicing, port forecasts, bandwidth forecasts, and revenues forecasts.

From 1998 to 1999, Mr. Mullan also served as District Manager for AT&T Solutions in the WAN & IP Offer Management division, where he authored Marketing Service Definitions to define market requirements, assess market opportunity, define product specification and determine the business justifications associated with enhancement to the MRS offer. He has also served as Senior Manager of Data Solutions for Global One Communications, Senior Engineer of Switching Platforms for Sprint and Small Systems Engineer for Cincinnati Bell Information Systems. In addition, Mr. Mullan invented two separate and patented routing algorithms for message switching systems.

Mr. Mullan received his undergraduate degree in 1988 and a graduate degree in 1994 in Computer and Software Systems Engineering from George Mason University in Fairfax, VA.

VERIFICATION

I, John A. Mullan, verify under penalty of perjury that I have read the Opening Evidence of AEP Texas in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.



John A. Mullan

Executed on: February 25, 2004.