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233519

December 17, 2012

Ms. Cynthia T Brown
Chief, Section of Administration
Office of Proceedings
Surface Transportation Board
395 E Street, SW
Washington, DC 20423-0012

Re: STB Finance Docket No. 35557
Reasonableness of BNSF Railway Company Coal Dust Mitigation Tariff Provisions

Dear Ms. Brown,

Enclosed for **FILING UNDER SEAL** in the above-referenced proceeding, please find a separately packaged original and ten (10) copies of the Highly Confidential version of the Rebuttal Argument and Evidence Argument of Arkansas Electric Cooperative Corporation together with three (3) electronic discs containing an electronic version of the **Highly Confidential** filing.

Also enclosed for **FILING UNDER SEAL** in the above-referenced proceeding, please find: a separately packaged original and ten (10) copies of the Confidential version of the Rebuttal Argument and Evidence Argument of Arkansas Electric Cooperative Corporation together with three (3) electronic discs containing an electronic version of the **Confidential** filing

I have also enclosed an original and ten (10) copies of a **REDACTED, PUBLIC** version of Arkansas Electric Cooperative Corp 's Reply Evidence and Argument for filing on the Board's public docket together with three (3) electronic disc containing an electronic version of the **Redacted Public** filing

Finally, I have enclosed additional copies of the above noted two filings to be date-stamped and returned to the bearer of this letter

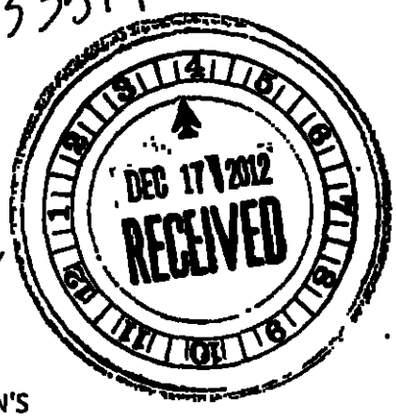
Respectfully submitted

Eric Von Salzen

Enclosures
cc. Parties of Record

PUBLIC

BEFORE THE
SURFACE TRANSPORTATION BOARD 233519



DOCKET NO FD 35557

REASONABLENESS OF BNSF RAILWAY COMPANY
COAL DUST MITIGATION TARIFF PROVISIONS

ARKANSAS ELECTRIC COOPERATIVE CORPORATION'S
REBUTTAL EVIDENCE AND ARGUMENT

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Dated: December 17, 2012

PUBLIC

BEFORE THE
SURFACE TRANSPORTATION BOARD

DOCKET FD 35557

REASONABLENESS OF BNSF RAILWAY COMPANY
COAL DUST MITIGATION TARIFF PROVISIONS

ARKANSAS ELECTRIC COOPERATIVE CORPORATION'S
REBUTTAL EVIDENCE AND ARGUMENT

In this Rebuttal, AECC 1/ shows that BNSF's safe harbor coal dust tariff is unreasonable and should be disapproved.

SUMMARY

The safe harbor coal dust tariff is unreasonable for several reasons.

Railroad Responsibility For Causing Fugitive Coal

The undisputed evidence shows that the railroads are responsible for causing a substantial amount of the fugitive coal that is released from PRB railcars. Yet BNSF's safe harbor would make coal shippers responsible for preventing coal deposition

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1/ AECC is Arkansas Electric Cooperative Corporation. As in its Opening and Reply, in this Rebuttal AECC will use conventional abbreviations and acronyms, such as BNSF for BNSF Railway Co., UP for Union Pacific Railroad Co , PRB for Powder River Basin, etc. Verified Statements submitted by a party in its Opening are cited [name of witness] VS, and Verified Statements submitted by a party in its Reply are cited [name of witness] RVS. The rebuttal verified statement of Michael A. Nelson submitted in this Rebuttal is cited Nelson Rebuttal VS.

caused by the railroads, contrary to the principles established by the Board in Coal Dust I (FD 35305, Decision served Mar. 3, 2011).

The evidence shows that the impacts, forces, and vibrations that cause deposition of fugitive coal occur at specific locations due to specific causes. Those causes are often symptoms of infrastructure or operating problems that require corrective action (and would require correction even if they did not also cause releases of fugitive coal). "Good railroading" practices to address these problems will also improve coal retention beyond what already has been achieved

The evidence also shows that without substantial reduction of the impacts, forces, and vibrations that cause releases fugitive coal, the thin, fragile coating produced by the low-water safe harbor toppers is subject to frequent failure before the train gets very far along its route. BNSF's claims of high performance for safe harbor toppers rest on the fact that their performance was only tested on the initial part of the movement (for which the topper, at least initially, was intact), and under conditions favorable to toppers, which are not representative of the real-world environment. 2/

The 85% Coal Dust Reduction Standard Is Arbitrary And Unreasonable

The 85% coal dust reduction standard in the safe harbor is arbitrary and unreasonable BNSF admits that adoption of the tariff would not measurably reduce the maintenance costs for the PRB lines, and the evidence has shown that the safe harbor

2/ BNSF would have no reason to put its thumb on the scale this way when testing alternative safe harbor methods that shippers might propose. As a result, the tariff would effectively prevent shippers from obtaining safe harbor approval for alternative methods of coal dust suppression that are no less effective than the toppers approved by BNSF

will not increase the amount of coal received by coal shippers, so the safe harbor would yield no benefits to justify the substantial costs it would impose on coal shippers.

Coal Dust Does Not Present A Greater Threat To Track Stability Than Other Ballast Foulants

New evidence and other information demonstrate that coal dust presents no greater threat to track stability on the PRB coal lines than do several other ballast foulants, so it can be treated with the same priority as the railroads have established for the other foulants, and not through extraordinary means that add unnecessary incremental costs

Shippers Are Already Taking Substantial Measures That Have Reduced Fugitive Coal

Shippers have already taken and are continuing to take substantial steps to assure that coal is properly loaded and contained in rail cars.

* * *

These issues are discussed at greater length in this Rebuttal Argument. The accompanying Rebuttal Verified Statement of Michael A. Nelson and the appended documents contain the evidence and analyses supporting these arguments as well as additional reasons why the safe harbor tariff is unreasonable.

DISCUSSION

1. The Safe Harbor Is Unreasonable Because It Would Impose On Shippers The Obligation To Prevent Fugitive Coal Deposition Caused By Railroad Operations And Infrastructure Conditions

BNSF claims that the "basic cause of coal dust losses in transit" is "the effect of wind on the coal" (BNSF Opening, Bobb VS at 3), so the reason for spraying toppers on coal cars is to "keep[ ] the wind from blowing coal dust out of a coal car."

BNSF Opening, VanHook VS at 4 See also BNSF Reply Argument at 16. However, in AECC's Opening, we showed that the preponderance of the fugitive PRB coal that lands on the ballast is not blown out of the car by wind, it is shaken out the car when BNSF and UP train operations permit or create inordinate amounts of slack action causing the cars to jerk and jolt; when coal cars experience impacts and vibrations as they pass over worn switches, certain curves, and other "rough track" conditions; and when drastic changes in track stiffness in some locations, such as bridges, culverts, drainage pipes, and grade crossings cause excessive impacts, forces, and vibrations in the cars. Wind is a consideration in that aerodynamic forces can cause coal loss, but those forces most often arise due to the speed at which the train is operated rather than ambient wind conditions. See AECC Opening at 8-12, and Nelson VS at 13-21.

The evidence that the railroads themselves cause much of the fugitive PRB coal comes largely from the railroads themselves.

- A study performed in 2003 by {{ }} explained how {{ }}
  BNSF COALDUSTII 00329010-22
- A BNSF video shows a large plume of coal dust emanating from a PRB coal train travelling approximately 50 mph as it descended a lengthy downgrade on the Joint Line. Coal Dust I, BNSF Counsel's Exhibit 4 (March 16, 2010), CD1, BNSF 0022999. See also Coal Dust I, BNSF COALDUST 0019796; 0020348.
- BNSF's trackside monitor on the Black Hills Subdivision recorded that over a two month period {{ }}
  BNSF COALDUSTII 00324301-04

- Slack action generating coal dust is shown in a BNSF video Coal Dust I, BNSF Counsel's Exhibit 4 (March 16, 2010), CD1, BNSF 0022995

- The role of slack action in {{ }} was described plainly in Coal Dust I, BNSF COALDUST 0019573, which references {{ }}, and Coal Dust I, BNSF COALDUST 0019582, which references {{ }}.

- { } was corroborated by photographic evidence. Coal Dust I, UP-AECCBN-0003565 (lower left photo).

- BNSF's consultants {{ }} generated by the two railroads at the Joint Line trackside monitor. BNSF COALDUSTII 00580630-32.

- BNSF and UP {{ }} Coal Dust I, BNSF Opening, VanHook VS at 3, Coal Dust I, BNSF Reply, VanHook RVS, Exhibit 7; and Coal Dust I, UP Opening Argument at 5, footnote 1. {{ }} modulus changes that result from changes in support for the track (e.g., from a concrete bridge to a conventional track structure, or from concrete ties to the {{ }}. Coal Dust I, AECC Opening, Nelson VS at 19-20; Coal Dust I, AECC Reply, Nelson VS at 6-7.

- BNSF had difficulty {{ }} Coal Dust I, BNSF Reply, Emmitt VS, Exhibit 8, UP 6695.

- {{ }} UP-AECC-00005599-601

- { } BNSF COALDUSTII 00153052. See also Coal Dust I, BNSF COALDUST 0021521.

- UP conducted a study (UP-AECC-00004644-94.) that {[redacted] } UP-AECC-00004673-74.
- Data from BNSF's {{[redacted] }} See the discussion in AECC Opening, Nelson VS at 16-20.

BNSF does not dispute any of this evidence. Thus the Board can take as established fact in this record that the manner in which the PRB railroads operate their trains and maintain their track is the primary cause of the deposition of fugitive coal.

But BNSF asserts that the Board is precluded by the Coal Dust I decision from considering the railroads' responsibility for causing fugitive coal. BNSF says.

> AECC argues, as it did in *Coal Dust I*, that coal shippers should not have to take any measures to address coal dust because BNSF's operations and maintenance practices are to blame for coal dust losses in transit. But those arguments were addressed and rejected in *Coal Dust I*, and they are off the table in this proceeding *Coal Dust I* at 9-10. The Board concluded in *Coal Dust I* that BNSF is entitled to establish reasonable loading requirements to ensure that a coal shipper's freight remains in the loaded railcars in transit *Coal Dust I* at 10-11 The narrow focus of this proceeding is on the reasonableness of the loading measures that are contained in the safe harbor provisions of BNSF's Coal Loading Rule. [citing *See Arkansas Elec. Coop. Corp -Petition for a Declaratory Order*, Docket No. 35305, at 4 (STB served Nov. 22, 2011) (instituting a new proceeding in Docket No 35557 to consider the reasonableness of the safe harbor provision);

> *Reasonableness of BNSF Railway Co. Coal Dust Mitigation Tariff Provisions,* Docket No. 35557, at 1 (STB served June 25, 2012).]

BNSF Reply at 2. BNSF's argument is wrong, because (1) BNSF misrepresents what AECC said in its Opening, and (2) BNSF misrepresents what the Board said in Coal Dust I.

First, with respect to BNSF's assertion that "AECC argues . . . that coal shippers should not have to take any measures to address coal dust because BNSF's operations and maintenance practices are to blame for coal dust losses in transit", the Board will note that BNSF does not provide a citation to any place in AECC's Opening where we said this. BNSF cannot provide a citation because AECC did not say this. BNSF's assertion is a straw man.

AECC is not arguing in this case that "coal shippers should not have to take any measures to address coal dust". That is not what this case is about. 3/ This case is about "the reasonableness of the safe harbor provision of the new tariff" (Coal Dust I/Coal Dust II, Decision served Nov. 22, 2011 at p. 4), and AECC's argument is that the safe harbor provision of the new tariff is unreasonable because it requires shippers to prevent fugitive coal caused by railroad operating practices, maintenance, and infrastructure conditions.

> [T]he safe harbor provision is unreasonable because it imposes on shippers the responsibility to prevent the deposition of fugitive coal caused by the actions of the railroads, that is, by railroad operating and maintenance practices and infrastructure

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3/ As a matter of fact, coal shippers have already taken substantial measures to address coal dust, including profiling, increased use of 3" coal, and improved car maintenance, and AECC has suggested other measures that shippers might take that offer the promise of being cost-effective. See Nelson VS at 55-56

> conditions that cause impacts, forces, and vibrations that shake the coal from the car.

AECC Opening at 2

Second, AECC's actual arguments – as distinct from BNSF's straw man arguments – were not "addressed and rejected" in Coal Dust I, and they are not "off the table in this proceeding." On the contrary, AECC's actual arguments are based on principles that the Board clearly stated in Coal Dust I. In that case, the Board summarized the conflicting positions of shippers and railroads regarding responsibility for preventing deposition of fugitive coal as follows:

> The Shipper Interests claim that the way BNSF operates its trains, changes in track modulus, and poor maintenance of the line increase coal dust dispersion. [Citing evidence and argument submitted by AECC.] BNSF responds that it is the shippers' responsibility to ensure that their freight remains in the loaded cars.

Coal Dust I at 11. The Board did not have to make factual findings about the extent to which railroad practices caused the deposition of fugitive coal, because it found the BNSF tariff in that case unreasonable on other grounds However, the Board stated the following principles: First, that shippers should not load their cars "in a manner that routinely results in the release of coal dust during transport"; and, second, that:

> [O]nce a railroad accepts a loaded car, it bears responsibility for transporting the car in a manner that avoids releasing or spilling the shipment

Coal Dust I at 14.

These are the principles on which this part of AECC's case is based. Shippers are responsible if they load their cars in such a way that "routinely results in

the release of coal dust during transport." On this point, the evidence – including Mr. Nelson's analyses of BNSF's "RTEPS" data – shows that little if any coal dust is released during transport away from {[redacted]}.

The railroad, for its part, is responsible if the railroad's manner of transporting a rail car results in "releasing or spilling the shipment." The evidence shows, without contradiction, that the PRB railroads do not meet their obligation, that "releas[e] and spill[age]" of fugitive coal is caused by the railroad running its trains too fast, by operating them in a manner that causes or permits excessive slack action, by failing to keep switches in proper repair, by not adequately addressing modulus changes, and so forth. Release of fugitive coal caused by such railroad actions and omissions is not the "routine" release for which the Board said shippers were responsible.

Thus, BNSF's safe harbor is unreasonable because it requires that shippers take responsibility for preventing the release of fugitive coal caused by "railroad operating and maintenance practices and infrastructure conditions that cause impacts, forces, and vibrations that shake the coal from the car." AECC Opening at 2.

The unrefuted evidence shows that the railroads are responsible for the preponderance of fugitive coal releases, because of the way they operate their trains

and because of the condition of their infrastructure On the basis of these undisputed facts, the Board should find the safe harbor to be unreasonable and invalid. 4/

2. The 85% Reduction Requirement In BNSF's Safe Harbor Is Arbitrary And Unreasonable

In AECC's Opening, we showed that the 85% dust reduction standard in BNSF's safe harbor violates the principles that this Board articulated in Coal Dust I, that "a valid standard to be applied to the coal dust problem" is "a general presumption that a tariff should employ cost-effective practices that are reasonably commercially available". Coal Dust I at 5. "Certainly, any tariff provision must be reasonably commensurate economically with the problem it addresses . . . ." Id., at 6 See AECC Opening Argument at 14-17 BNSF makes no effort to show that the 85% safe-harbor standard is cost-effective or reasonably commensurate with the problem it addresses.

On the contrary, BNSF admits that it has no evidence that "shipper compliance with BNSF's Coal Loading Rule will have any notable impact on BNSF's maintenance costs." BNSF Opening, Bobb VS at 6-7 (emphasis added) See, also BNSF Opening Argument at 24 ("It is far from clear that shipper compliance with the safe

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4/ Until the railroads have addressed the impacts, forces, and vibrations that cause the preponderance of fugitive PRB coal, the use of toppers would be largely futile, as overwhelming photographic evidence shows that the thin, fragile coating provided by the safe harbor toppers routinely is failing within {[redacted]} what, on average, are 1000+ mile trips. BNSF cannot offer any credible assurance that toppers will not cause large increases in fugitive coal deposition on the latter part of trips. Such increases, which are understood to result from topper failure, were observed in previous testing, but omitted from the testing BNSF used to select the safe harbor toppers. This issue is discussed in Mr. Nelson's attached Rebuttal Verified Statement, Part 6 See, also AECC Opening, Nelson VS at 21-26, and AECC Reply, Nelson RVS at 6-11.

harbor will have any impact on BNSF's costs, certainly in the near future."). This represents a dramatic change from the position BNSF took in Coal Dust I, where it claimed that "the incremental maintenance costs associated with coal dust from PRB trains exceeds the cost of surfactant application by a substantial margin." Coal Dust I, BNSF Reply Argument at 19. AECC thoroughly refuted those claims in its rebuttal in that case Coal Dust I, AECC Rebuttal Argument at 13-16, and Nelson Rebuttal VS at 32-44

If reducing coal dust by 85% would not reduce maintenance expenses on the PRB lines, there is no economic rationale for applying toppers regardless of their costs. 5/ Whether the cost of applying toppers is $50 million per year or $150 million per year, or some other amount, it is certainly not "reasonably commensurate economically with the problem it addresses" when the identifiable cost of the problem is zero. 6/

5/ AECC witness Nelson demonstrated that railroad claims regarding the increased volume of coal that shippers would receive due to the use of toppers are illusory, because the amount of coal loaded in the car must be reduced to offset the weight of the topper, and this reduced loading exceeds the weight of the coal retained as a result of toppers. Coal Dust I, AECC Rebuttal, Nelson Rebuttal VS at 42-44. Moreover, evidence presented by Mr Nelson in his Rebuttal Verified Statement in this docket demonstrates that losses of coal associated with observed episodes of topper failure can easily dwarf the coal loss that would be expected from an untreated car Given that no net benefit from coal retention can be established, maintenance cost savings would be the only other potential source of measurable benefits, and BNSF admits that there are none. Nelson Rebuttal VS at 16.

6/ In Coal Dust I, at 5-6, the Board expressed concern about "capacity constraints" that might be created by increased maintenance activities to deal with the consequences of coal dust, a track would have to be taken out of service for a period of time while maintenance was being performed, and the more maintenance required, the more often a track would be out of service. Mr. Nelson's testimony describes how the addition of 3rd (and in some areas, 4th) mainline tracks on 25' centers has fundamentally changed maintenance window issues on the Joint Line, so that

BNSF seeks to justify the 85% safe harbor requirement on the ground that shippers can afford what it would cost to achieve an 85% reduction in coal dust. See BNSF Reply Argument at 17 ("No party in this proceeding has argued that the cost to comply with the safe harbor provisions will impose any hardship on PRB coal shippers"). The absence of "hardship" is not the standard; the standard is whether the cost of complying with the safe harbor is "reasonably commensurate economically with the problem" caused by coal dust, and BNSF has ignored that issue.

The 85% safe harbor dust reduction standard itself lacks any type of economic foundation, and is completely arbitrary. BNSF did not even consider whether a dust reduction target lower than 85%, which could be achieved at a much lower cost, would be reasonably commensurate with the problem.

This is not a merely theoretical issue. Evidence shows that substantial coal dust reductions can be – and already have been – achieved without the use of toppers. The railroads' own consultants concluded that use of the "breadloaf" profile alone, without applying toppers, reduced coal dust by 40-70%. AECC Reply, Nelson RVS at 35. BNSF's consultants also concluded that using larger coal sizes would reduce coal dust by 20%, and combined with profiling would result in a 61% reduction Id. at 35-36 BNSF now disparages these conclusions, but it fails to come to grips with the central issue: Even if the toppers perform as BNSF claims – and the overwhelming evidence

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directional operations at normal speeds can now be maintained even when one track is taken out of service for maintenance. Nelson Rebuttal VS at 31 BNSF's admission that coal dust no longer creates identifiable increases in maintenance costs corroborates Mr. Nelson's testimony and should resolve the Board's concern.

shows they would not in the real-world conditions to which they would be exposed – if other methods have already reduced coal dust by 40-70%, and further opportunities exist for the railroads to engage in "good railroading" improvements that will further reduce coal dust at little or zero incremental cost, the extra cost of toppers (estimated by various parties at $50-150 million per year -- $76-90 million per year, as estimated by witness Nelson) is unjustified and unreasonable.

3. Coal Dust Is Not An Unusually Dangerous Ballast Foulant.

BNSF has continued to argue that coal dust is "a particularly harmful ballast contaminant" because it "absorbs water, expands when exposed to water, and acts as a lubricant." BNSF Opening Argument at 5 (not citing any evidence). In fact, as AECC showed in its opening argument, Erol Tutumluer, the BNSF consultant who had supported that argument in Coal Dust I, has discovered on further study that it is not coal dust per se that has these effects, but rather the clay soil on which the Joint Line is built that mixes with the coal dust (and other foulants) and causes ballast instability AECC Opening, Nelson VS at 30-31. BNSF tries to change the subject by pretending that AECC is "question[ing] the need for any control on coal dust" (BNSF Reply Argument at 16 n. 8), but that is not the issue. The issue is whether the benefits to be expected from the 85% coal dust reduction in BNSF's safe harbor are worth the costs.

> Clay will migrate into the subballast and ballast at approximately the same rate with or without control of fugitive coal, so Professor Tutumluer's new findings demonstrate that the control of fugitive coal does not convey the types of "infrastructure stability" benefits that BNSF previously claimed. As a result, it is appropriate for the Board to give full weight to tangible cost/benefit measures associated with the use of

> toppers, but toppers should get no "extra points" from stability concerns Without those "extra points" the toppers have no possibility of meeting the Board's "reasonably commensurate" standard, and by that standard are unreasonable.

AECC Opening, Nelson VS at 31

BNSF also relies on the assertions of the USDOT that "coal dust threatens railroad safety more than other foulants". BNSF Reply Argument at 16 n. 8 (citing USDOT Opening Argument at 5). However, as AECC showed in its Reply, the USDOT assertion that coal dust is the worst ballast foulant is unsupported; the studies that USDOT cited say no such thing – in fact, they hardly mention coal dust at all. See AECC Reply Argument at 19-22. Thus, USDOT's opinion, on which BNSF (having lost Dr. Tutumluer) seeks to rely, is completely unsupported.

This does not mean, as BNSF claims, that AECC is arguing that it is unnecessary to control coal dust But the nature and degree of the coal dust problem affects the evaluation of what steps to control it are reasonable. The more serious the problem of coal dust is, the more it would be reasonable to do (and spend) to address that problem This is particularly so to the extent that the nature of the coal dust "threat" is to "safety", rather than merely to maintenance expenses. But, as the evidence shows, coal dust is not a special "safety" "threat"; it is only one of several "nonplastic" ballast foulants, all of which must be dealt with to protect the stability of the track, so the benefit of reducing coal dust deposition may not be that great – because the railroad would still have to clean the ballast of the other foulants.

The evidence is clear that coal dust is only one of a number of ballast foulants, all of which need to be addressed in an appropriate way, but coal dust is not

unique or more "dangerous" than other foulants. This is corroborated by BNSF's admission that reducing coal dust by 85% would not significantly reduce its maintenance expenses. If, after its efforts to catch up on deferred Joint Line maintenance in the aftermath of the 2005 derailments, BNSF really needed to engage in extraordinary ongoing maintenance to protect its infrastructure against unique threats posed by coal dust, BNSF surely would be able to quantify some aspect of that effort as a tangible benefit of the safe harbor The fact that BNSF throws in the towel on such benefits means that no such extraordinary maintenance is needed, and in fact that coal dust is at most a minor factor in the ballast fouling that BNSF needs to address on an ongoing basis to maintain the integrity of its infrastructure. Because coal dust is not an extraordinarily harmful foulant, it does not warrant the application of the extraordinary remedy that BNSF proposes.7/

7/ BNSF may argue that the Board is bound in this case by its statement in Coal Dust I, at 7, that "coal dust poses a unique problem to safe and efficient rail operations". Such an argument would be incorrect, because a ruling in one case does not bind a tribunal or the parties in a subsequent case unless "its determination was essential to that judgment [in the first case]". Cooper v. Federal Reserve Bank of Richmond, 467 U.S. 867, 874 (1984) See, also, e.g , Wyly v. Weiss, 697 F. 3d 131, 2012 U. S. App. LEXIS 21032, *35 (2d Cir. 2012); King v Burlington Northern & Santa Fe Railway, 538 F. 3d 814, 818 (7th Cir. 2008); Marvel Characters, Inc v Simon, 310 F. 3d 280, 289 (2d Cir. 2002), Innovad, Inc v. Microsoft Corp., 260 F. 3d 1326, 1334 (Fed. Cir. 2001); Amgen, Inc v. Hoffmann-La Roche Ltd., 494 F. Supp. 2d 54, 59 (D. Mass. 2007). In Coal Dust I, the Board's judgment was that the BNSF coal dust tariff that AECC was challenging was unreasonable and hence invalid. The Board's comments about how unique the coal dust problem is, were not "essential" to that ruling and do not preclude the Board ruling in the present case in accordance with the evidence in this record

4. The Safe Harbor Toppers Are Not Effective In Preventing Fugitive Coal Deposition.

Even if toppers made sense on a conceptual and economic basis – which they do not – the safe harbor provision would not make sense because the thin, fragile crust provided by the safe harbor toppers is prone to early failure in the real-world environment in which it would have to perform.

As BNSF explains, the purpose of applying a topper to the coal in a rail car is to "form[ ] a pliable crust on top of the coal that prevents the wind from blowing the coal out of the moving car." BNSF Opening Argument at 16. BNSF claims that toppers have been used successfully for years "to prevent wind from blowing coal dust off of coal stockpiles", so it ought to work to prevent "coal dust losses in transit", too. BNSF Opening, Bobb VS at 3 The problem with this reasoning is that coal piles don't move, but coal trains do. It's easy enough to see how applying a crust to the top of a stationary coal pile could prevent the wind from blowing the dust off the pile, but if the coal is in a rail car, what happens to the crust when the car moves?

In AECC's Opening we showed, based on evidence provided by BNSF and UP, that dynamic forces from the movement of the car cause the coal to shift, and the "pliable crust" to break, so that the effectiveness of the topper is compromised as the car moves toward its destination. BNSF only tested the effectiveness of toppers between the mines and {[redacted]} out of a typical thousand-plus mile trip, but even by the time trains reached {[redacted]} photographic evidence showed that {[redacted]} AECC Opening, Nelson VS at 21-26. In AECC's Reply, in response to unfounded claims by BNSF that toppers were intact

when the cars reached their destination, AECC provided additional {[redacted]}. Out of photographs of {[redacted]} trains {[redacted]}, {[redacted]} of the trains showed unambiguous evidence of {[redacted]}. Photographs provided by coal users also showed topper failures in cars arriving at their plants. AECC Reply, Nelson RVS at 6-11 and photographs attached.

In BNSF's Reply, witnesses Carré and Murphy speculated that two of the photographs in AECC's Opening showing topper failure at {[redacted]} might be the result of incomplete topper application, but they offered no evidence of this. BNSF excluded trains from its Super Trial results for improper topper application, so BNSF records ought to show if the cars in these photographs had incomplete toppers, and apparently the records do not show this Carré and Murphy also seek to give the impression that these photographs are atypical, yet the much larger collection of photographs contained in Mr. Nelson's Reply show the very same evidence of topper failure. See Nelson Rebuttal VS at Part 6.

Let us assume for discussion purposes that BNSF Super Trial results show that, under ideal conditions -- not cold, not rainy, not windy, with trains not operating at high speeds, and with properly applied safe harbor toppers -- fugitive coal was significantly reduced during the first (say) 200 miles of the journey from the mine. Even so, the evidence is clear beyond any reasonable dispute, from {[redacted]} and presumably from direct observations by their personnel and consultants who saw the same conditions {[redacted]} by the end of

that first part of the trip As a result, the effectiveness of the toppers would be much lower during the entirety of the trip from mine to power plant than in the first short segment of the trip. Shifting the distribution of fugitive coal from one part of the route to another would serve no valid purpose. Moreover, the likelihood is that the failed toppers would contribute to higher total coal losses than occur on untreated cars due to the types of "erosion" (i e , loss of chunks of coal bound together by the fragmented remains of the failed topper surface) that have been openly acknowledged by BNSF's consultants BNSF Reply, Carre/Murphy RVS at 6, referencing the photos of failed toppers in AECC Opening, Nelson VS at 24-25.

5. The Tariff Denies Shippers An Effective Opportunity To Obtain Safe Harbor Approval For Alternative Methods Of Coal Dust Reduction

BNSF apparently thinks it's cute to pretend that AECC is complaining that the safe harbor toppers are too effective. BNSF Reply Argument at 17 n. 9; Carré/Murphy RVS at 6-7. In reality, the problem is that BNSF is not taking the requirements for topper performance seriously, and it is shippers who will pay the price for BNSF's disregard.

BNSF insists that its safe harbor standard requires that an approved topper must reduce coal dust emissions by 85% "relative to cars that have not been

profiled or treated with toppers" BNSF Reply, Bobb RVS at 3. 8/ However, as AECC showed in its Opening, in the Super Trial BNSF based its approval of safe harbor toppers on their performance relative to cars that had been profiled in accordance with the BNSF tariff. AECC Opening Argument at 15; AECC Opening, Nelson VS at 37-39.

This does not mean that the "effectiveness [of the safe harbor toppers] may actually exceed the 85% reduction required by BNSF's Coal Loading Rule", as BNSF cleverly claims (BNSF Reply Argument, Carré/Murphy RVS at 6). In fact, BNSF had to manipulate the Super Trial procedures to achieve the desired 85% result, by testing the toppers under idealized, unrealistic conditions, as AECC showed in its Opening. The Super Trial failed to give adequate consideration to the effect on topper performance of cold weather, rain, wind, train speed, application problems, etc., as well as the {{ }} issue described above. Actual performance in the real world of the safe harbor toppers would be substantially less than 85% AECC Opening Argument at 17-21; Nelson VS at 40-45.

BNSF tried in its Reply to justify the exclusions from testing it implemented, but its rationalizations are inadequate, as Mr. Nelson shows in his rebuttal verified statement. Nelson Rebuttal VS at Part 4. BNSF's own data shows that toppers do not perform well in cold weather, but it did not test toppers in winter, rain

8/ The Tariff says Shippers "must take measures to load coal in such a way that any loss in transit of coal dust from the shippers' loaded coal cars will be reduced by at least 85 percent as compared to loss in transit of coal dust from coal cars where no remedial measures have been taken." BNSF Price List 6041-B, effective Sept 19, 2011, Item 100 (the "Coal Dust Tariff"), ¶ 2 (emphasis added) On the other hand, the safe harbor provision, which is the specific focus of this proceeding, is less clear: "An acceptable topper agent is one that has been shown to reduce coal dust loss in transit by 85% " Id., ¶ 3 B.

adversely affects topper performance, but BNSF postponed planned tests if rain was expected, and excluded topper tests when rain nevertheless was experienced; train speed affects topper performance, and BNSF has not disputed Mr Nelson's observation that BNSF reduced the speed of the test trains used to compute the percent reduction results in the Super Trial.

Thus, there is no basis upon which anyone can believe that the toppers BNSF has approved will in practice achieve an 85% reduction in fugitive coal, whether measured against cars that have been profiled or have not been profiled. BNSF's determination that the safe harbor toppers satisfy that standard is based on BNSF's unilateral decision to exclude from testing many circumstances under which toppers are known to perform poorly. BNSF would have no incentive to do the same for shipper-proposed alternatives; so even though such alternatives might in practice be better than the approved safe harbor toppers, they might not meet the illusory 85% standard

6. Substantial Progress Has Already Been Made In Reducing Fugitive Coal, And More Progress Can Be Made Without Mandating Toppers.

BNSF asks this Board to believe that the new tariff and the safe harbor provision are the only possible approach to the coal dust "problem" Thus, when AECC points out flaws in the tariff and safe harbor, BNSF claims that this is an "argu[ment] . that coal shippers should not have to take any measures to address coal dust . ." BNSF Reply Argument at 2. BNSF refers to "The Do-Nothing Approach Advocated By AECC", which BNSF calls "irresponsible" Id. at 16

Yet the Board well knows that shippers have taken substantial actions to contain coal in rail cars, most importantly through the adoption of the breadloaf profile

recommended by BNSF. BNSF's own studies showed that profiling alone reduced coal dust deposition by 40-70% AECC Opening, Nelson VS at 35. In addition, some mines have followed the conclusions of BNSF consultants that use of 3" coal instead of 2" would reduce coal dust by 20% (and the combination of profiling and larger coal sizes would reduce coal dust by over 60%). Id. at 36.

Now, in its Reply in this case, BNSF disparages such shipper efforts because they will not "achieve an 85% reduction in coal losses in transit as required by BNSF's Coal Loading Rule." BNSF Reply Argument at 18. But, as discussed above, the 85% standard in the safe harbor tariff is entirely arbitrary, it is not supported by any kind of cost-benefit or cost-effectiveness analysis. It is a number plucked out of the air. If measures that shippers have already taken reduce coal dust by 60-70% (as BNSF consultants say) then is it really necessary to spend $50-150 million per year for another 15-25%?

BNSF doesn't care. It's someone else's money. But the Board should care.

CONCLUSION

The safe harbor provision seeks to impose on coal shippers unreasonable obligations to spend many tens of millions of dollars every year to address a problem that is principally caused by the railroads themselves. Coal shippers have already taken cost-effective measures to assure that coal is properly loaded in railcars in a manner that assures that coal dust is not routinely released during transport. Now, the railroads

must stop sitting on their hands, and must take meaningful responsibility to transport coal cars in a manner that avoids releasing or spilling the shipment.

The Board should declare the safe harbor tariff to be an unreasonable practice and invalid.

Respectfully submitted,

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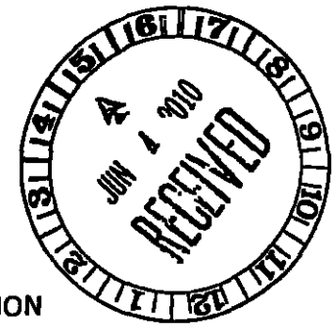
Dated: December 17, 2012

EXHIBIT I PUBLIC

PUBLIC VERSION

BEFORE THE
SURFACE TRANSPORTATION BOARD

STB Finance Docket No. 35305



PETITION OF ARKANSAS ELECTRIC COOPERATIVE CORPORATION
FOR A DECLARATORY ORDER

ARKANSAS ELECTRIC COOPERATIVE CORPORATION'S REBUTTAL EVIDENCE AND ARGUMENT

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Dated: June 4, 2010

BNSF Reply Argument at 14. But saying that it is "undeniable" that coal dust contributed to the derailments is not evidence that it did so, and BNSF has not proved that coal dust played a significant role in causing the derailments. All BNSF has done is repeat, over and over, that coal dust threatens to disrupt Joint Rail service, and to repeat, over and over, the claim that coal dust did so in 2005. Repetition is not the same as evidence.

On the other hand, the evidence presented by AECC, as well as by other parties, shows that coal dust did not cause the derailments. See AECC Opening Argument at 6-15, De Berg VS at 8-12, Nelson VS at 9-25; AECC Reply VS at 9-13, Nelson Reply VS at 16-20; De Berg Rebuttal VS at 8-18, Nelson Rebuttal VS at 17-31.

Other than its unsupported claim that coal dust caused the 2005 derailments, BNSF offers no support for its claim that its coal dust tariff is necessary to prevent a service disruption. As discussed in subpart 1, above, proper maintenance can deal with coal dust deposition on the Joint Line. If the Line is properly maintained in the future, there is no need to fear that another catastrophe will occur. Of course, that's a big "if", because BNSF is trying as hard as it can to skimp on maintenance expenses (see Part F, below). The coal dust tariff is clearly intended to justify doing that.

3. It Would Be Much More Expensive To Reduce Fugitive Coal Dust Through The Use Of Surfactants Than To Continue To Deal With It As Part Of Track Maintenance.

The issue in this case is whether the coal dust tariff is "reasonable", (49 U.S.C § 11101), and the concept of reasonableness "has long been associated with the balancing of costs and benefits." International Union, United Auto., Aerospace & Agric. Implement Workers v. OSHA, 938 F.2d 1310, 1319 (D.C. Cir. 1991) ("courts have often taken the word 'reasonable'

in a statute to require that burdens be justified by the resulting benefits") (citing Consolidated Rail Corp. v. ICC, 646 F.2d 642, 648 (D.C. Cir. 1981), cert. denied, 454 U.S. 1047 (1981))

In AECC's opening, we showed that BNSF's own internal analyses showed that it would cost much more to comply with the coal dust tariff than any possible savings in maintenance costs that would result from the dust reduction BNSF seeks to achieve. See AECC Opening Argument, at 17-19, and Nelson VS, at 26-28. See also WCTL Opening Argument, at 34-37 and evidence cited therein. In its opening, BNSF provided no analysis of costs and benefits, as we noted in our reply. AECC Reply Argument at 13-16

BNSF criticizes these figures because they ignore the "costs of possible service interruptions" and "the impact of increased maintenance on PRB rail capacity". BNSF Reply Argument at 16. But, as discussed in subpart 2 above, coal dust hasn't caused "service interruptions" in the past, and it doesn't threaten "possible service interruptions" in the future. And as discussed in subpart 1 above, coal dust isn't responsible for the fact that the Joint Line needs a lot of maintenance, the tremendous volume of traffic is responsible (and with three tracks throughout, and four tracks in places, there ought to be plenty of capacity on the line to maintain it and operate it at the same time).

Belatedly, in its own reply, BNSF presents a verified statement from its witness Mr. VanHook that, BNSF says, "shows that the incremental maintenance costs associated with coal dust from PRB trains exceeds the cost of surfactant application by a substantial margin." BNSF Reply Argument at 19. Even BNSF doesn't seem to have a great deal of confidence in Mr. VanHook's cost-benefit analysis ("It is not necessary for the Board to bless Mr. VanHook's cost

analysis for purposes of this proceeding" [Id]), and the rebuttal testimony of AECC's Mr. Nelson shows that BNSF's reluctance was justified

Mr. VanHook's cost-benefit analysis differs from the results of BNSF's past internal analyses, which concluded that the cost of applying surfactants to coal cars would exceed the savings in maintenance that would be achieved from the reduction in fugitive coal dust As Mr. Nelson explains in his rebuttal statement, Mr. VanHook is able to show much larger maintenance savings by incorporating into his estimates unexplained and unjustified increases in maintenance costs. For example, in 2005 BNSF estimated the unit cost for undercutting at [redacted] (a figure that was somewhat higher than the figure used by UP and BNSF to apportion Joint Line maintenance costs), but Mr. VanHook uses [redacted] without any explanation. See Nelson Rebuttal VS at 36. In another instance, Mr. VanHook uses a unit cost of [redacted] for vacuum trucks, which represents an increase of [redacted] compared to the 2005 level of [redacted]. Mr. Nelson corrected Mr. VanHook's cost figures and generally used BNSF's 2005 costs plus a reasonable degree of inflation from 2005 to 2010 (generally 12%) Nelson Rebuttal VS at 35-36.

Mr. VanHook also exaggerates the amount of maintenance savings that BNSF might realize if its coal dust tariff achieved its dust-reduction goal. Mr. VanHook's estimate assumes that, without control of coal dust deposition, undercutting would need to be performed on average every [redacted] but this would be extended to every [redacted] if the coal dust tariff were implemented. The 10 year cycle, however, fails to take account of the fact that that coal constitutes at most only [redacted] by volume of the undercutter waste on the Joint Line. The other [redacted] of fouling agents would still be there, and would have to be

removed through periodic undercutting. Eliminating all coal dust fouling would extend the [redacted] cycle to [redacted] not [redacted] Nelson Rebuttal VS at 36

However, surfactants would not eliminate all fugitive coal dust deposition; a substantial quantity of fugitive coal would still land on the ballast. A study cited by UP found that an average of [redacted] pounds of coal will leave the top of each railcar even with a surfactant applied (compared to 225 pounds if no surfactant is used). Thus, application of a surfactant would only eliminate [redacted] of the fugitive coal accumulation, so BNSF's undercutting cycle would be extended by the tariff from every [redacted] to every [redacted] Id. at 37.

As a result of Mr. VanHook's unjustified increase in unit costs and his failure to take account of undercutting requirements that would exist even after the reduction of fugitive coal dust, his annual estimate for undercutting cost savings is three times what it should be. Id. at 37-38.

Mr. Nelson's revisions to Mr. VanHook's cost estimates to correct these and other errors are discussed in detail in his rebuttal statement at 34-43. What they show is that the analysis that Mr Nelson presented in his opening, based on BNSF's own figures, is still correct. the cost to comply with the coal dust tariff would far exceed the benefits to BNSF. It is simply not reasonable to require shippers to pay large sums of money to spray surfactants on their cars to save BNSF a little money on maintenance.

* * *

Thus, all three of BNSF's arguments why coal dust should be dealt with by shippers paying to apply surfactants are wrong. The high level of maintenance required on the Joint Line is the result of the high volume of traffic on the line, not the presence of coal dust.

5. Cost/Benefit Analysis Shows That BNSF's Coal Dust Tariff Is Unjustified

On page 15, BNSF argues that comparative cost analysis is not the right way to assess the reasonableness of its coal dust requirements. This contention is not only unsupported, but also is voided by BNSF's own advocacy of "efficiency" considerations as determining factors.[47]

The costs of needed rail maintenance and capacity are certainly legitimate considerations, but in the public interest they are no more legitimate than are the costs that would be incurred by shippers to satisfy BNSF's requirements. BNSF has pressed forward with its requirements in the apparent hope that the Board will attach overriding significance to the costs BNSF incurs, irrespective of the impacts on shippers. That would be wholly inconsistent with the Board's mandate to administer the public interest, as opposed to BNSF's private interests

On page 16, BNSF describes as "meaningless" the cost comparison presented in my opening VS, in part because it supposedly ignores the impact of increased maintenance needs on PRB rail capacity. The values I presented were drawn from BNSF's own studies, which purported to [redacted]

The cost-benefit analysis offered in reply [redacted] It is important to note that having

[47] BNSF Reply Argument at 15 and VS VanHook at 24.

benefits exceed costs is a necessary condition, but not a sufficient condition, to proceed along any given course of action regarding coal dust control. As indicated in my opening VS at page 28 n40, the action would also need to maximize the excess of benefits over costs. However, for the Tariff the analysis does not need to consider such issues, since [redacted] the cost-benefit analysis reaffirms the conclusion of my opening VS that the application of toppers would not be cost-effective.

(a) Costs

The railroad reply witnesses present anecdotal evidence suggesting that toppers may not be as costly as indicated in the railroads' earlier study. However, that study contemplated that costs would vary according to the circumstances at different mines, and the anecdotal evidence appears to fall within the expected range. Moreover, neither shippers nor the Board can have any confidence that the "introductory" pricing of a topping supplier seeking to establish a presence in this new market, especially during a recessionary period, will reflect fully the longer-term cost components captured in the railroads' study. In short, the railroads have provided no basis for relying on costs lower than those contained in the railroads' study. If anything, those estimates may need to be increased somewhat to account for general price inflation, though as a practical matter that has been minimal

(b) Benefits – Joint Line Maintenance/Operational

The principal benefit from the use of toppers would be the reduction of Joint Line maintenance costs and operational impacts that could be achieved through reduced coal

deposition. Even before the [redacted] [redacted][18] Essentially the same analytical framework was used by witness VanHook to develop the estimate presented in Exhibit 7 of his Reply VS.[49] In 2005, the annual maintenance cost impact of coal dust on the Joint Line estimated using this framework was [redacted]/year,[50] with the operational impacts of maintenance windows and slow orders adding [redacted] year, for a total of [redacted]; Mr VanHook's estimates include annual maintenance cost impacts of [redacted] and operational impacts of [redacted] for a total of [redacted]

The specific numerical results produced by the framework reflect a series of implicit and explicit assumptions and data inputs The differences between the 2005 estimate and witness VanHook's estimate can best be understood, and the reasonableness of Mr. VanHook's estimate can best be assessed, by reviewing those assumptions and data inputs

Obviously, some underlying facts have changed that may affect the numerical results For example, the numbers of track miles and turnouts are higher now than they were in 2005, and my estimate relies on the values for those parameters supplied by Mr.

[48] See BNSF COALDUST 0015810. The fact that this document was composed before the Joint Line derailments confirms that BNSF from the outset viewed coal dust as a cost reduction issue. The entire purpose of the extra maintenance costs estimated in the framework is to ensure that track instability does not occur. The threat of track instability certainly contributes to the need for the measured incremental maintenance, but does not .provide "extra" benefits if the costs of incremental maintenance have properly been estimated.

[49] This discussion addresses the estimation of the cost impacts of fugitive coal dust on the Orin Subdivision (i e., the Joint Line). Witness VanHook's methods of extrapolating these results to other trackage are discussed separately.

[50] The original reported result of $13,888,525 included a line item for a one-time, nonrecurring right-of-way cleanup cost of $640,000 (which itself appears to have been miscalculated, since 80,000 x 40 = 3,200,000, not 640,000). That line item properly was [redacted]

VanHook. Likewise, all else equal, general price inflation has added approximately 12 percent to unit costs since 2005. In addition, information developed since 2005 now permits greater accuracy in the development of estimates of rail cost savings that would be associated with the use of toppers. The reasonableness of specific elements of Mr. VanHook's estimate of incremental coal dust maintenance costs is examined below in light of these considerations, and a revised estimate is developed that corrects for the problems in Mr. VanHook's analysis that are identified.

Unit costs – One of the most striking features of [redacted] a figure that was somewhat higher than the figure used by UP and BNSF to apportion Joint Line maintenance costs.[51] Mr. VanHook's use of [redacted]/mile as the unit cost is unexplained and inconsistent with the available evidence

In other categories, the amount of [redacted] my analysis generally assumes that unit costs from 2005 to 2010 increased by 12 percent, reflecting general price inflation As discussed further below, for some line items I use the unit cost information provided by Mr. VanHook, and for some line items the unit costs I used, based on a 12 percent increase over 2005 levels, are higher that Mr. VanHook's.

[51] See BNSF COALDUST 0001642.

Undercutting requirements – Mr. VanHook's estimate assumes that [redacted] reasonably consistent with a value developed in my reply VS.[52] However, his use of a [redacted] First, BNSF's own data show that coal constitutes only [redacted] by volume of the undercutter waste on the Joint Line Even this figure likely represents an upper bound on the percentage that coal forms of the material occupying the voids of fouled ballast, since the undercutter typically takes in materials sitting on top of the ballast that are not in the voids. Using the [redacted] figure as an upper bound for the purpose of this analysis, even if no coal were deposited on the ballast, BNSF would need to undercut every [redacted] years to ensure that the fouling of ballast was no more severe than it would be on a [redacted] year cycle with no toppers.

This leads to the second consideration, which is that, even with toppers, a substantial quantity of fugitive coal will still land on the ballast As the study cited by UP found, an average of [redacted] pounds of coal will leave the top of each railcar even with a topper applied (compared to 225 pounds if no topper is used).[53] All else equal, fugitive coal will still accumulate at a rate approximately [redacted] of the rate at which it

[52] AECC Reply VS Nelson at 10. I believe that BNSF has further opportunities to reduce the need for undercutting in response to coal dust through more careful analysis of fugitive coal accumulation patterns and application of improved procedures, including GPR (as discussed in my reply VS), to target undercutting to the areas where it is needed However, my analysis includes no adjustment that would reduce the estimated coal dust costs to reflect this consideration

[53] Coal will also continue to leave the bottoms of railcars This is discussed under turnout/bridge undercutting (below)

accumulates with no topper.[54] With only [redacted] percent (rather than 100 percent) of the fugitive coal accumulation eliminated by the topper, BNSF would need to undercut every [redacted] years to ensure that the fouling of ballast was no more severe than it would be on a [redacted] year cycle with no toppers.[55] This is the value used in the corrected estimate.

Due to witness VanHook's failure to account for [redacted] he has overstated (by about [redacted] percent) the size of the impact that the application of toppers would have on annual undercutting requirements. Combined with his apparent [redacted], Mr. VanHook's estimate of increased annual undercutting cost [redacted] is approximately [redacted]

Turnout/Bridge Undercutting – Mr. VanHook utilizes an estimate that turnouts and bridges need to be undercut on a cycle that is [redacted] my observation that vibration issues at turnouts and bridges cause the deposition of fugitive coal to be concentrated at such locations. Since vibration-related deposition, especially from the bottoms of cars, is not known to be susceptible to effective control through the application of toppers, my estimate preserves in the "topper" scenario the [redacted] In this category I have utilized [redacted] rather than the inflation adjusted

[54] Computed as [redacted]
[55] Computed as [redacted]

unit cost from 2005 to account for the possible higher unit costs of undercutting on bridges [redacted]

Ties, Insulated Joints, Frogs, Switches and Rails – [redacted]

For the purposes of my analysis I include requirements for these track components, but correct [redacted] I note that inclusion of these components, even as I have calculated them, may tend to overstate actual maintenance cost impacts.

Switch winterization (vacuum trucks) and switch failures – [redacted] My analysis adjusts the requirements from the 2005 estimate to account for the increased number of turnouts and [redacted]

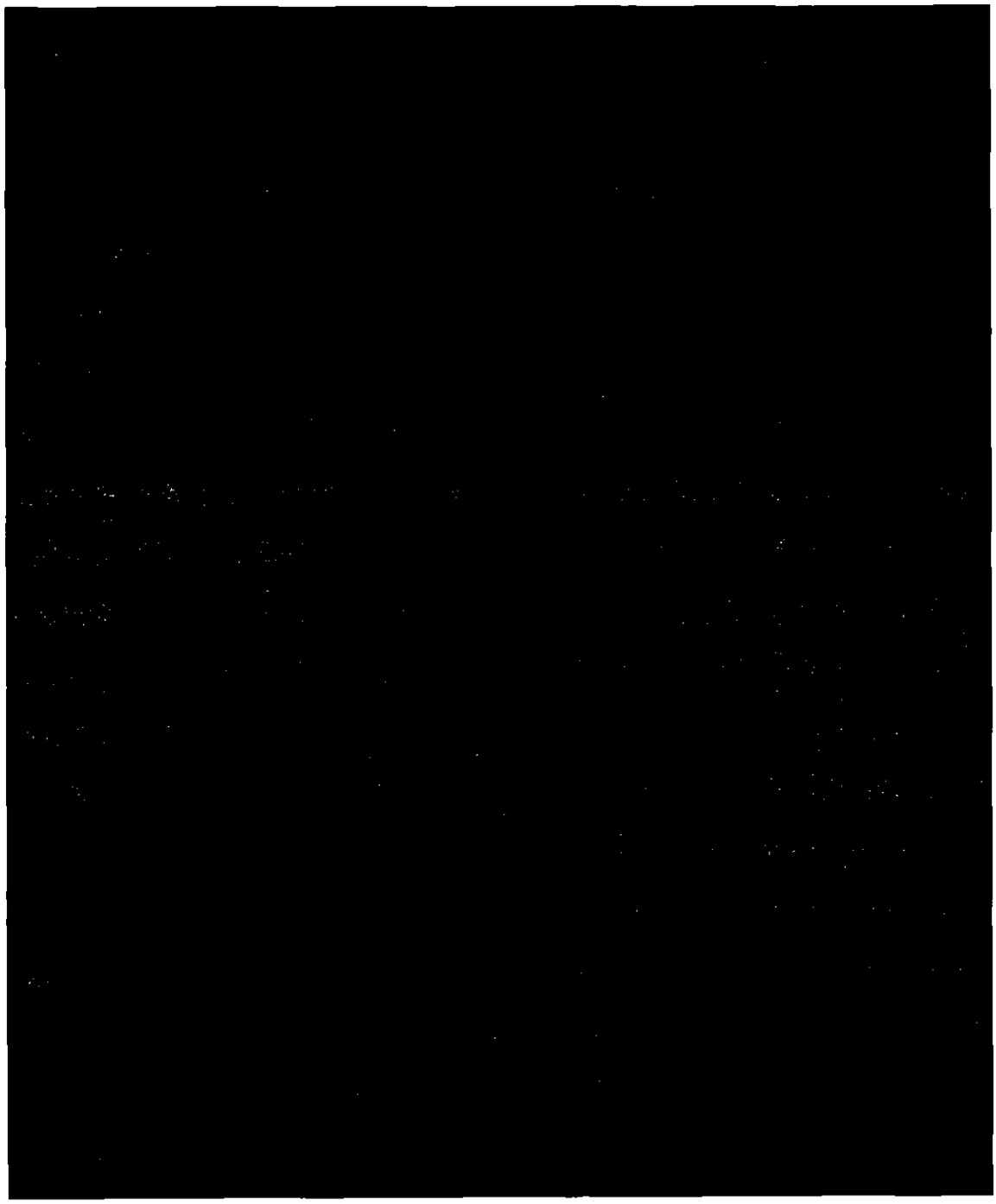
Track availability (slow orders) – The 2005 estimate included [redacted] a central purpose of the incremental maintenance costs estimated in this analysis is to minimize or eliminate the occurrence of unforeseen events related to coal dust that would cause the need for a slow order in the first place.

[redacted] the infrastructure changes that have occurred on the Joint Line since the 2005 analysis, and that dramatically reduce the operational impact of slow orders. Subsequent to the 2005 analysis, the entire Joint Line became triple-tracked, so even if one track has to be taken out of service, two tracks remain to support high-capacity directional operations Moreover, BNSF has built the new track and relocated existing track to produce 25' on-center separations between adjacent tracks [56] This generally permits full-speed operation even when maintenance is being performed on an adjacent track.

On the basis of these considerations, [redacted] For the purposes of this analysis, I have used 50 percent of the 2005 estimate, adjusted to reflect general price inflation since 2005, as well as [redacted]

[56] BNSF Reply VS Vanl look at 16, n3.

[redacted]



My analysis shows that the annual maintenance savings achieved through the use of toppers would be no more than $10.95 million, and that the total savings would be no more than $13.59 million. These figures are [redacted]

because the increases in the amount of Joint Line infrastructure and in general price levels that have occurred since 2005 have been [redacted] Mr. VanHook's own description of the way that Joint Line infrastructure improvements have mitigated the need for and operational impacts of slow orders.

Benefits – Other Lines

[redacted]

[redacted] the entire body of evidence in this proceeding uniformly shows that (a) the deposition of fugitive coal declines significantly with distance; (b) coal volumes dissipate as Joint Line traffic moves onto different routes away from the Basin; and, (c) the effectiveness of the low-water toppers under consideration declines with distance. There is no need to perform a formal correction of Mr. VanHook's methodology in this area, because the number of multiples of the corrected Joint Line maintenance and operational savings that would be needed to justify the costs of the toppers would not comport with these realities.

Benefits – Retention of Coal

I concur in principle with the general proposition advanced by BNSF reply witness VanHook[59] and UP reply witness Glass[60] that it is appropriate to take into

[57] See BNSF COALDUST 0019748+.
[58] See BNSF Reply VS VanHook, Exhibit 11.
[59] BNSF Reply VS VanHook at 32-33
[60] UP Reply VS Glass at 7

account the value of any increase in the quantity of coal actually delivered to customers by virtue of the improved retention of coal provided by a topping agent (or any other dust control strategy). Depending upon such factors as the quantity of the coal retained and the value of that coal, the retention of coal can be a significant consideration in some circumstances. However, I believe the railroad witnesses have overlooked an important consideration that appears to moot this issue, at least for PRB coal.

The additional consideration that must be taken into account before such a benefit can be ascribed to a topper program is that the weight the treatment material itself adds to the car must be subtracted from any improvement in coal retention to account for the fact that, all else equal, the weight of the treatment reduces (by a very small percentage) the amount of coal that can be loaded into a treated car relative to an untreated one. Using an exaggerated example for illustration, if a car can carry a total net weight of 240,000 pounds without going overweight, an untreated car can be loaded with as close to 240,000 lb. of coal as such circumstances as the accuracy of loading equipment and scales will permit, while a car that is to receive 1000 pounds of topper can only be loaded with as close to 239,000 pounds of coal as such circumstances will permit. Put another way, the amount of coal the shipper receives from each car is determined not only by the ability of the topper to retain coal, but also by the restriction on lading imposed by the weight of the topper itself.

For PRB coal, the weight measurement study cited by UP concluded that coal loss from the tops of untreated cars averages 225 pounds,[61] and that the average coal loss from

[61] See UP Reply VS Beck at 2. BNSF witness VanHook relies on [redacted]

the tops of treated cars is [redacted] pounds [62] That study further estimated the weight of the added topper (including water and solids) as [redacted] pounds per car.[63] In theory, the mine could load the car with [redacted] pounds of coal, add [redacted] pounds of topper and stay within the assumed 240,000 lb net weight limit Holding aside any changes in moisture content, such a car would lose [redacted] pounds of coal enroute, and the shipper would receive [redacted] pounds of coal. However, if the mine loaded 240,000 pounds of coal and applied no topper, the shipper would receive 239,775 pounds of coal. In short, the best available evidence indicates that in the case of PRB coal [redacted] would be created by the introduction of a topper spraying program. Therefore, it would not be proper to include any benefit of this type in the cost-benefit analysis.

Even though the retention of coal does not lead to a net benefit, BNSF claims that its maintenance savings from the control of coal dust through the application of toppers would be greater than the costs that would be incurred by shippers to do so. However, it never explains why, if this is correct, BNSF long ago did not ask shippers for permission to apply toppers at its own expense, or implement a simple rate incentive to obtain such permission.

(c) Other Applications of Toppers

BNSF's argues that "(T)he State of Virginia requires that steps be taken to curtail coal dust emissions from moving coal trains."[64] As it did when it first attempted to threaten shippers with draconian penalties for failure to comply with its unilateral coal

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[redacted] and estimated the actual coal loss to be 225 pounds/car

[62] See BNSF COALDUST 0033110

[63] Calculated as [redacted] See BNSF COALDUST 0033108

[64] BNSF Reply Argument at 7

PUBLIC

REBUTTAL VERIFIED STATEMENT

OF

MICHAEL A. NELSON

REBUTTAL VERIFIED STATEMENT
OF
MICHAEL A. NELSON

1. Qualifications

My name is Michael A. Nelson. I am an independent transportation systems analyst with 32 years of experience in railroad competition and coal transportation. My office is in Dalton, Massachusetts My qualifications were described in the verified statement I submitted in support of AECC's opening comments in this proceeding.

2. Subjects Covered in This Statement

I have been asked by AECC to investigate and respond to criticisms of the opening comments of shipper parties, including the opening verified statement I submitted on behalf of AECC, made by BNSF Railway ("BNSF") and Union Pacific Railroad ("UP") in their reply filings. A closer look reveals that those criticisms frequently misrepresent AECC's comments and/or ignore critical evidence If anything, the criticisms highlight the lack of foundation for and internal inconsistencies of the railroads' own positions, and undermine the railroads' entire premise for forcing use of chemical toppers on PRB coal shippers.

Specific issues addressed in this statement include the following

- BNSF offers no attempt to quantify the economic benefits of the safe harbor toppers, and concedes outright that the effect of the toppers on maintenance costs are small or negligible, and that shipper compliance with the safe harbor may not produce any tangible reduction in BNSF's costs. Toppers don't make it out of the starting gate on cost-benefit criteria, because by BNSF's own assertion they don't or won't produce tangible economic benefits,
- The absence of tangible economic benefits highlights the arbitrary nature of BNSF's 85 percent reduction standard;
- BNSF ultimately rests the entire rationale for safe harbor toppers on the "infrastructure stability" issue, but fails to address effectively the withdrawal of

disappearance of both of the sources of support the railroads (and the Board) have relied upon for the proposition that fugitive coal possesses uniquely harmful properties as a ballast foulant No one has disputed the proposition that excessive ballast fouling should be avoided and that excessively fouled ballast tends to become unstable when wet, but the railroads' position that toppers are required to protect the stability of track infrastructure against coal dust is unsupported,

- BNSF tries unsuccessfully to sidestep plain evidence that the safe harbor toppers are unable to withstand the rigors to which they would be exposed, and that their effectiveness is far lower than BNSF has claimed, and may well be negative BNSF's repeated references to laboratory testing are trumped by the {{[redacted]}} observed in BNSF's own field tests;
- BNSF similarly is unsuccessful in ducking the environmental concerns I raised regarding the use of toppers.
- BNSF claims its use of toppers is consistent with that in other locations, but those other locations involve situations where coal dust raised nuisance impacts on third parties, and toppers were applied in response to actions taken or requests made by relevant governmental authorities. Nowhere in the world have toppers been used for the purpose and in the way that BNSF proposes;
- BNSF continues in its efforts to marginalize or deny the improvements in coal containment that have been achieved through actions other than application of chemical toppers. Indeed, BNSF discredits methodologies and conclusions advanced by its own consultants in order to create a false impression that toppers are the only option for controlling fugitive coal. BNSF's inability to quantify the impacts of coal dust on its current and future maintenance activities and costs forms prima facie evidence that such impacts now are small or negligible. This affirms that substantial reductions in fugitive coal deposition already have been achieved,
- BNSF relies in large part on its monitoring of load profiles to disavow the effectiveness of past coal containment actions, but its claims are self-contradictory, and illustrate how BNSF seeks to make shippers responsible for addressing fugitive coal caused by the railroad's own acts and omissions;
- From the outset AECC has pointed out the need for the railroads to take responsibility for the portion of fugitive coal that results from railroad operating and maintenance practices that affect railcars in transit. UP's attempt to criticize AECC's citation to a UP study highlights the way the Board should be looking to good railroading – not non-economic toppers – as the primary source of further, cost-effective progress on fugitive coal containment; and,
- The railroads have offered no reply to the portion of my opening statement that illustrated, using an example drawn from BNSF's own data, how good railroading would address a very large proportion of remaining fugitive coal releases

At the end of the day, BNSF has come to the Board with a proposal that has no precedent, no tangible economic benefits, a high likelihood of failure in the real-world conditions that prevail in the PRB for much of the year, and a substantial likelihood of failure even when conditions are ideal Moreover, the proposal seeks to place responsibility for all in-transit coal loss on shippers, and excuse BNSF from any responsibility for the demonstrated effects of its own actions on fugitive coal deposition. The evidence shows that this proposal rests on a foundation of retracted conclusions, phantom studies, misinterpreted statistics and neglected evidence, and is not sound or reasonable

Reduction of fugitive coal deposition in transit is a worthwhile objective, but at this point the path to get there depends most heavily on good railroading, not on Board endorsement of a deeply flawed plan for which BNSF has gained shipper participation only through duress The Board should reject the safe harbor, and make clear to the railroads that it takes seriously the railroad responsibility for the aspects of a railcar's journey that the railroad controls At the same time, the Board could make clear to shippers that its rejection of the safe harbor does not allow shippers to pack their tents on fugitive coal control efforts, and that shippers are expected to continue their reasonable efforts to contain coal within railcars.

Putting an end to the controversy associated with the forced use of toppers, combined with suitable admonitions to both shippers and carriers, would provide a clean slate for the parties to get back to work on viable and reasonable improvements in fugitive coal control. This would provide an opportunity for the railroads to extend and enhance the types of good railroading practices that already have been shown to be effective in addressing underlying causes of fugitive coal

3. Economic Benefits

In Dust I, BNSF's reply filing contained an elaborate estimation of the line-item impacts on several categories of BNSF's costs that would be associated with control of fugitive coal releases [1] In AECC's rebuttal filing, I presented a detailed response to BNSF's estimates that reconciled obvious inconsistencies between those estimates and other evidence in that proceeding. My analysis indicated that BNSF had greatly overstated the cost impacts of fugitive coal, but that such impacts, while comparatively modest, were at least measurable.[2]

In this proceeding, BNSF has abandoned any claims that reducing fugitive coal will reduce its maintenance-related expenses Indeed, BNSF's reply comments contain the profound concession that shipper compliance with the safe harbor may not "have any impact on BNSF's costs, certainly in the near future" [emphasis added].[3]

This concession has major implications for assessment of the economic and public interest merits of the safe harbor. It has already been shown that the coal shippers cannot expect to receive more coal from each car as a result of application of the safe harbor toppers,[4] so the only other plausible measurable benefits from the use of toppers would be savings that stem from reductions in needed maintenance efforts and expenditures on the part of BNSF. In Dust I, the line-item coal dust cost impacts claimed by BNSF ranged from increased undercutting and shoulder ballast cleaning, to vacuum trucks, to maintenance window costs, and more. My rebuttal testimony demonstrated the way BNSF's estimates had overlooked critical relevant facts, including (a) the {{[redacted]}} that fugitive coal forms of the materials that foul PRB rail ballast; (b) the nontrivial amount of fugitive coal that enters rail

[1] Dust I, BNSF Reply VS VanHook at pages 23-31
[2] Dust I, AECC Rebuttal VS Nelson at pages 32-41
[3] BNSF Reply, Argument at page 24
[4] Dust I, AECC Rebuttal VS Nelson at pages 42-44

ballast even when toppers are used; (c) substantial discrepancies between the unit costs of some maintenance functions claimed in {{ }} vs. the values for the same unit costs {{ }}, and, (d) the reduction in maintenance window issues associated with the extension of triple-tracking and the introduction of quadruple-tracking on the Joint Line. If all of the various benefits previously identified and claimed by BNSF are, in fact, negligible, the safe harbor would produce literally no quantifiable benefits.

The safe harbor therefore does not and cannot satisfy the optimality condition of being the approach that maximizes the excess of benefits over costs, since it does not produce any excess of benefits over costs. Indeed, the greatest net benefit from the safe harbor toppers can only be achieved by not using them.

Even under the more relaxed "reasonably commensurate" standard advanced by the Board, it is impossible to view the expenditure of many tens of millions of dollars on topper application as being "reasonably commensurate" with zero tangible benefits. If there are no beneficiaries of a given action, or if the benefits are negligible relative to the costs, economic analysis would categorize the action as a misallocation of resources. The National Transportation Policy provides the Board with explicit guidance to avoid such unsound economic conditions.[5] Basically, BNSF's declaration on maintenance costs makes it impossible to justify the safe harbor using any type of conventional cost-benefit grounds.

4. 85 Percent Reduction Standard

The absence of tangible economic benefits also highlights the arbitrary nature of BNSF's 85 percent reduction standard. In attempting to explain BNSF's selection of the 85 percent standard, BNSF reply witness Bobb references BNSF's belief that it would be "commercially

[5] Section 10101(5)

feasible to achieve an 85 percent reduction". Witness Bobb does not explain what he means by the phrase "commercially feasible". Normally, commercial feasibility would connote a situation in which a rational business entity would voluntarily undertake an action on the basis of its own self-interest Such self-interest would normally be present only if the benefits of the action to the entity maximized the excess of benefits over costs among alternative courses of action available to the entity.

In light of BNSF's declaration that the safe harbor toppers do not produce tangible economic benefits, it is not possible to justify any particular percentage reduction standard as "commercially feasible" Any reduction that does not produce economic benefits, but can only be achieved through the expenditure of resources, will not be commercially feasible. The only percentage reduction that would be even marginally justifiable, if it produces no significant benefits, is one that can be achieved at no cost.[6]

What witness Bobb apparently means by "commercially feasible" is that coal shippers have enough money to pay the cost of the toppers if they were to be compelled to do so. However, this is not a legitimate consideration in a public interest assessment of the safe harbor toppers. The economic merits of the safe harbor toppers are determined by their costs and benefits, not by the availability of a party that could be forced to pay for them. Whether shippers have the money or not, spending that yields no benefit is a waste.

While BNSF has basically extinguished the possibility that its 85 percent standard could be justified on economic grounds, I would like to clarify some of the points made in my opening verified statement regarding the 85 percent standard, which have been muddied by the reply comments. First and foremost, based on the evidence I do not believe that any topper would

[6] See Section II, below.

actually achieve an 85 percent reduction in the real-world conditions in which it would have to perform. My opening verified statement described the systematic exclusion from topper testing of many circumstances in which toppers perform poorly, including cold weather, wind and rain [7] Regarding cold weather, BNSF witness Emmitt observes that at least one topper was tested in March and April, and that it gets cold in Wyoming in March and April.[8] However, he forgets to mention that in {{ }} BNSF's 85 percent reduction standard.[9] Witness Emmitt also observes that the toppers have a low freezing point, a factoid that does not remedy or even acknowledge the {{ }}.[10]

Witness Emmitt's comments about the exclusion from the Super Trials of samples affected by rain are similarly misleading He claims that such samples were not excluded because rain caused toppers to perform poorly,[11] apparently hoping that the Board is willing to approve use of toppers without looking at any evidence regarding the frequency with which such poor performance actually occurs.[12] Likewise, he asserts that "the Super Trial included tests on

[7] AECC Opening VS Nelson at pages 40-44 In addition, I note that BNSF has not disputed my observation that the "gizmo" trains used for PC testing in the Super Trials appear to have been {{ }} (AECC Opening VS Nelson at pages 44-45) I have identified three movements for topper tests in which the { }

[8] BNSF Reply VS Emmitt at page 9.

[9] BNSF COALDUSTII 00573460-462

[10] These were described further in AECC Opening VS Nelson at page 41, particularly footnote 99

[11] BNSF Reply VS Emmitt at page 8.

[12] In the Super Trials, a deliberate and concerted effort was made to avoid sampling on days when rain was forecast for the given mine or route of travel While some samples nevertheless experienced rain in the middle or latter parts of their movements, I have identified only 3 movements that apparently experienced rain during the critical early part of the movement, before the topper has fully cured In one of those three movements, which occurred on May 20, 2010, rain apparently contributed to the result that the average PC weight for untreated cars was {

windy days".[13] but provided no substantive response to the evidence that wind caused the toppers to {{ }} and that {{ }} Wind is a particularly important factor in the context of topper integrity issues; as BNSF's own witnesses have pointed out the thin topper layer, if applied with gaps or irregularities, is subject to "erosion" and failure.

Thus, in combination with my findings regarding topper failure and the evidence that indicates the likelihood of {{ }} my comments that address the inconsistencies associated with BNSF's 85 percent standard do not mean that BNSF has demonstrated anything about the achievement of actual reductions over 85 percent. Instead, my comments point out the inconsistency between the Super Trial analysis procedure and the standard articulated by BNSF's own witness[14], and the exaggeration by BNSF of the magnitude of the further improvement that would be needed to meet the articulated standard.

5. Infrastructure Stability

Absent any type of cost-benefit justification, BNSF rests the entire rationale for safe harbor toppers on the "infrastructure stability" issue.[15] However, it fails to address effectively the

[redacted]

[13] BNSF Reply VS Emmitt at page 9.
[14] BNSF Reply VS Bobb at page 2 affirms that BNSF's 85 percent reduction standard is supposed to be computed relative to conditions ". .before shippers and mines began taking any measures to control coal dust losses "
[15] ".. BNSF's objective in requiring shippers to take measures to keep their coal in the loaded cars is not to reduce maintenance costs but to ensure safe, reliable and efficient PRB transportation " (BNSF Reply, Argument at pages

withdrawal or disappearance of both of the sources of support the railroads (and the Board) have relied upon for the proposition that fugitive coal possesses uniquely harmful properties as a ballast foulant.

In its decision in Dust I, the Board referenced the testimony in that proceeding of BNSF witness Tutumluer, along with studies ostensibly performed by FRA, as the basis for its view that the properties of coal dust make it uniquely harmful as a ballast foulant Each of these is discussed below

Tutumluer

In my opening verified statement, I noted that subsequent to his testimony in Dust I, Prof. Tutumluer essentially {{ }}. Through further investigation, he found that {{ }} fell in line with standard engineering texts, but {{ }} the proposition for which the railroads and the Board had cited it.

Both BNSF and UP have attempted to refute my comments regarding {{ }}, but then attempts are unavailing. UP claims that my comments regarding Professor Tutumluer's {{ }}

23-24) "BNSF's objective is not to reduce maintenance costs but to eliminate the serious risks associated with coal dust fouling in the PRB " (BNSF Reply VS Bobb at page 7)

[16] { } (BNSF COALDUST[illegible]00305910-11) {{ }} (UP-AECC-00006350-51)

[redacted]}}[17] UP disregards the fact that the same statement could be made of other ballast foulants in the PRB, and even on lines that carry no coal at all.

My point on this has never been that coal dust does not fill voids in rail ballast, or that the addition of water to ballast highly fouled with coal dust doesn't affect the performance of the ballast. Rather, my point has been that coal dust has never been shown to be different from other ballast foulants in this regard [18] Professor Tutumluer's more recent work {{[redacted]}} If Professor Tutumluer had stated on the record in Dust I that {{[redacted]}}, the fallacy of BNSF's attempts to blame coal dust – rather than {{[redacted]}} along with other considerations addressed in AECC's evidence – for infrastructure instability problems would have been transparent

FRA

In Dust I, DOT's rebuttal filing claimed that research conducted at the Volpe Center provided support for the proposition that coal dust is uniquely "destructive" as a ballast foulant. In a footnote, DOT supplied a link that ostensibly provided access to the relevant research, which

[17] UP Reply, Argument at pages 4-5

[18] In Dust I, my reply verified statement described how Professor Tutumluer's original findings that coal was different from other foulants resulted from Professor Tutumluer's erroneous reliance on foulant weight rather than cubic volume, and his resulting comparison of ballast that was fully fouled with coal dust to ballast that was only partially fouled with other substances. (Dust I, AECC Reply VS Nelson at pages 2-5) Engineering testimony on behalf of other parties – including UP – confirmed that cubic volume was the relevant consideration. (Dust I, AECC Rebuttal VS Nelson at page 15)

the Board referenced in its decision. In its opening in this proceeding, DOT reiterated its position from Dust I that coal dust is an especially bad ballast foulant, relying on the Volpe research

As discussed in detail in the portion of my reply verified statement in this proceeding that addressed DOT's claims,[19] DOT has supplied a list of documents pertaining to track buckling,[20] and links to 4 specific studies, but none of the studies support the proposition for which the Volpe research has been cited In particular, they do not address the relative severity of coal dust as a ballast foulant.

Summary

No one has disputed the proposition that excessive ballast fouling should be avoided and that excessively fouled ballast tends to become unstable when wet. However, the portrayal of coal dust as a uniquely "destructive" foulant has no foundation in the evidence While it was repeated so often by the railroads that it appears to have taken on a life of its own, it is engineering fiction that has been proven incorrect {{[redacted]}}.

The evidence shows that coal dust is in a category of foulants that railroads commonly address through routine ballast maintenance programs. The harms caused by coal dust stem from the identifiable effects – if any – that coal dust has on the frequency of such required maintenance. As described previously, BNSF has already conceded outright that the safe harbor toppers will produce no significant tangible effects of this type.

The explicit and exclusive reliance placed by BNSF on the proposition that coal dust is uniquely destabilizing is unsupported, and certainly does not substantiate a need for coal shippers

[19] AECC Reply VS Nelson at 18-19

[20] "Track buckling" may sound like it is relevant to the track stability concerns raised in this proceeding and in Dust I, but it relates to deformations of track resulting from lateral forces associated with "high thermally-induced compressive loads" (i e , expansion of long segments of CWR on hot days). It has no direct connection to the May 2005 PRB Joint Line derailments, or any other actual or alleged ballast fouling issues in this proceeding or in Dust I.

to spend many tens of millions of dollars on toppers that have no other redeeming features or purpose.

6. Topper Integrity

BNSF tries unsuccessfully to sidestep its own evidence that the safe harbor toppers are unable to withstand the rigors to which they would be exposed, and that their effectiveness is far lower than BNSF has claimed (and may well be negative). In my opening verified statement, I presented two sets of photographs to address topper integrity issues. In its reply, BNSF has criticized my use of both sets of photographs, but even a cursory review shows that BNSF's criticisms are misdirected, and that my use of the photos was fully appropriate

Witnesses Carré/Murphy claim that the first two photos I included[21] "are {{[redacted]}}.[22] This criticism is erroneous, however, because I did not claim or rely in any way on the proposition that these two photos showed {{[redacted]}} My testimony was that "BNSF has supplied two images that illustrate {{[redacted]}}."[23]

It is particularly odd to see witness Carré take this position, because {{In March 2010 he circulated photos "where the treatment crust has separated and developed cracks".}} and indicated that {{[redacted]}} It is difficult to imagine a closer parallel to the use I made of such images.

The principal difference between the two uses of the images {{[redacted]}} is that {{[redacted]}} Super Trials, while mine occurred after

[21] AECC Opening VS Nelson at pages 22-23
[22] BNSF Reply VS Carré/Murphy at page 5
[23] AECC Opening VS Nelson at page 22.
[24] BNSF COALDUSTII 00573929

all of the evidence was in. It is troubling to think that witness Carré changed his mind about displaying examples of {{ }}, and even about the significance of {{ }}, solely because of the severity of the {{ }} that became evident during the Super Trials.[25]

To illustrate that problem, I presented three photos in my opening verified statement which showed that {{ }}[26] I selected these three photos to illustrate {{ }} conditions I observed in all {{ }} of the sets of photos taken at Alliance, NE during Super Trial testing performed in September 2010. I cross-checked identifying information in each set against available information regarding the schedule of topper testing to ensure that the photos I selected depicted the performance of the indicated safe harbor topper. Witnesses Carré/Murphy refer to two of those photographs and admit that they show {{ }} They speculate this might have been caused by {{ }}[27]

[25] BNSF witness Vanlook has made clear his disdain for consultants who pander to their clients' litigation strategy He seems to think I am one of them, but he is wrong He notes (correctly) that I have concluded that body treatment and compaction have not been shown to be effective to reduce fugitive coal, but then claims that coal shippers' "views on toppers are not be credited", because they "are willing to endorse the results of passive collector tests that suit their litigation objectives". (BNSF Reply VS Vanlook at page 10) If this statement is intended to refer to me, it needs some fact-checking In fact, I have not criticized the use of passive collectors as a means of gathering data, and witness Vanlook does not and cannot offer any citation to demonstrate that I have ever made any such criticism My criticisms have been of BNSF's sampling and analysis procedures, and are based on what the evidence shows about the many steps BNSF has taken that have the effect of exaggerating the effectiveness of toppers and concealing their infirmities under real-world conditions. The next time witness Vanlook feels the need to question someone's professional integrity, he might want to speak with witnesses Carré/Murphy, who seem to have had no qualms about telling the Board something different about {{ }} than they previously had told witness Vanlook and others at BNSF

[26] AECC Opening VS Nelson at pages 24-25

[27] BNSF Reply VS Carre/Murphy at page 6

Witnesses Carré/Murphy apparently want the Board to get the impression that the {{[redacted]}} shown in the photos are not representative of likely topper performance in practice if the safe harbor were found by the Board to be reasonable. It is essential to note, however, that witnesses Carré/Murphy have omitted any reference to {{[redacted]}} from the Super Trial showing {{[redacted]}} that actually were observed. If witnesses Carré/Murphy can't demonstrate that the photos involve cars or trains with known {{[redacted]}}, the speculation they're trying to sell to the Board is completely unsubstantiated, and is inconsistent with the {{[redacted]}}.

Even if the failures did result from {{[redacted]}}, it would only reinforce my previous observation that the thin crust produced by the low-water safe harbor toppers is inherently susceptible to {{[redacted]}}. Given witness Carré's previous candid acknowledgement of the {{[redacted],}}[28] blaming the Super Trial {{[redacted]}} on {{[redacted]}} does not support at all the proposition that performance would be better in practice.

It also should be noted that one of the reasons that witnesses Carré/Murphy have no definitive answers on the causes of the two {{[redacted]}} they discuss – let alone the general pattern of frequent {{[redacted]}} documented further in my reply verified statement – is that BNSF has made no attempt to study the frequency, incidence, circumstances, or consequences of {{[redacted]}} that were observed in the field. Witnesses Carré/Murphy

[28] BNSF COALDUSTII 00157227-28

simply try to soft-pedal the existence of cracks in the topper crust,[29] noting that "(t)he question is how much coal is allowed to escape" [30]

I agree that is the question; the problem is that this is a question for which these witnesses cannot provide an answer Knowing that toppers were {{ }} – by its own consultants' definition – prior to the {{ }}[31] and obviously being aware that the movement from {{ }} proportion of typical PRB movements, BNSF could and should have investigated further the {{ }} issue. BNSF has provided the Board with no evidence upon which the Board could reach anything other than the obvious conclusions that {{ }} the thin crust provided by the low-water safe harbor toppers is {{ }}, and that {{ }} is a crucial issue that BNSF has failed to address.[32] The safe harbor is unreasonable because the thin crust provided by the low-water safe harbor toppers {{ }}, and because BNSF can provide no assurance that {{ }} do not simply move fugitive coal losses to points further along the route of the movement, or even increase overall coal loss relative to untreated cars.

In light of the overwhelming {{ }} evidence of safe harbor {{ }} observed during field testing, BNSF's repeated references to its laboratory testing of

[29] For example, they note the hypothetical possibility that "cracks may form in a topper crust without leading to a substantial loss in cost dust " (BNSF Reply VS Carré/Murphy at 5) While this undoubtedly is possible, it is irrelevant to the safe harbor toppers, for which numerous photographs show {{ }} cracking As indicated in my reply verified statement, the magnitude of the {{ }} dwarfs the 225 lb coal loss experienced by untreated cars, let alone the (225 x 0 15 =) 34 lb loss that a treated car hypothetically could experience while remaining in compliance with the claimed 85 percent reduction

[30] BNSF Reply VS Carré/Murphy at 5

[31] The conclusion that {{ }} are commonplace is substantiated fully by the comprehensive set of {{ }} I provided in my reply verified statement in response to BNSF witness Rahm's ludicrous assertion that the toppers arrive intact at destination plants

[32] As in the Wizard of Oz, the illusion of topper effectiveness created by witness VanHook requires that the viewer not look past the "curtain" BNSF erected at {{ }}, or the various curtains that keep from view {{ }}.

toppers[33] are particularly feeble and unpersuasive The laboratory testing provided a method for screening candidate products. so that field testing resources would not be wasted on products found in the lab to be poor candidates However, the laboratory testing, by its nature, could not and did not simulate the performance of candidate products on full rail carloads of PRB coal moving hundreds of miles without the benefit of laboratory protocols to standardize parameters like {{ }}. The field tests were needed precisely because of such inherent limitations of laboratory testing

When the field tests revealed {{ }} that the lab testing had not identified, it simply reaffirmed the need for field testing On its face, the lab testing did not and could not simulate all of the conditions that loads actually experience in transit, and thus did not identify the {{ }} exhibited in the field tests by the safe harbor toppers. Under these circumstances, neither BNSF nor the Board can rely on the lab testing performed on the safe harbor toppers to excuse or overlook the field test results. Basically, the lab tests have been trumped by the {{ }} observed in the field tests, and shown in the safe harbor {{ }} I have presented

7. Environmental Issues

BNSF does not dispute much of the material in the discussion of environmental issues presented in my opening verified statement, particularly the absence of any demonstrated need for fugitive coal control on the basis of air quality, water quality or nuisance considerations.

[33] For example, witnesses Carré/Murphy highlight the way SWA's lab tests examined "the ability of the topper to provide a crust or film that would accommodate shifting coal loads in transit", (BNSF Reply VS Carré/Murphy at page 3) completely overlooking the {{ }}. Likewise, witness Emmitt attempts to rely on the lab tests for the proposition that field tests didn't need to be performed under rainy conditions, since BNSF {{ }} (BNSF Reply VS Emmitt at page 8) As described previously, this proposition was not substantiated by the limited field testing performed under {{ }} conditions.

BNSF witnesses Carré/Murphy criticize the portion of my discussion of environmental issues that addresses potential harms associated with the use of toppers on the basis that the shippers on the Super Trial Selection Committee already considered such issues.[34] I agree that some consideration of environmental issues was undertaken by the Selection Committee; my concern, which witnesses Carré/Murphy do not address, is that BNSF has been aware of a number of specific potential environmental concerns for which I can find no record of a resolution by the Selection Committee, BNSF, or anybody else. For example, witnesses Carré/Murphy reference reformulation of a {{ }} product to address {{ }} concerns, but I have found no evidence that {{ }}[35] have ever been resolved. Likewise, I have found no evidence of a resolution of {{ }}[36] Before the Super Trials BNSF witness Murphy characterized the summary of environmental concerns in which these issues were listed as {{ }},[37] but I cannot confirm that they have ever been addressed.

Likewise, BNSF's reply provides no indication that BNSF has done anything to address the likelihood that rain could cause the discharge of chemical compounds from the toppers into the run-off from rail facilities As discussed in my opening verified statement, such issues are known to be of explicit concern to EPA when chemical toppers are used on open coal storage piles [38] Whether or not BNSF thinks it can compel shippers to assume liability for such issues, those issues must be taken into account in assessing the reasonableness of the safe harbor provision.

[34] BNSF Reply VS Carré/Murphy at page 7.
[35] BNSF COALDUSTII 00580395
[36] BNSF COALDUSTII 00580406
[37] BNSF COALDUSTII 00329132-33.
[38] AECC Opening VS Nelson at pages 32-33

8. Other Locations

BNSF continues to try to bootstrap its planned use of toppers through references to topper use at a very small number of other locations.[39] However, those other locations for which BNSF has supplied documentation all involve situations where coal dust raised nuisance impacts on third parties, and toppers were applied in response to actions taken or requests made by relevant governmental authorities

BNSF has supplied no evidence of a precedent for the use of toppers to ensure the stability of rail infrastructure, or for any purpose other than responding to nuisance dust complaints. Indeed, as shown in further detail in my reply verified statement,[40] the evidence reveals many {{ }} BNSF's planned use of toppers and the small number of other situations where toppers are used on railcars in transit, including {{ }}. The closer one looks at the other locations, the clearer it becomes that the proposed safe harbor is completely unprecedented.

BNSF has not identified any place in the world where a railroad imposes on coal shippers an obligation to spray toppers on their coal cars to reduce fugitive coal – except the PRB

9. Improved Fugitive Coal Containment Already Achieved

In its reply, BNSF continues its efforts to marginalize or deny the improvements in fugitive coal containment that have been achieved through actions other than application of chemical toppers. For example, witness Emmitt spends several pages backtracking from previous

[39] BNSF Reply, Argument at page 3.
[40] AECC Reply VS Nelson at pages 20-23

research showing dust reduction benefits associated with changing the mine coal crushing standard from 2 inch minus to 3 inch minus.[41]

A description of the improvements in fugitive coal containment that have been achieved through actions other than application of chemical toppers was provided in my opening verified statement.[42] Several of these actions were expected on the basis of testing by BNSF's consultants to produce meaningful reductions in fugitive coal releases For example, testing by BNSF's consultants concluded that {{ [redacted] }}[44] While it is understood that some amount of imprecision may exist in the exact estimates, the proposition that a meaningful dusting reduction could be produced by 3" coal {{ [redacted] }} At the time this analysis was performed, BNSF and its consultants had enough confidence in the conclusion that they {{ [redacted] }}[45]

Now, in contrast, BNSF actively disparages the potential effectiveness of 3" coal by citing, for example, the fact that additional fines may be created when cars are loaded, etc Such disparagement is not based on any type of new information or further investigation Rather, BNSF apparently now is willing to throw its own methodologies and consultants under the bus in order to create a false impression that toppers are the only option for controlling fugitive coal

[41] BNSF Reply VS Emmitt at pages 13-16.
[42] AECC Opening VS Nelson at pages 35-37
[43] BNSF COALDUSTII 00581049; UP-AECC-00003869
[44] See Dust I, BNSF COALDUST 0000666
[45] BNSF COALDUSTII 00581049; UP-AECC-00003869 Likewise, BNSF and its consultants were sufficiently confident in the { [redacted] } (BNSF Opening VS Vanlook, Exhibit 1 at pages 1, 17)

In this context, however, BNSF's inability to quantify the impacts of coal dust on its current and future maintenance activities and costs forms prima facie evidence that such impacts now are small or negligible. Given BNSF's claims from the more distant past of being inundated in coal dust, BNSF's current inability to quantify an impact of coal dust on its costs affirms that substantial reductions in fugitive coal deposition already have been achieved

10. BNSF's Reliance on Load Profile Monitoring

In its reply, BNSF uses its monitoring of load profiles in an attempt to disavow the coal containment achieved through profiling For example, witnesses Carré/Murphy argue that it was appropriate to ignore dusting reductions from profiling in the Super Trials because "the performance of the mines in achieving effective grooming of coal loads was erratic".[46] However, BNSF's claims are self-contradictory, and illustrate yet another way in which BNSF seeks to make shippers responsible for BNSF's own actions.

BNSF formerly used {{ [redacted] }} used to measure dusting levels (at MP 90 7 on the PRB Joint Line) for the coal dust program that the Board found in Dust I to be unreasonable BNSF's monitoring regularly finds that on the order of {{ [redacted] }} of all trains exhibit profile imperfections that cause them to "fail" the {{ [redacted] }}[48]

The reported {{ [redacted] }} do not justify BNSF's neglect of profiling benefits for at least two major reasons. First, all of the loads. {{ [redacted] }}. have been profiled according to the "modified chute" design specified by BNSF, and bear no

[46] BNSF Reply VS Carré/Murphy at page 7
[47] {{ [redacted] }}.
[48] See, for example, BNSF COALDUSTII 00329827.xls

relation to the {{ }} that characterized most PRB loads before the modified chute design was promulgated. (Indeed, in advancing this rationale for ignoring the benefits of profiling, witnesses Carré/Murphy seem to have forgotten that they were the witnesses who demonstrated the dramatic improvements associated with profiling in the first place.[49]){{ }} means that the profiled load fails to conform with {{ }} that BNSF uses to evaluate {{ }}[50] but this does not mean that the load would be as likely to experience coal dust deposition as were the unprofiled loads that form the baseline for the fugitive coal reduction BNSF seeks to achieve.[51] BNSF has no basis to assert that loads with such {{ }} do not achieve any of the benefits of profiling

Second, the location where BNSF monitors profiles is {{ }}, and trains from some mines may have travelled 100 miles or more before their profile is assessed Obviously, events that occur after the train leaves the mine can affect the measured profile, and even BNSF acknowledges that "coal in moving rail cars .shifts and is redistributed over the course of a train trip."[52] BNSF attempts to skirt this issue, however, by claiming that load shifts that occur away from the mine automatically cause the load to move toward a more perfect breadloaf profile [53]

Unfortunately, the willingness of BNSF's consultants to assume that the actions of enroute forces produce a breadloaf profile reflects the same flawed thinking that is responsible for the {{ }} The breadloaf profile may have

[49] BNSF Opening VS Carré/Murphy, Exhibit 3 shows the {{ }} the modified chute design.
BNSF COALDUSTII 00000289-90
[51] BNSF Reply VS Bobb at page 2
[52] BNSF Reply VS Carré/Murphy at page 3.
[53] BNSF Reply VS Carré/Murphy at page 4

been *designed* and *intended* to approximate the natural repose of a load of PRB coal, but the evidence shows plainly that the impacts, forces, and vibrations that a load experiences in transit {{[redacted]}} the breadloaf specifications. While {{[redacted]}} is apparent in many of the {{[redacted]}}, it has been {{[redacted]}}[54] and was documented with precision in a study conducted by UP.[55]

The {{[redacted]}} and disproves the Carré/Murphy attempt to defuse the problems created by the instability of the breadloaf profile in transit. It specifically {{[redacted]}} the breadloaf profile with the application of toppers. Witnesses Carré/Murphy likely are correct that the breadloaf profile "will shift less in transit as compared to the trapezoidal profile that PRB mines previously used",[56] but that does not establish that its stability is adequate to support use of fragile low-water toppers.

Witnesses Carré/Murphy criticize my reference to the "garden bed" profile used in Australia, but they have missed the underlying point. In both the Australian and Canadian examples, {{[redacted]}}

[54] {{[redacted]}} no mention of loads shifting toward a breadloaf shape, or of such a shape remaining stable after being achieved.

[55] UP-AECC-00005599-601 UP inexplicably complains about AECC's purported reliance on that study for issues related to "coal loss". (UP Reply, Argument at pages 4-5) but my opening verified statement plainly relied on the study for the same evidence of {{[redacted]}} as UP cited in its reply. UP's further claim that its study supports use of toppers because there was {{[redacted]}} is invalid because it ignores variations within the train in the impacts, forces and vibrations that act to{{[redacted]}} the thin crust provided by the low-water safe harbor toppers

[56] BNSF Reply VS Carré/Murphy at page 4

[redacted] - was needed. While grooming to a flatter profile does tend to produce a small area of steep slopes on the sides of the load, research has concluded that {{[redacted]}} The willingness of witnesses Carré/Murphy to disregard this possibility, and to assume that enroute forces experienced by PRB railcars are basically benign with respect to profile issues, is at the heart of many of the problems associated with BNSF's proposed safe harbor.

An example of this can be seen in the {{[redacted]}} caused by the presence of {{[redacted]}} [57] Without any observation of the train when it left the loadout. BNSF {{[redacted]}}. However, BNSF does not consider the possibility that the coal was properly within the car when the train left the loadout, and only {{[redacted]}} as a result of enroute forces. In particular, in Dust I I presented unrebutted testimony that a {{[redacted]}} the Joint Line bridge over the Cheyenne River,[58] and that {{[redacted]}} significant slack action at {{[redacted]}} (the bottom of a "big sag") If BNSF isn't going to dispute that slack action severe enough to {{[redacted]}}, it needs to explain how it knows that the shipper's substandard loading of railcars - rather than BNSF's trainhandling - is responsible for {{[redacted]}}

[57] See, for example, BNSF COALDUSTII 00007370
[58] Dust I, UP-AECCBN-0003565 (lower left photo).

Four new pieces of evidence corroborate BNSF's contribution to the problem about which it complains. First, a {{ [redacted] }} In my opinion, the most likely cause of this pattern is a slack action impact {{ [redacted] }} That explains the observed pattern of {{ [redacted] }} far better than could any credible hypothesis about loading. {{

}}BNSF COALDUST11 00116820

The second piece of corroborative evidence is provided in internal communications related to {{ }} longitudinal redistribution of coal within railcars is strongly suggestive of significant slack action impacts

The third piece of corroborative evidence is provided from {{ }}.

The fourth piece of corroborative evidence is provided by an extension of the analysis of RTEPS data I performed in my opening verified statement, to encompass the time when the sampled train moved through Crawford, NE. Crawford lies at the foot of "Crawford Hill", a comparatively steep and arduous ascent for a loaded PRB coal train Indeed, it is understood that BNSF uses helpers appended to loaded coal trains just north of Crawford to assist in the ascent

The RTEPS record for the sampled train shows that at approximately {{ }}. As

[59] UP-AECC-00005242
[60] UP-AECC-00006328

was the case in the RTEPS analysis presented in my opening verified statement, the coal dust signals {{ [redacted] }}

The most interesting coal dust signal, however, occurs in the vicinity of {{ [redacted] }}[61] Indeed, the entire area generally south of Elm Street {{ [redacted] }} is conducive to slack action due to the initial transition to the {{ [redacted] }} ascending grade at that point. This area is of interest because it includes the area immediately south of Ann Street {{ [redacted] }}, from which drainage from BNSF's right-of-way in March 2010 damaged a local organic garden in an incident BNSF brought to the Board's attention in its oral argument in Dust I.

BNSF attempted to seize on the black color of the residue to claim this incident illustrated the need for shippers to take action to control coal dust. In fact, press reports plainly and repeatedly referenced the presence of "chunks of coal" as well as other black residue on the

[61] It should be noted that { [redacted] } To an even greater extent than was the case in the RTEPS analysis presented in my opening verified statement, identifiable sources of impacts and vibrations account for {{ [redacted] }}.

organic farm property.[62] For chunks of coal to fall from a loaded PRB coal train on that part of Crawford Hill, it is a virtual certainty that significant slack action was the cause.

This incident illustrates in microcosm the issues facing the Board in this proceeding. BNSF's trainhandling practices on PRB coal trains permit slack action so severe that chunks of coal are spilled out of railcars. BNSF tries to impose a unilateral responsibility on shippers to keep coal in railcars no matter what BNSF does to the railcars in transit, but the thin, fragile low-water topper films they offer for this task have been shown to be {{[redacted]}}.

Under these circumstances, the Board should put a stop to BNSF's practice of passing the buck to shippers for problems that BNSF causes. It would be unreasonable to impose on shippers requirements to apply remedies of questionable effectiveness that cost many tens of millions of dollars annually while excusing BNSF from any responsibility for its direct role in causing releases of fugitive coal.

11. Good Railroading Leads To Cost-Effective Progress

From the outset AECC has pointed out the need for the railroads to take responsibility for the portion of fugitive coal that results from railroad operating and maintenance practices that affect railcars in transit. UP's attempt to criticize AECC's citation to a UP study highlights the way the Board should be looking to good railroading – not non-economic toppers – as the primary source of further, cost-effective progress on fugitive coal containment.

UP complains that the UP study of modulus issues I referenced in my opening verified statement {{[redacted]}}, and with that I agree completely, since I never

[62] See, for example, "Coal Dust Runoff Inundates Crawford Family's Organic Garden", Rapid City Journal (May 7, 2010).

claimed or relied on the proposition that it did.[63] The UP study was undertaken to examine {{[redacted]}}

I cited this study as being relevant to coal dust because the impacts, forces, and vibrations to which coal loads are subjected due to modulus changes were identified by my work in Dust I, and corroborated in my opening verified statement, as a significant cause of fugitive coal releases. The relevance of the UP study is further emphasized by the way it illuminates the likely cause of one of the substantial PRB rail infrastructure problems identified by UP and discussed in my work in Dust I. Specifically, in Dust I, I presented a {[redacted]}

[63] UP Reply, Argument at page 5, footnote 9. I also welcome the reminder from UP of its witness Connell's observations in Dust I regarding "accumulations of coal dust ..at many locations that do not involve switches or bridges." Such accumulations are fully consistent with both my general findings regarding the role of forces, impacts and vibrations in causing releases of fugitive coal, and my specific findings from the analysis of RTEPS data undertaken in my opening verified statement (AECC Opening VS Nelson at pages 16-20) and extended above.

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UP's study of modulus issues identified {{ }}.[65] In light of the UP study, {{ }}, and the tendency of coal dust to accumulate on the culvert resulted both from the impacts, forces, and vibrations stemming from {{ }}. From the outset, the release of fugitive coal at this location - and other locations

[64] UP-AECC-00004673
[65] UP-AECC-00004674-78

where fugitive coal releases are caused by modulus changes - can be seen as a symptom of an underlying engineering/design issue that would warrant attention and remedy even if PRB coal were moved in sealed cars with no possibility of fugitive coal releases.

For the purposes of this statement, I will use the shorthand "good railroading" to refer to railroad actions to address engineering/design issues of this type. From Dust I and the record in this proceeding, I believe the Board should give weight to at least four additional examples of ways that good railroading already has addressed significant portions of the problems once posed by fugitive coal. These include:

- {{ }}. As discussed in my opening verified statement, BNSF has undertaken a program of {{ }} on the Joint Line.[66] This program responded to {{ }} irrespective of coal dust, but had the side benefit of enhancing coal containment by reducing or eliminating the sources of vibrations and impacts that previously shook disproportionate quantities of coal from railcars {{ }}.
- Capacity enhancements The addition of third and (in some areas) fourth main lines provided Joint Line capacity commensurate with the volume growth that had been achieved. As discussed in Section 3 (above), these capacity increases also had the effect of enhancing the availability of maintenance windows. Triple tracks spaced 25' on center generally permit full-speed, high-capacity directional operations over the two remaining tracks even when one track is taken out of service for maintenance.

[66] AECC Opening VS Nelson at page 36

The capacity enhancements were undertaken for reasons unrelated to coal dust, but had the effect of greatly reducing the operational burdens associated with maintenance windows, including windows prospectively needed to address coal dust issues

- {{[redacted]}}. A document produced in Dust I indicated that railroads were giving careful consideration to issues related to {{[redacted]}}.[67] This consideration involved issues unrelated to coal dust However, as concluded in my work in Dust I and affirmed in my opening verified statement, {{[redacted]}}. To the extent that the research leads to {{reduced maximum speeds for HAL traffic due to infrastructure wear considerations}}, it would also tend to reduce deposition of fugitive PRB coal.
- Maintenance improvements. Similar in effect to the {{[redacted]}} discussed above. efforts made by BNSF in the aftermath of the 2005 derailments to {{[redacted]}} have had the effect of providing a smoother ride for PRB coal traffic With {{[redacted]}}, the resulting improvements in ride quality have tended to reduce the deposition of PRB coal

The shared theme in all of these examples of good railroading is that sound rail infrastructure goes hand-in-hand with the provision of a smooth ride. Situations where railcars experience particularly high enroute impacts, forces, and vibrations tend to be situations that also

[67] Dust I, BNSF COALDUST 0019798-805

are detrimental to rail infrastructure and/or indicate a need for maintenance or other corrective action. When high enroute impacts, forces, and vibrations cause fugitive coal to be released from railcars, it is a symptom of underlying infrastructure and operational issues the railroads have an ability, incentive, and demonstrated propensity to address

In the context of the issues being considered in this proceeding, good railroading is by far the most cost-effective method for controlling fugitive coal dust, because it addresses the underlying causes of dust releases but does so for reasons unrelated to coal dust Put another way, it is in the interest of the railroads to eliminate many of the causes of fugitive coal even if no coal moves on a given line Because good railroading reduces or eliminates the causes of fugitive coal deposition for essentially zero incremental costs, it is, by definition, the most cost-effective possible method of coal retention. The Board should not institutionalize an expensive solution to a problem that largely can be fixed through good railroading

12. AECC's Unchallenged Evidence Shows Good Railroading Can Achieve Large Gains

The railroads have offered no reply to the analysis presented in my opening statement, which illustrated, using an example drawn from BNSF's own RTEPS data, how good railroading would address {{ [redacted] }} fugitive coal releases. That analysis showed that fugitive coal releases {{ [redacted] }} at those locations. Fugitive coal releases do not result from improper loading of coal in railcars, or from any intrinsic characteristic or defect in PRB coal that would cause it to leave railcars in significant quantities absent such {{ [redacted] }}, which typically can be remedied through good railroading.

VERIFICATION

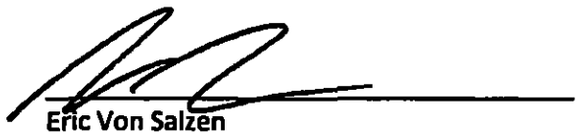
I, Michael A. Nelson, declare under penalty of perjury that the foregoing is true and correct. Further, I certify that I am qualified and authorized to file this verified statement.

Michael A. Nelson

Executed on December 15, 2012

CERTIFICATE OF SERVICE

I hereby certify that on this 17th day of December, 2012, I caused a copy of the CONFIDENTIAL or HIGHLY CONFIDENTIAL version of this Reply Evidence and Argument to be served by overnight courier or hand delivery on all parties of record on the service list in this action who are entitled to receive CONFIDENTIAL or HIGHLY CONFIDENTIAL material respectively in accordance with the Protective Order herein, and a copy of the PUBLIC version of the same to all parties of record on the service list in this action.



Eric Von Salzen