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BEFORE THE
SURFACE TRANSPORTATION BOARD

DOCKET NO. FD 35557

REASONABLENESS OF BNSF RAILWAY COMPANY
COAL DUST MITIGATION TARIFF PROVISIONS

ARKANSAS ELECTRIC COOPERATIVE CORPORATION'S OPENING EVIDENCE AND ARGUMENT

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Arkansas Electric Cooperative Corporation (AECC) 1/ submits this evidence and argument in accordance with the Board's Decision served July 31, 2012.

1/ AECC is a membership-based generation and transmission cooperative that provides wholesale electric power to electric cooperatives, which in turn serve approximately 500,000 customers, or members, located in each of the 75 counties in Arkansas and in surrounding states. In order to serve its 17 member distribution cooperatives, AECC has entered into arrangements with other utilities within the state to share generation and transmission facilities. For example, AECC holds ownership interests in the White Bluff plant at Redfield, AR and the Independence plant at Newark, AR, each of which typically uses in excess of 6 million tons of Powder River Basin (PRB) coal each year. In addition, AECC holds an ownership interest in the Flint Creek plant, at Gentry, AR, which normally uses in excess of 2 million tons of PRB coal each year. Because of the large volume of coal consumed by these plants, and the need for long-distance rail transportation to move this coal, AECC has a direct interest in the effective and efficient operation of the rail facilities between the PRB and its plants, including the PRB Joint Line.

As shown in greater detail in the following discussion and in the attached Verified Statement of Michael A. Nelson ("Nelson VS"), BNSF 2/ Tariff 6041-B, Item 100, "Coal Dust Mitigation Requirements", including Appendix B, "Acceptable Topper Agents And Application Rates" (the "BNSF Tariff" or the "tariff"), and in particular its "safe harbor" provision, Sections 3.B and 4 and Appendix B, is an unreasonable practice under 49 USC § 10702 and should be disapproved by the Board.

In brief summary, the safe harbor provision is unreasonable because:

- The safe harbor imposes on coal shippers an obligation to prevent the deposition of fugitive coal 3/ even where such deposition is caused by actions of the railroad in transporting the coal.
- The safe harbor provision requiring shippers to reduce fugitive coal by 85% is unreasonable, and cannot be achieved under normal real world conditions even by the toppers that BNSF has approved.
- As implemented by BNSF, the 85% reduction requirement effectively denies shippers an opportunity to obtain safe harbor approval of alternate toppers (or other mitigation methods).
- The cost to comply with the safe harbor provision is not reasonably commensurate economically with the benefits that would be achieved from such compliance.

2/ BNSF Railway Company is referred to as "BNSF". Union Pacific Railroad Company is referred to as "UP". The Powder River Basin is referred to as "PRB".

3/ Although the tariff refers to "coal dust mitigation", and BNSF's testing methods are oriented towards measuring airborne dust, the underlying problem of fugitive coal on the rail right-of-way also includes larger pieces of coal that leave rail cars in transit. In this Argument and in the Nelson VS, the term "fugitive coal" is used to reference all the coal that leaves rail cars in transit, and the term "coal dust" is used to reference the portion of fugitive coal that leaves rail cars in the form of airborne dust.

- The safe harbor fails to take account of the substantial progress that has already been made through means other than toppers to control releases of fugitive coal.

- The actual causes of fugitive coal are susceptible to cost-effective and direct remedies that BNSF has elected not to implement.

- The "breadloaf" profile mandated by BNSF is incompatible with the use of chemical toppers and undermines their performance.

- {[redacted]} This development needs to be considered in evaluating the benefits of the safe harbor provision of the tariff.

- BNSF has misleadingly invoked various environmental concerns in its attempts to promote the use of toppers. Use of the safe harbor toppers would create its own set of potentially significant environmental problems. Further, although use of these chemicals raises substantial compliance issues under state and federal environmental laws and regulations, BNSF apparently has not obtained any required approvals for the use of these chemicals, nor for the use of the large volume of water that the toppers require.

- BNSF has promulgated the safe harbor options with no meaningful consideration of numerous adverse impacts {[redacted]}, including: (a) safety hazards associated with topper overspray and buildup; (b) hazards indicated by past laboratory test failures of safe harbor toppers; (c) increased moisture content of topper-treated coal as received; (d) topper residue found in ash settling ponds; and, (e) effects of the safe harbor toppers on carryback.

- Although BNSF dictates the chemicals that shippers must use in order to satisfy the safe harbor provision, the tariff makes shippers responsible for any adverse consequences to railroad employees or property from the use of these chemicals.

BACKGROUND

In Arkansas Electric Cooperative Corporation – Petition For Declaratory Order, Docket No. FD 35305, Decision served Mar. 3, 2011 ("Coal Dust I"), the Board found that a tariff adopted by BNSF in 2009 was unreasonable and in violation of 49 USC § 10702. The 2009 tariff required shippers to comply with specific airborne dust standards as measured by BNSF's trackside monitors, with the intent of reducing fugitive coal deposition by 85% from historical levels through a combination of profiling and applying topper agents. 4/

The Board disapproved the tariff in part because BNSF's system of trackside monitors for measuring the amount of coal dust released from a particular train was unreliable, and in part because a shipper had no way to be sure, when the loaded car was turned over to the rail carrier, whether or not it had complied with the tariff; compliance would be measured in transit, when "the shipment is under the control of the railroad and subject to the vagaries of wind, weather, train speed, and track conditions" (Coal Dust I, at 13-14). The Board suggested that BNSF consider revising its approach to provide for a safe harbor, that is, specified actions that a shipper

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4/ Although the 2009 tariff did not specify the use of toppers, the Board explained that "BNSF acknowledges . . . that profiling alone is not sufficient to meet the emission limitations in BNSF's tariff", and "[n]o other containment methods [than toppers] seem to be under serious consideration for commercial use in the short term." Coal Dust I, Slip Opn. at 12.

could take, before the loaded cars were turned over to the railroad, that would conclusively constitute compliance with the tariff. The Board concluded:

> Rather than using this decision to define a specific, government-approved approach to the problem at hand, we expect that railroads and their customers will collaborate to develop a solution that guarantees that loaded rail cars are fit for safe travel, while also ensuring that commodity spillage during transport is minimized. * * * It is inefficient for railroads to move cars loaded in a manner that routinely results in the release of coal dust during transport. Moreover, once a railroad accepts a loaded car, it bears the responsibility for transporting the car in a manner that avoids releasing or spilling the shipment. In light of the importance of the coal transportation supply chain to the national and world economy, we are confident that railroads and coal shippers can develop reasonable solutions to the problems presented in this case.

Coal Dust I, at 14.

However, despite the Board's expectation that railroads and customers would collaborate to develop a solution, BNSF elected not to do so and developed and published a revised tariff unilaterally. The Western Coal Traffic League ("WCTL"), supported by AECC and other shipper interests, filed a petition asking the Board to reopen proceedings in FD 35305 and institute mediation regarding the new tariff. BNSF, however, announced that it was unwilling to participate in mediation, and the Board denied the WCTL petition.

However, on its own initiative, the Board "institute[d] a new declaratory order proceeding under 49 U.S.C. § 721 and 5 U.S.C. § 554(e) to consider the reasonableness of the safe harbor provision in the new tariff", which the Board described as "an issue of broad public importance to the railroad industry". Arkansas

Electric Cooperative Corporation – Petition For Declaratory Order, Docket No. FD 35305, Decision served Nov. 22, 2011, Slip Opn. at 4.

DISCUSSION

The safe harbor provision of the BNSF tariff is unreasonable for several important reasons. In this Opening Argument we focus particularly on two important defects in the safe harbor provision.

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

Second, the tariff's requirement that fugitive coal deposition be reduced by 85% beyond the reduction already achieved through load profiling is unreasonable and unsupported by any consideration of cost-effectiveness or costs and benefits, is excessive and cannot actually be achieved under real-world conditions, and effectively denies shippers the opportunity to obtain safe harbor treatment for alternative means of reducing fugitive coal deposition even if such alternatives are as effective as the three toppers approved by BNSF.

Either of these defects in the safe harbor provision is sufficient to make the tariff unreasonable and invalid.

There are also several other serious defects in the safe harbor provision, which separately or in combination make it unreasonable and the tariff invalid. In the interest of brevity, we only summarize these defects and refer the Board to Mr. Nelson's Verified Statement for a complete discussion.

The evidence that supports these arguments largely comes from documents produced in discovery by BNSF itself, as well as by UP. This evidence is submitted for the record in the accompanying documentary appendix and is discussed and analyzed in depth in Mr. Nelson's Verified Statement.

1. The Safe Harbor Is Unreasonable Because It Would Impose On Shippers The Obligation To Prevent Fugitive Coal Deposition Caused By Railroad Operating, Maintenance, and Construction Practices.

In Coal Dust I, the Board took note of the conflicting positions of shippers and railroads regarding responsibility for preventing deposition of fugitive coal.

> 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. Although 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), the Board made clear that the railroad, not the shipper, is responsible for preventing deposition of fugitive coal caused by the way that the railroad transports the coal.

> [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, Slip Op. at 14.

The evidence in the record of the present proceeding clearly shows that the primary causes of fugitive PRB coal deposition are excessive forces, impacts, and vibrations acting on the loaded cars that are caused by specific characteristics of the rail infrastructure and the railroads' operating and maintenance practices. Releases of fugitive coal occur at specific track locations as a result of the (poor) quality of ride to which loads are subjected at those locations, and not from any intrinsic characteristic or defect in PRB coal that would cause it to leave railcars in significant quantities absent such ride quality problems. It is the railroads' responsibility to transport the coal in a manner that avoids releasing or spilling it in transit, but the safe harbor provisions would impose on shippers the entire burden to prevent coal deposition caused by railroad actions. Not only does the safe harbor provision impose the obligation on the wrong party, it cannot succeed in preventing unacceptable levels of fugitive coal.

A) Railroad Infrastructure, Maintenance, And Operating Practices Cause Fugitive Coal Deposition.

Several specific factors cause fugitive releases of PRB coal in transit, including train speed, train handling, and infrastructure and maintenance issues that produce impacts, forces, and vibrations on the coal being transported. AECC identified and discussed these factors in Coal Dust I, based on documents produced by BNSF and

UP in that case, and evidence produced in the present case confirms these facts. These factors are discussed in the attached Nelson VS, Part 4, and are summarized below.

- High train speeds create aerodynamic pressures that cause fugitive coal to be blown off the top of the rail car.

- Train handling practices, primarily related to slack action, 5/ cause vibrations that shake coal out of the car. Slack action tends to increase with train length; in today's long PRB coal trains the gross weight of cars and coal in motion between power units is typically 17,000-19,000 tons. The proliferation of longer, heavier PRB coal trains has resulted in increased incidents of slack action and associated accumulations of coal on the right of way.

- Deposition of fugitive coal also results from railroad infrastructure and maintenance practices. Vibrations are generated as rail cars pass over switches and bridges because of changes in the support for the track (track "modulus"). The resulting vibration shakes coal from the cars and causes the observed accumulations of fugitive coal at bridges and switches.

Information produced by the railroads in discovery in this proceeding corroborates the role of operating and infrastructure problems in generating fugitive coal.

5/ "Slack action is the amount of free movement of one car before it transmits its motion to an adjoining coupled car. This free movement results from the fact that in railroad practice cars are loosely coupled, and the coupling is often combined with a shock-absorbing device, a 'draft gear,' which, under stress, substantially increases the free movement as the train is started or stopped. Loose coupling is necessary to enable the train to proceed freely around curves and is an aid in starting heavy trains, since the application of the locomotive power to the train operates on each car in the train successively, and the power is thus utilized to start only one car at a time. * * * * The amount and severity of slack action . . . are not wholly dependent upon the length of train, as they may be affected by the mode and conditions of operation as to grades, speed, and load." Southern Pacific Co. v. Arizona Ex Rel. Sullivan, Attorney General, 325 U.S. 761, 776 (1945).

BNSF's own data show that {[redacted]}. The way to prevent the deposition of fugitive coal is to address its causes, the railroad maintenance, infrastructure characteristics, and operating practices that shake the coal from the cars. Nelson VS, Part 4.

In his Verified Statement, Mr. Nelson demonstrates how data collected by BNSF in assessing the performance of toppers can be used to examine the locations and mechanisms where forces, impacts, and/or vibrations cause releases of fugitive coal, such as where track modulus changes as the train crosses bridges, turnouts, pipes, culverts, etc.; on curves and turnouts that are known sources of vibration; at profile positions conducive to specific forms of slack action; and, at locations where the train is operating at high speeds. This provides a tool to identify track conditions and train operations that can be changed to reduce or eliminate fugitive coal. Nelson VS, Part 4. BNSF did not use this information this way. Indeed, despite working on fugitive coal control issues for over seven years, BNSF has not offered the Board any type of coherent explanation why releases of fugitive coal occur where and when they do, let alone acknowledge anything about its own role in causing such releases.

PRB unit coal trains have evolved to a point where they provide extraordinary efficiency, but that efficiency has come at a cost. In a comparatively brief

period of time, PRB operations transitioned from shorter trains made up of 263,000-lb cars to longer trains made up of 286,000-lb cars. The railroads observed repeatedly that a lot of fugitive coal was accumulating on the worn old switches, but they have failed to draw the obvious conclusion from those observations that the fugitive coal releases were symptoms of underlying problems of modulus change and vibration when PRB unit trains travelling along track laid with concrete ties (to accommodate the high volume of 286,000-lb traffic) crossed worn old turnouts laid with wood ties. It does not require complicated physics to get the idea that the heavier coal cars may be more sensitive to modulus changes than were the lighter ones, especially when the evidence shows, as it did in Coal Dust I, that {[redacted]}. Likewise, longer trains and heavier cars foster increased slack action.

The Board and the railroads ought to regard accumulations of fugitive coal at particular locations on the rail lines as warning signs – like the canary in a coal mine – that something is amiss with the quality of the ride now being provided to PRB coal cars relative to the ride quality provided before the productivity improvements, when fugitive coal was not an issue. The answer to the coal dust "problem" is to address the conditions that cause the dust to be shaken from the cars at these locations.

The situation with fugitive coal is reminiscent of railroad experiences in the early days of intermodal traffic, when higher-than-acceptable rates of loss and damage to some intermodal shipments resulted from vibrations and impacts caused by classification activities, slack action, etc. These aspects of ride quality were not as much

of a problem for conventional boxcar and bulk shipments, but the higher-value intermodal shipments needed gentler handling. In that instance, the railroads treated the problem at its source by finding ways to improve the quality of the ride provided to intermodal traffic. Nelson VS, Part 4. The railroads need to take a similarly proactive approach with PRB coal shipments to avoid shaking coal out of the cars.

While it is neither necessary nor appropriate for shippers – or the Board - to prescribe a comprehensive list of remedies for the forces, impacts, and vibrations that cause the deposition of fugitive coal, information provided by the railroads in discovery shows that they themselves have the capability to address the causes of fugitive coal at their sources. But the railroads need to understand that the Board means it when it says that it is the responsibility of the railroads - not the shippers - to "transport[ ] the car in a manner that avoids releasing or spilling the shipment". BNSF's safe harbor improperly seeks to shift that responsibility to shippers.

B) Toppers, Including Those Approved By BNSF As "Safe Harbors", Cannot Prevent Fugitive Coal Deposition Caused By Such Railroad Operating And Maintenance Practices.

The same forces, impacts, and vibrations that cause depositions of fugitive coal undermine the ability of the safe harbor toppers to prevent those depositions.

A topper puts a thin chemical coating on the top of the coal in a car. The coating is supposed to prevent the coal from leaving the car. To be effective, the thin

coating must remain intact. However, the stresses placed on the load in transit – particularly the substantial forces, impacts, and vibrations discussed above – can rapidly degrade the effectiveness of the topper.

As discussed at greater length in Mr. Nelson's Verified Statement, information produced in discovery by the railroads in this proceeding {[redacted]}. Nelson VS, Part 5.

BNSF's Super Trials did not attempt to determine the effect of toppers on fugitive coal deposition over the entire length of the trip from the mines to the destination power plant. However, documents produced by BNSF demonstrate that even the safe harbor toppers to which BNSF ascribes the highest performance commonly {[redacted]} Nelson VS, Part 5. {[redacted]} Nelson VS, Part 6.

The only effective way to reduce fugitive coal is to correct the conditions and practices that cause the coal to be shaken out of the cars. Applying toppers without addressing the causes won't help, because the conditions that cause the fugitive coal also undermine the ability of the toppers to perform their intended function. Thus, the safe harbor provision cannot achieve the goal for which it is supposedly imposed, no matter how much money is wasted on it.

2. The 85% Reduction Requirement In BNSF's Tariff Is Excessive, Cannot Be Achieved By The Approved Safe Harbor Toppers, And Denies Shippers An Opportunity To Receive Safe Harbor Approval For Alternative Toppers Or Methods.

The BNSF tariff requires that coal dust deposition be reduced by 85%. This requirement is not supported by any consideration of cost-effectiveness or costs and benefits. The 85% requirement is so extreme that it cannot actually be achieved under real-world conditions even by BNSF's approved safe harbor toppers; BNSF's Super Trials used unrealistic assumptions and unreliable procedures in evaluating these toppers. The tariff effectively denies shippers the opportunity to obtain safe harbor treatment for alternative means of reducing fugitive coal deposition even if such alternatives are as effective as the three toppers approved by BNSF.

A) BNSF's 85% Reduction Standard Is Arbitrary And Unreasonable.

The 2009 BNSF tariff (which the Board disapproved as unreasonable in Coal Dust I), required that profiling of loads and application of toppers combined must

reduce coal dust signals at trackside monitors to levels intended to achieve an 85% reduction compared to the historical rate of coal deposition. 6/ The new BNSF tariff requires that a safe harbor topper reduce coal dust "by 85%", but 85% of what? The tariff doesn't say, but the Super Trials {[redacted]} the substantial measures that coal shippers and mines have taken over the last several years to reduce fugitive coal, such as profiling the load according to BNSF's requirements, the use of larger coal sizes, measures to reduce coal fines, and so forth. {[redacted]} For a topper to qualify for safe harbor treatment it must achieve an 85% reduction in coal dust beyond the reduction already achieved through load profiling and other measures that shippers have voluntarily adopted to reduce fugitive coal. 7/

6/ The 2009 tariff didn't express the dust reduction requirement in percentage terms, but BNSF has acknowledged that the intention was to achieve an 85% reduction in coal dust deposition. See www.bnsf.com/cistomers/what-can-i-ship/coal/coal-dust.html.

7/ Thus, shippers are to be punished for having accepted and adopted the profiling requirement by having a more stringent dust reduction imposed on them.

Why did BNSF adopt this much more stringent coal dust reduction standard? What benefit does BNSF expect to derive from it? Shockingly, it does not appear that BNSF {[redacted]}. See Nelson VS, Part 6. The "new" 85% standard appears to be entirely arbitrary.

In Coal Dust I, Slip Opn. at 5, the Board reaffirmed the principle that:

> Whether a particular practice is unreasonable depends upon the facts and circumstances of the case. The Board gauges the reasonableness of a practice by analyzing what it views as the most appropriate factors.

The Board went on to explain 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". Id. "Certainly, any tariff provision must be reasonably commensurate economically with the problem it addresses . . . ." Id., at 6.

The Board assumed in Coal Dust I, after it disapproved the 2009 tariff, that BNSF and shippers would "collaborate to develop a solution that guarantees that loaded rail cars are fit for safe travel, while also ensuring that commodity spillage during transport is minimized." Id., at 14. If the solution had been developed in that collaborative way, the parties would undoubtedly have considered how much reduction in fugitive coal should be sought, taking account of the cost of doing so.

However, because BNSF chose to develop its new reduction standard unilaterally, and because its tariff places the entire cost of reducing fugitive coal on shippers, the 85% reduction standard was developed without any consideration to how

much it would cost to achieve, or whether that cost was reasonable in light of the benefits to be expected from that much reduction. 8/

The fact that the new reduction standard is excessive is shown most dramatically by the fact that BNSF had to {[redacted]}, as discussed below.

B) Because Of Serious Flaws In The Super Trial Testing Procedures, BNSF Does Not Have A Reasonable Basis For Its Approval Of Some Toppers For Its Safe Harbor And Its Rejection Of Others.

BNSF claims that its approved safe harbor toppers met this 85% standard in the so-called Super Trials (and subsequent individual topper tests), but in fact this is not so. The actual performance of the safe harbor toppers in real-world conditions would be nowhere near the 85% reduction BNSF has claimed because testing of the safe harbor toppers was {[redacted]}. The Super Trials were conducted under unrealistic conditions that did not reflect the way {[redacted]}, and so

8/ The Board said in its Decision in Docket No. FD 35305 served Nov. 22, 2011, Slip Opn. at 3-4, that "the prior decision did not impose upon BNSF a regulatory obligation to consult with its shippers prior to issuing a new tariff concerning coal dust suppression." Of course, AECC does not dispute the Board's interpretation of its own decision. But the point is that BNSF's decision to proceed unilaterally meant that the costs of dust suppression would not be considered in setting a reduction standard unless BNSF chose to consider them, which it did not do.

the results of these trials do not reflect the way the approved toppers will perform in actual real world conditions.

As discussed in Mr. Nelson's Verified Statement, topper performance is well known to be affected by such factors as temperature, rain, wind, topper application, and train speed. Nelson VS, Part 11. The Super Trials {[redacted]}, as summarized below.

Cold. Cold weather adversely affects the proper application of toppers because hoses may freeze while the topper is being applied, nozzles may clog, and the viscosity of the topper may change. As a result, the intended coverage of the coal load by the thin film of topper agent may not be achieved. Even if proper coverage is achieved, cold may prevent the topper from curing properly. Cold is a particular challenge in Wyoming where temperatures typically fall below freezing for almost half the year. {[redacted]}.

Rain. Rain may adversely affect topper performance if it falls on the topper while it is curing, because that can prevent a proper cure and make the topper less effective. In addition, rain falling on the untreated cars may reduce the amount of coal dust that is released, which distorts the comparison of coal dust released from treated and untreated cars. {[redacted]}

[redacted]}. Yet rain is a reality, and in the real world the performance of a topper will be affected by rain.

Wind. Wind during topper application may cause uneven coverage by the thin film of topper, which would adversely affect its performance. Wind during transit is one of the particular causes, aside from the actions of the railroad, that can cause coal dust releases. {[redacted]}.

Incomplete topper application. Thin or missing areas of topper coating inherently undermine topper performance, and cause the coating to be especially susceptible to cracking and failure. This can be caused by wind (as mentioned above) as well as by various types of equipment failures and malfunctions and operator error. {[redacted]}.

Excess topper application. {[redacted]}.

Apparent speed limitation. {[redacted]}.

Thus, BNSF's claim that its safe harbor toppers achieved an 85% reduction resulted from BNSF ignoring circumstances that in real life would lead to lower topper performance, and so does not accurately represent the actual dust reduction that these toppers could be expected to achieve.

In addition to all of these defects in BNSF's tests of safe harbor toppers, the tests used very small sample sizes, which undermines the statistical reliability of the test results, as discussed in Nelson VS, Part 12. BNSF presumably used this small-sample approach in its testing regime in order to save it money, but BNSF wants to force

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9/ This terms is used by BNSF to refer to trains used in its Super Trials and other topper tests. Half the cars in the "gizmo" trains were treated with a topper, and the other half were not (but were profiled in accordance with BNSF requirements). This was supposed to allow BNSF to assess the effectiveness of each topper. As discussed in this Argument, defects in the testing and analysis procedures caused the results of the gizmo tests to be an unreliable measure of topper effectiveness. However, the instruments used in the tests generated a wealth of information about the locations and circumstances under which fugitive coal is deposited, and from this information conclusions can be drawn about the causes of fugitive coal.

shippers to spend hundreds of millions of dollars on toppers whose effectiveness is supposedly supported by these bargain basement tests.

In addition, there are numerous data quality problems that undermine confidence in the assessment of the toppers, as well as instances where changes in measured results were considered or implemented to conceal observed topper effectiveness problems. These are explained by Mr. Nelson at greater length in his Verified Statement (Nelson VS, Part 12).

Thus, BNSF has failed to provide any reliable basis for its claim that the toppers it requires shippers to use will reduce fugitive coal by 85% (or any other specific percentage). 10/

BNSF may respond that shippers have no right to complain about the ineffectiveness of these toppers, because so long as a shipper uses a safe harbor topper, it cannot be penalized for violating the tariff. Such an argument would be absurd from a public policy viewpoint. Requiring shippers to spend hundreds of millions of dollars on toppers that will not achieve a commensurate reduction in fugitive coal would result in a huge waste of resources that would benefit no one (except perhaps the favored topper vendors). See the discussion in Nelson VS, Part 3.

10/ In addition, of course, as discussed in Part 1 of this Argument, much of the deposition of fugitive coal is caused by railroad practices and actions, for which shippers ought not be to held responsible, and there is no reason to believe that toppers can be effective in preventing deposition of fugitive coal caused by track conditions and train operating practices.

But more than that, shippers would be injured directly by BNSF's unreasonable standard for fugitive coal reduction and the defects in its process for approving safe harbor toppers, because shippers would be prevented from obtaining safe harbor approval of alternative toppers (or other methods) that could achieve the same or better results as the toppers approved by BNSF, at a lower cost. This problem is discussed in the next section.

C) BNSF's Tariff Effectively Denies Shippers The Opportunity To Obtain Approval Of Alternative Means Of Reducing The Deposition Of Fugitive Coal That Would Be No Less Effective Than The Toppers Approved By The Tariff.

In Coal Dust I, at 6, the Board found that "the science regarding the effects of coal dust dispersion, and its effective control, is still evolving", so that it would be unwise to "lock in" any particular method for controlling fugitive coal. Thus, any safe harbor provision needs to provide a means whereby new methods of controlling fugitive coal can qualify for safe harbor treatment. In theory, BNSF's tariff does this, but only in theory.

Section 3.B of the BNSF tariff provides "BNSF will consider other topper agents to be acceptable for purposes of this safe harbor provision . . . if the shipper can demonstrate that appropriate testing has shown that the topper agent achieves compliance with this item", that is, it must "have been shown to reduce coal dust loss in transit by 85%.". Section 4 provides that a shipper may seek approval of an alternative

"method of coal dust suppression (e.g., compaction or other technology)" by making the same showing.

The problem is that the toppers approved by BNSF do not achieve an 85% reduction in coal dust loss, as is discussed above, but BNSF approved them anyway. As Mr. Nelson shows in his Verified Statement, BNSF's objective in the Super Trials was to {[redacted]}. Nelson VS, Part 3. To accomplish that, the Super Trials were conducted in a way that made it appear that at least one topper agent could single-handedly achieve BNSF's previously-stated objective of an 85% reduction in fugitive dust. However, BNSF would have no reason to put its thumb on the scale for a shipper seeking to have an alternative topper approved for safe harbor treatment. If the Board approves the tariff, BNSF will have the license to basically do whatever it likes with any shipper-proposed alternative to the approved toppers.

Even if the shipper-proposed alternative were significantly cheaper than the BNSF-approved safe harbor toppers, BNSF would gain no benefit from that, because the entire cost of reducing fugitive coal falls on the shipper. Thus, a shipper-proposed alternative that reduced fugitive coal by as much as, or more than, the approved toppers do, but still by less than 85%, would not qualify for safe harbor treatment.

As a result, the tariff's promise that shippers can obtain BNSF's approval for alternative methods to reduce fugitive coal is illusory.

3. BNSF's Tariff Is Unreasonable For Numerous Additional Reasons.

There are numerous other defects in the BNSF tariff, which are discussed and demonstrated at length in the Verified Statement Of Michael A. Nelson. In the interests of brevity, we will only summarize these points here and refer the Board to the verified statement for a complete discussion.

1. Substantial progress already has been made through means other than toppers to control releases of fugitive coal. The magnitude of the problem is already much smaller than it was when BNSF began to advocate use of toppers, and has been declining even without their general use. Nelson VS, Part 9.

2. The actual causes of fugitive coal are susceptible to cost-effective and direct remedies that BNSF has elected not to pursue, implement, or even test (or at least has not disclosed doing so). Nelson VS, Part 15.

3. BNSF has misleadingly invoked various environmental concerns in its attempts to promote the use of toppers. Use of the safe harbor toppers would create its own set of potentially significant environmental problems, including substantial compliance issues under state and federal laws, which BNSF leaves shippers to deal with. Nelson VS, Part 8.

4. BNSF has promulgated the safe harbor options with no consideration of numerous adverse impacts, including (a) safety hazards associated with topper overspray and buildup; (b) hazards indicated by past laboratory test failures of safe harbor toppers; (c) increased moisture content of topper-treated coal as received; (d) topper residue found in ash settling ponds; and, (e) effects of the safe harbor toppers on carryback. Nelson VS, Part 14.

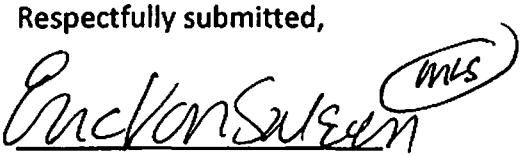
CONCLUSIONS

The foregoing discussion and the evidence in Mr. Nelson's Verified Statement show that the safe harbor provision of BNSF's tariff is not a reasonable

approach to dealing with the problem of fugitive coal. The Board should find that the tariff is an unreasonable practice under 49 USC § 10702.

Information collected by BNSF and UP, which has been produced in discovery in this case, shows that to a substantial extent the deposition of fugitive coal on the Joint Line and the Black Hills Subdivision is caused by railroad operating and maintenance practices. There are reasonable steps that railroads can take to reduce the deposition of fugitive coal by addressing these causes. Shippers have already accepted BNSF's profiling requirement and many have begun using larger coal sizes; by so doing, shippers have cooperated reasonably in the implementation of sensible, cost-effective ways of addressing the fugitive coal problem. The sensible and cost-effective next steps are for the railroads to do the things that are readily within their capability to ensure that the highly-efficient PRB coal transportation system provides a reasonable ride quality. Approval of the safe harbor provision would detract from the efficiency of the rail transportation system through both non-economic expenditures on toppers and the loss of incentive for rail management to address the underlying causes of the coal dust issues that remain.

Respectfully submitted,



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Dated: October 1, 2012

CERTIFICATE OF SERVICE

I hereby certify that on this 1st day of October, 2012, I caused a copy of the HIGHLY CONFIDENTIAL version of this Opening 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 HIGHLY CONFIDENTIAL material 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

VERIFIED STATEMENT

OF

MICHAEL A. NELSON

PUBLIC VERSION

VERIFIED STATEMENT

OF

MICHAEL A. NELSON

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. Prior to February 1984, I was a Senior Research Associate at Charles River Associates, an economic consulting firm in Boston, Massachusetts.

I have directed or participated in numerous consulting assignments and research projects in the general field of transportation. My work typically involves developing and applying methodologies based on operations research, microeconomics, statistics and/or econometrics to solve specialized analytical problems.

A considerable portion of my work has involved the analysis of railroad competition and coal transportation issues. On behalf of The Denver and Rio Grande Western Railroad (DRGW), Rio Grande Industries and the merged SP/DRGW system, I performed analyses of competitive issues in many of the western merger proceedings of the 1980's and early 1990's, including SP/ATSF, UP/MKT, SP/DRGW, UP/CNW and SP's acquisition of authority to purchase the CP/Soo line between Kansas City and Chicago (ICC Finance Docket No. 31505). I subsequently advised CP regarding competitive issues associated with the Conrail breakup transaction (STB Finance Docket No. 33888), and provided analytical support for CP in its settlement with NS and CSX. I provided testimony regarding competitive issues on behalf of the Committee to Improve American Coal Transportation (a coal shipper group) in the proceeding that defined the Board's

current merger rules, and on behalf of Arkansas Electric Cooperative Corporation (AECC) in DME's acquisition of IMRL/ICE.

A second major focus of my work has been the study of issues related to Powder River Basin (PRB) rail competition and the rate/service options it provides to shippers. In 1998, I provided testimony to this Board on behalf of the Mid-States Coalition for Progress regarding the absence of economic viability associated with the proposal for a new rail line to serve the PRB submitted by the Dakota, Minnesota & Eastern Railroad (DME) in Finance Docket No. 33407. In the final year of Board oversight of the UP/SP merger, I provided testimony on behalf of the Cowboy Railroad Development Company (CRDC), a group of utilities pursuing development of a new PRB outlet via Kansas City. I developed information to assist coal users in responding to the coal supply problems created by the May 2005 derailments and subsequent rail throughput constraints on the PRB Joint Line, and have worked extensively on the development of technically and economically feasible options for an ultra-efficient, "World Class" line in the corridor between the PRB and Kansas City. Portions of this work were presented in September 2006 at the conference and annual meeting of the National Coal Transportation Association. I have conducted detailed analyses of PRB coal transportation options for approximately 40 existing and potential powerplants, performed analyses and developed forecasts of PRB rates that include detailed consideration of operational issues and productivity-enhancement measures, and prepared an analysis of fuel use on PRB coal movements that was submitted to this Board in Ex Parte No. 661. On behalf of AECC, I have submitted testimony to this Board in numerous proceedings related to PRB coal transportation, with the most directly relevant being the extensive testimony I submitted in Docket No. FD 35305, Arkansas Electric Cooperative Corporation—Petition For Declaratory Order (hereafter, "Dust I"). In that testimony I analyzed

many issues related to releases and control of fugitive PRB coal, and documented the lack of reasonableness of the tariff provisions BNSF Railway previously sought to implement. On the basis of this work, I am intimately familiar with the fugitive PRB coal issues in this proceeding.

I have also consulted to a number of shippers, railroads (U.S., Canadian and Mexican) and governmental bodies on various other railroad issues. Outside of my rail experience, I have analyzed the cost structure of the U.S. Postal Service in five dockets before the Postal Rate Commission. In addition, I have assisted in the preparation of numerous other verified statements presented before various regulatory and legal bodies, and authored many technical reports and articles in transportation journals.

I received a bachelor's degree from the Massachusetts Institute of Technology in 1977. In 1978, I received two master's degrees from MIT, one in Civil Engineering (Transportation Systems) and one from the Alfred P. Sloan School of Management, with concentrations in economics, operations research, transportation systems analysis and public sector management.

2. Subjects Covered in This Statement

I have been asked by AECC to analyze and comment on several issues related to the release and control of fugitive coal from PRB coal trains, and assess the reasonableness of the "safe harbor" provision within BNSF's most recent coal dust mitigation tariff. This statement begins with a review of background and context considerations that I believe are relevant to a proper assessment of the reasonableness of the safe harbor provision. It then provides detailed discussions of issues and evidence in 12 specific areas, including references to relevant evidence from Dust I and from the large quantity of new information provided by BNSF and UP in discovery in this proceeding.

The evidence demonstrates that the safe harbor provision is unreasonable in multiple respects. It does not address the causes of fugitive coal releases, does not perform as advertised to control those releases, and comes nowhere near to satisfying the economic standards articulated by the Board. BNSF has readily-available alternatives that would provide cost-effective control of fugitive coal releases. By finding the safe harbor provision unreasonable, the Board would fulfill its public interest responsibilities, provide an opportunity for BNSF to reconsider its narrowly-focused pursuit of chemical toppers, and create an environment conducive to fugitive coal control options that are able to withstand scrutiny on their merits.

3. Background

The promotion of economic efficiency in rail transportation is a core objective of rail regulation, as it should also be of prudent management on the part of railroads and coal shippers alike. With fugitive PRB coal,[1] as with virtually any other operational or maintenance issue, actions should be favored if they minimize the resource costs associated with PRB coal transportation. Conversely, actions should be avoided if they unnecessarily increase resource costs, or otherwise undermine economic soundness.

PRB shippers and railroads have a lengthy history of successfully developing and implementing measures to improve the productivity and reduce the cost of PRB coal transportation, even when such changes have required the commitment by shippers of substantial financial resources. BNSF and UP have enjoyed particular success in getting shippers to tender

[1] As used in this statement, the term "fugitive coal" refers to coal that leaves the tops or bottoms of railcars in transit through means unrelated to deliberate offloading. The term "coal dust" refers to the subset of fugitive coal that leaves the tops of railcars in transit in the form of an airborne suspension of small particles. Evidence developed in Dust I demonstrated that coal dust forms a {[redacted]} coal that lands on track ballast. Dust I, AECC Rebuttal VS Nelson at 10. This is consistent with findings from research regarding fugitive coal in Australia. See "Coal Loss Literature Review", Coal Loss Management Project (January 11, 2008), Section 2.3.2, as discussed at Dust I, AECC Rebuttal VS Nelson at 46-47. As a result, focusing on coal dust alone may overlook major issues related to the accumulation of fugitive coal on track ballast.

longer trains with greater tons per car and lower tare weights, enhancements that form much of the core of the dramatic improvements in the productivity of PRB coal transportation that have been achieved over the past 30 years. Even in the fugitive coal area, shippers have cooperated with BNSF in the implementation of load profiling (the adoption of which has been essentially universal without any need for regulatory intervention), improved car inspection and maintenance practices to reduce commodity losses from the bottoms of railcars, and other efforts to control fugitive coal.

In this context, BNSF to date has offered no coherent rationale why the "safe harbor" options in the BNSF tariff at issue in this proceeding have not drawn such cooperation from shippers.[2] In a competitive marketplace, actions that hinder efficiency and increase costs tend to be prevented by market forces. Here, however, BNSF in effect enjoys a monopoly over the establishment of operating rules for PRB coal transportation, including any such rules pertaining to fugitive coal. UP may compete with BNSF in the transportation of some PRB coal movements, but under the terms governing UP's use of the Joint Line it must follow operating rules established by BNSF.[3] If BNSF makes a myopic decision that it is ok to make shippers spend $90M/year for it to save $20M/year in Joint Line costs, UP and its shippers have to comply with BNSF's operating rules (until and unless the Board declares the rules to be unreasonable and hence invalid). Even if BNSF is tempted by the possibility that, for example, placing costly requirements on Joint Line (primarily UP) customers would benefit BNSF's northern tier routes, UP has to follow the operating rules. For such reasons, the Board should be

[2] It is understood that some shippers have negotiated contracts with BNSF that call for {[redacted]}, and some shippers have elected to {[redacted]}, at least until the Board reaches a conclusion regarding the reasonableness of the safe harbor options. BNSF's ability to parlay its {[redacted]} requirements should not be misconstrued by the Board as shipper endorsement of toppers as a method of controlling fugitive coal.

[3] BNSF is well aware that this puts UP {[redacted]} (BNSF COALDUSTII 00549081)

leery of any attempt by BNSF to impose as a requirement a purported cost-reduction measure that has not been adopted through cooperation with affected shippers. Fugitive coal issues keep coming before the Board because of the power BNSF wields to make and implement decisions that serve its private interests or preferences irrespective of the public interest, competitive market standards or the resource costs of PRB coal transportation.[4]

In Dust I, documents produced in discovery revealed that BNSF decided {[redacted]} that chemical toppers should be a central component of efforts to control fugitive PRB coal.[5] While much important information can be drawn from the so-called "Super Trials"[6] and other laboratory and field tests of such toppers, it is essential to note that BNSF's primary objective in undertaking the Super Trials was {[redacted]}

[4] Even in the context of the topper testing process, BNSF is well aware that {[redacted]}. (BNSF COALDUSTII 00012423)

[5] Even prior to the Joint Line derailments of May 2005, BNSF was {[redacted]} See Dust I, BNSF COALDUST 0003048; 0015797; 0023636.

[6] As used in this statement, the term "Super Trials" refers to laboratory and field tests of chemical toppers and body treatments conducted from March-September 2010. In those tests, the selections of the first topper and first body treatment were made by BNSF, while subsequent selections of products for testing were made by a "selection committee" of interested coal shippers. BNSF's consultants and in-house lab evaluated all of the results, which resulted in the selection of 3 toppers as "safe harbor" options.

Testing of another topper had been conducted {[redacted]} that test was not integrated with reports of results from the tests conducted in March-September 2010, and is referenced separately herein.

In 2011, further testing was undertaken to assess {[redacted]} two toppers were added as "safe harbor" options.

Prior to the testing referenced above, other laboratory and field tests of toppers had been conducted. These are summarized at BNSF COALDUSTII 00008554 Natives.

[redacted] This basic objective is repeated in many documents produced by BNSF in discovery, and was {[redacted] even-handed investigation of fugitive coal control methods needed for the Board to be able to reliably assess the reasonableness of the safe harbor provision from a public interest perspective. For example, BNSF attempted to assure {[redacted] BNSF's reliance on the Super Trials (and the subsequent tests of additional toppers) as the foundation for the identification of the safe harbor options.

[7] See, for example, BNSF COALDUSTII 00012423 (goal is to find the {[redacted]}. (BNSF COALDUSTII 00016259)

[8] A second stated objective was to validate that {[redacted] }This objective appears to have been mooted by the Board's findings in Dust I regarding {[redacted]}.

[9] See BNSF COALDUSTII 00116805 {[redacted].}

[10] See BNSF COALDUSTII 00012428.

Recent developments in energy markets have illustrated the practical significance of ensuring that arbitrary decisions shielded by rail market power do not detract from rail efficiency. Economic pressure from inexpensive shale gas is causing the accelerated retirement and diminished dispatch of coal-fired facilities. Combined with the prospect of further environmental constraints on such facilities, railroads are facing substantial economic pressure on some coal traffic.[11] Rail transportation must be as efficient as it can be for railroads to retain participation in and maximize contribution from this business, and for shippers to avoid costly plant retirement, repowering and/or replacement associated with transition to fuels other than coal.

It is essential to note that efficiency here does not relate to the costs experienced by railroads or shippers in isolation, and that "offloading" costs so that they are borne directly by only shippers or railroads does not address the efficiency issue. A failure to minimize the overall resource costs associated with rail transportation undermines the competitiveness of rail, and ultimately is detrimental to carriers and shippers alike.

Economic theory would call for the Board to prefer the option that maximizes the excess of benefits over costs. As a practical matter, however, information is still evolving regarding the causes of fugitive coal and the effectiveness of different approaches to control it. An approach that appears to be meritorious today may be overtaken by new information and/or innovation, and may not be preferred as a longer-term approach. Moreover, if there are beneficial alternative approaches whose economic merits are reasonably comparable, it would not be unreasonable for the Board to give weight to the carrier's preference among such options.

[11] See, for example, Association of American Railroads, Railroads and Coal (June 2012) at 4-6, as presented at http://www.aar.org/~/media/aar/Background-Papers/Railroads-and-Coal.ashx .

By the same token, however, there is no public interest foundation upon which the Board could approve actions or requirements that would create harms, burdens or costs demonstrably greater than the ones they are intended to remedy. Several elements of the national transportation policy serve to preclude such outcomes, including specific mandates for the Board "to ensure the development and continuation of a sound rail transportation system..." (Section 10101(4)), "to foster sound economic conditions in transportation..." (Section 10101(5)) and "to encourage honest and efficient management of railroads..." (Section 10101(9)). Toward this end, the Board in Dust I explicitly recognized that "(c)ertainly, any tariff provision must be reasonably commensurate economically with the problem it addresses...".

This statement examines the reasonableness of the safe harbor provision in the context of the Board's "reasonably commensurate" standard, as well as the voluminous information regarding fugitive coal issues that the railroads have provided through discovery. It concludes that the safe harbor provision is unreasonable due to numerous specific considerations, including the following:

- In Dust I, AECC identified and discussed specific factors that cause fugitive releases of PRB coal, including train speed, train handling and infrastructure and maintenance issues that produce impacts, forces and vibrations on the coal being transported. Information produced by the railroads in discovery {[redacted]}. Releases of fugitive coal occur at {[redacted]} The safe harbor provisions do not address the underlying causes of fugitive releases of PRB coal.

- The impacts, forces and vibrations that cause fugitive releases of PRB coal also cause the {[redacted]}. The safe harbor toppers put only a thin coating on the top of the coal in the car, which is supposed to prevent coal dust from be released from the top of the car. However, {[redacted]} Indeed, new information provided by BNSF in discovery demonstrates that {[redacted]} Alliance, NE (a small fraction of the length of most PRB coal movements). The evidence indicates that the breadloaf profile is a reasonable and cost-effective way to reduce aerodynamic pressures on coal loads relative to unprofiled loads, {[redacted]}

- None of the safe harbor toppers come close to producing benefits "reasonably commensurate" with or greater than their costs. Documents produced by BNSF in discovery {[redacted]}

- BNSF has promoted the proposition that coal dust {[redacted]} However, that proposition has been voided by new findings from {[redacted]}

[redacted]} it is appropriate for the Board to give full weight to tangible cost/benefit measures.

- {[redacted]}
- Substantial progress already has been made through means other than toppers to control releases of fugitive coal. The magnitude of the problem is already much smaller than it was when {[redacted]}, and has been declining even without their general use.
- The "85 percent reduction" standard BNSF used to select the safe harbor toppers {[redacted]}
- The actual performance of the safe harbor toppers in real-world conditions is {[redacted]}
- The performance of the safe harbor toppers would be {[redacted]}

[redacted] the statistical properties of the small samples used. These properties were discussed in the development of BNSF's sampling plan, {[redacted]}

- Notwithstanding BNSF's claims that the safe harbor toppers achieve reductions in fugitive coal that are {[redacted]} that would implement the original standard.
- BNSF apparently has undertaken {[redacted]}
- The actual causes of fugitive coal are susceptible to cost-effective and direct remedies {[redacted]}

Each of these is discussed in detail below.

4. Safe Harbor Provisions Do Not Address Causes of Fugitive Coal

In Dust I, AECC identified and discussed several specific factors that cause fugitive releases of PRB coal, including train speed, train handling and infrastructure and maintenance issues that produce impacts, forces and vibrations on the coal being transported.[12]

Train speed was addressed in Dust I, AECC Opening VS Nelson at 29 and Dust I, AECC Rebuttal VS Nelson at 12-13.[13] Of particular importance is the disproportionate increase in aerodynamic pressures that occurs as train speeds increase. This was confirmed vividly by a video showing a large plume of coal dust emanating from a PRB coal train travelling approximately 50 mph as it descended the lengthy downgrade approaching MP 75 just north of the Cheyenne River bridge on the Joint Line.[14] It is also illustrated in {[redacted]}[15]

Trainhandling issues, primarily related to slack action, were addressed in Dust I, AECC Opening VS Nelson at 18 n.26; Dust I, AECC Reply VS Nelson at 7; and Dust I, AECC Rebuttal VS Nelson at 13-14. This material described how slack action tends to increase with train length and how the gross weight of coal and cars typically carried between the leading and trailing locomotives of a PRB coal train is 17,000-19,000 tons. The role of slack action in creating coal dust was confirmed in a video,[16] its role in {[redacted]

[12] The general reasonableness of that result has been confirmed in a study performed in 2003 by {[redacted]} which was included in BNSF's discovery materials. (BNSF COALDUSTII 00329010-22) The consultant explained how {[redacted]}

[13] See also Dust I, BNSF COALDUST 0019796; 0020348.

[14] See Dust I, BNSF Counsel's Exhibit 4 (March 16, 2010), CD1, BNSF 0022999.

[15] For example, data from January and February 2010 at the trackside monitor at MP 558.2 on the Black Hills Subdivision show that {[redacted]} See BNSF COALDUSTII 00324301-04.

[16] See Dust I, BNSF Counsel's Exhibit 4 (March 16, 2010), CD1, BNSF 0022995.

[redacted]}the Joint Line bridge over the Cheyenne River.[18] Taken together, these considerations suggest strongly that {[redacted]} increased slack action accompanying the proliferation of longer, heavier PRB coal trains.

Notwithstanding BNSF's dismissive response in Dust I to AECC's evidence regarding trainhandling issues, the U.S. Supreme Court long ago recognized that amount and severity of slack action are a function of the length of the train, as well as "the mode and conditions of operation".[19] Information produced in discovery suggests that {[redacted]} generated by the two railroads at the Joint Line trackside monitor.[20]

Infrastructure and maintenance issues were summarized in Dust I, AECC Rebuttal VS Nelson at 11. Basically BNSF and UP {[redacted]} 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

[17] See, for example, Dust I, BNSF COALDUST 0019573, which references settling and slack action, and Dust I, BNSF COALDUST 0019582, which references differential settling.
[18] See Dust I, UP-AECCBN-0003565 (lower left photo).
[19] See Southern Pac. Co. v. Arizona Ex Rel Sullivan, 325 US 761, 776-77 (1945)..
[20] See BNSF COALDUSTII 00580630-32.
[21] See, for example, Dust I, BNSF VanHook Opening VS at 3; Dust I, BNSF VanHook Reply VS, Exhibit 7; and Dust I, UP Opening Argument at 5, footnote 1.

to the {[redacted]}

Information produced by the railroads in discovery in this proceeding corroborates and extends {[redacted]}

UP has also supplied a clear and particularly practical advancement in knowledge regarding {[redacted]}

[22] See Dust I, AECC Opening VS Nelson at 19-20; Dust I, AECC Reply VS Nelson at 6-7.
[23] See Dust I, BNSF Reply VS Emmitt, Exhibit 8, UP 6695.
[24] See UP-AECC-00005599-601.
[25] See BNSF COALDUSTII 00153052.
[26] See Dust I, BNSF COALDUST 0021521.
[27] See UP-AECC-00004644-94.
[28] See UP-AECC-00004673.

[redacted]

The data to which I am referring are the {[redacted]} latitude and longitude (lat-lon) coordinates of the train, along with a {[redacted]} over the train, with both values (along with a great deal of other information) recorded every {[redacted]}

To provide an example of how such information can be developed, I examined two datasets provided by BNSF containing {[redacted]}

[29] See UP-AECC-00004674.
[30] See, for example, BNSF COALDUSTII 00507572; BNSF COALDUSTII 00515978-79; BNSF COALDUSTII 00517129-30; BNSF COALDUSTII 00517830-31; BNSF COALDUSTII 00532863-64; BNSF COALDUSTII 00533677-78; and many more.
[31] BNSF COALDUSTII 00018197.xls and BNSF COALDUSTII 00018198.xls.

[redacted] I matched the records from the two datasets to each other based on the {[redacted]} then used the combined data to discern the locations and apparent causes of individual dust releases.[32]

At the outset, I observed that the {[redacted]} For the purposes of this analysis, I treated {[redacted]} background dust levels, and focused primarily on the largest {[redacted]}. I also omitted the portion of the movement that occurred closest to the mine, as I had no information regarding mine track infrastructure to compare with the locations of apparent dust releases, and no information regarding sources of dust other than coal, such as heavy equipment moving on dirt roads, that could affect {[redacted]} in the immediate vicinity of the mine.

My analysis effectively began at {[redacted]}. Of those records, a total of 17 showed {[redacted]}

[32] This analysis {[redacted]}disturbances to the coal load that cause deposition of fugitive coal on the right-of-way. In Dust I, the evidence indicated that airborne dust only accounted for about {[redacted]} of fugitive coal releases, and {[redacted]} of the fugitive coal that lands on rail ballast, with the remainder of fugitive coal generated by such factors as {[redacted]} Dust I, AECC Rebuttal VS Nelson at 10. This {[redacted]} the tariff BNSF sought to implement in Dust I, which purported to reduce fugitive coal deposition through limitations on dusting levels. {[redacted]} I have addressed this issue in part by reviewing aerial photography of identified dusting locations and adjacent trackage to confirm the presence of {[redacted]}. My analysis provides a tool for identifying sources of disturbance to coal loads, and does not assume or require any specific assumptions regarding the exact correspondence between deposition and dusting levels, since complementary information regarding deposition at identified locations can readily be obtained from other sources (aerial photography, field measurements, GPR, etc.).

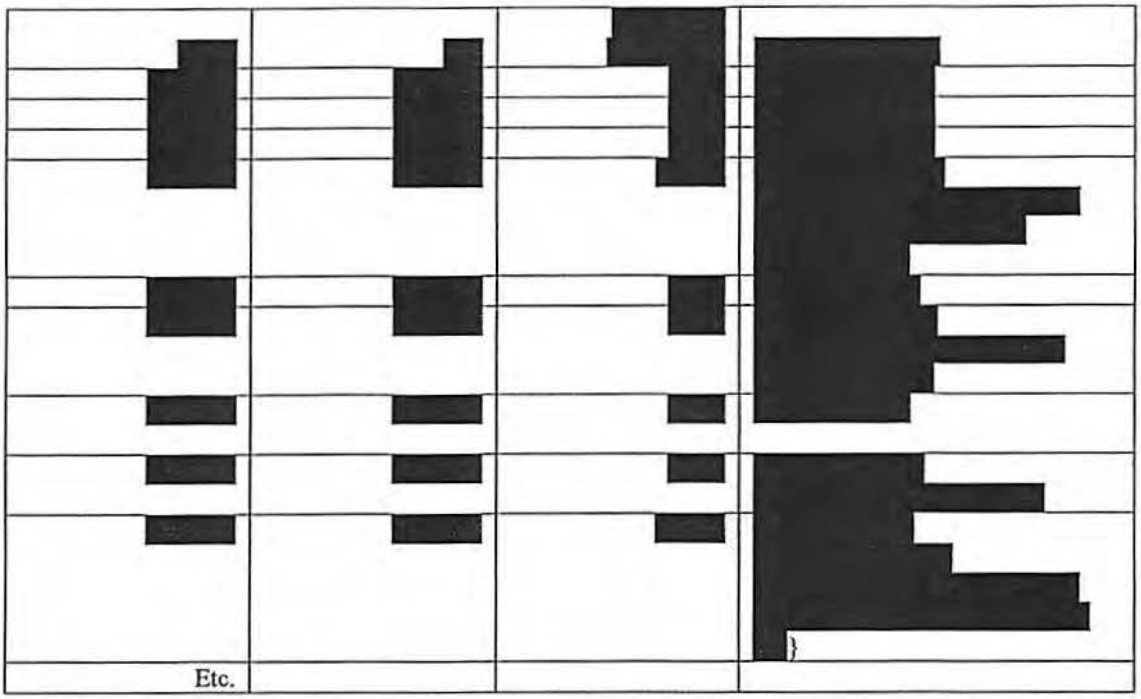
Closer inspection of {[redacted]} provides a preview of the wealth of information regarding releases of coal dust that is available from {[redacted]} In either case, the sequence of elevated dust readings surrounding and including this single dusting location accounts for {[redacted]} on the Campbell Sub.

Similarly, the second and third largest {[redacted]} observed on the Campbell Sub occurred in a sequence of {[redacted]} These two sequences alone account for over {[redacted]} over the Campbell Sub.

When the {[redacted]} sources of impact, vibration and/or aerodynamic forces corresponding to causes of fugitive coal releases identified previously by AECC. Moreover, the geographic specificity provided by the {[redacted]} permitted a larger number of specific apparent causes of {[redacted]} to be identified.

[33] Between 14:36:30 and 14:37:50.
[34] From 14:32:40 to 14:33:00.

A summary of identified likely causes of {



These results illustrate and extend AECC's previous findings that fugitive coal releases are not random or uniform, but rather result almost entirely from identifiable causes at specific locations. The readings referenced in this table constitute a {

} Those readings[35] accounted for a combined total of only { } compared to the

[35] At 16:12:20 and 16:14:40.

{[redacted]} episodes.

The results also provide useful clarifications of specific causes of fugitive coal releases. For example, they reveal that {[redacted]} slack action.

Obviously, results drawn from less than {[redacted]} do not determine precisely the contributions of individual causes to overall fugitive coal releases, and may not even encompass all such causes that arise at other locations or on other {[redacted]} Their primary significance in this proceeding is that they demonstrate BNSF has in hand a capability to {[redacted]} The early returns from this information {[redacted]} any intrinsic characteristic or defect in PRB coal that would cause it to leave railcars in significant quantities {[redacted]}[36]

"Those who cannot remember the past, are condemned to repeat it..." - Santayana

In many ways, the situation with {[redacted]} is reminiscent of a problem that arose during the early growth of intermodal traffic, when it became apparent that a portion of intermodal freight was susceptible to damage from the vibrations and impacts arising from

[36] BNSF's basic strategy has been to{[redacted]} address most fugitive coal issues at the source.

classification activities, slack action, etc. In that instance, the railroads treated the problem at its source by finding ways to improve the quality of the ride provided to intermodal.[37]

{[redacted]} the underlying causes of fugitive PRB coal. Too much is now known regarding {[redacted]} What the data show is that increasing PRB volumes and some of the steps taken to improve productivity, including longer trains and heavier loaded cars, were accompanied by {[redacted]} the greater momentum of a 286k car relative to a 263k car causes it to experience increased impact forces when it encounters modulus changes, a situation that would be exacerbated by {[redacted]}[38] and that longer trains and heavier cars have increased slack, slack action and the {[redacted]}. Fugitive coal should be viewed as a symptom of these causes - which can be remedied through railroading – and not as a freestanding problem that can be passed on to shippers.

5. Safe Harbor Toppers Incompatible with "Breadloaf" Profile

The impacts, forces and vibrations that cause fugitive releases of PRB coal also cause {[redacted]}

[37] See, for example, Brown, Thomas R. and Anthony B. Hatch, The Value of Rail Intermodal to the U.S. Economy (September 19, 2002) as presented at **http://intermodal.transportation.org/Documents/brown.pdf** at 9.
[38] See Dust I, AECC Opening VS Nelson at 24-25.

The fundamental incompatibility between use of toppers and profiles with sloped sides – like the breadloaf - was documented thoroughly in research conducted 35 years ago.[39] The relevant findings are expressed succinctly in two sentences from the 65-page report:

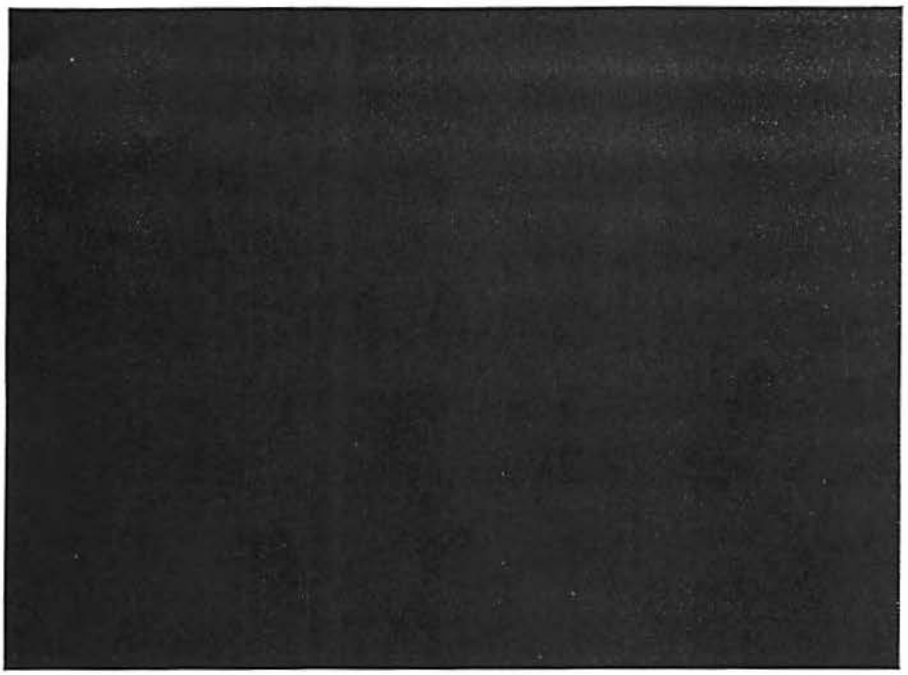
- "Loading profiles had a profound influence on crust retention [cite omitted]." (page 7); and,
- "During the field test it was soon realized that a totally flat surface would produce the most desirable profile [cite omitted]." (page 8)

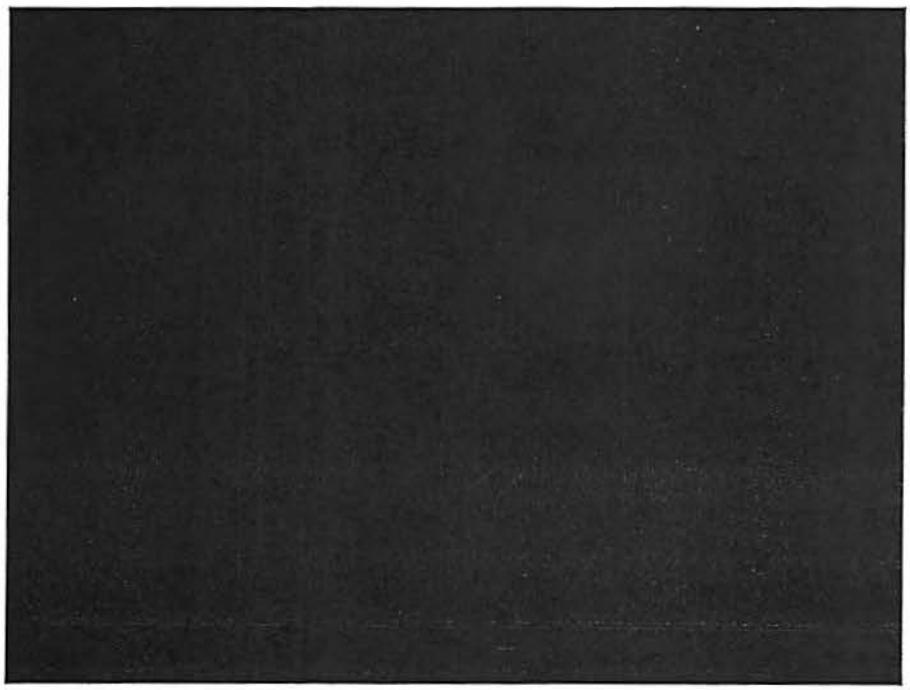
There is no evidence that {[redacted]} use of the safe harbor toppers.

BNSF and its consultants are well aware that the toppers are {[redacted]}

BNSF has supplied two images that illustrate {[redacted]}

[39] Guarnaschelli, Claudio, In-Transit Control of Coal Dust from Unit Trains, Environmental Protection Service, Report No. EPS 4-PR-77-1 (May 1977), available at http://www.aquafoam.com/papers/Guarnaschelli.pdf .
[40] See, for example, BNSF COALDUSTII 00000315, BNSF COALDUSTII 00007260 {[redacted]}
[41] At field tests conducted in 2008 and 2009 at Black Thunder, Jacobs Ranch and North Antelope/Rochelle, treated cars released {[redacted]} (BNSF COALDUSTII 00008554 Natives)





[redacted]}

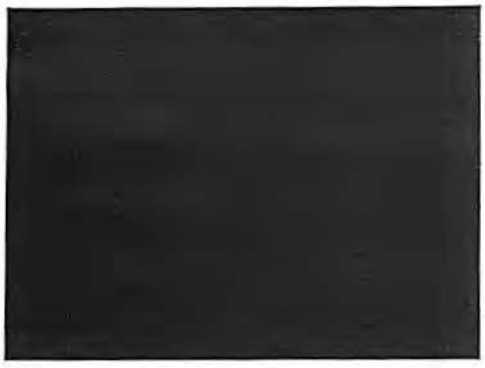
New information produced by BNSF in discovery in this proceeding demonstrates plainly that {[redacted]} I reviewed all of the photographs provided for a set of {[redacted]

[redacted]

[redacted]

[redacted]

[42] The presence at the "south end" (understood to mean Alliance) of {[redacted]}



[redacted]}

The bottom photo is particularly noteworthy in that it shows not only {[redacted]} (discussed further below).

{[redacted]}

Introduction of the breadloaf profile provided a reasonable and cost-effective way to reduce aerodynamic pressures on coal loads when no other fugitive coal control methods were being employed. BNSF was aware that the {[redacted]

[redacted]

[redacted]

[redacted]

[43] See UP-AECC-00005594.
[44] See BNSF COALDUSTII 00580441.
[45] See BNSF COALDUSTII 00000491.

[redacted] might be needed. In Australia, for example, the {[redacted]} the use of chemical toppers for long-distance PRB movements.

6. Safe Harbor Toppers Are Economically Unsound

In Dust I, BNSF did not present a cost-benefit analysis of toppers until the reply phase of the case. In the rebuttal phase, I responded with lengthy testimony on many specific points, correcting many obvious errors in BNSF's computations, and bringing those computations into conformity with other record evidence.[48] My testimony addressed such issues as the unit costs and required length of maintenance cycles for different maintenance functions, including undercutting. Because BNSF did not present a cost-benefit analysis in its opening evidence, the record in Dust I does not contain any substantive response by BNSF to the material presented in my rebuttal.

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[46] See BNSF COALDUSTII 00000740.
[47] See Section 11, below.
[48] Dust I, AECC Rebuttal VS Nelson at 32-44.

My review of discovery material provided by the railroads in this proceeding has revealed {[redacted]}

On the cost side, my findings in Dust I were based on a BNSF study that estimated the costs to shippers of applying toppers to comply with the Dust I tariff would likely be {[redacted]}, and could be as much as {[redacted]}.[52] Discovery materials show topper costs during the trials of {[redacted]}[53] and a vendor estimate of ongoing/future spraying costs {[redacted]}.[54] At an annual volume of 450 million tons/year, the direct economic cost of applying the safe harbor toppers would be {[redacted]} million/year.

It should be noted, however, that pricing to date has reflected substantial competition among vendors to secure a position in this new "market". To the extent each mine allows only one spray vendor on site, there is no assurance for shippers that the competitiveness of topper

[49] A draft of BNSF's plan for studying chemical dust control products indicated that {[redacted]}

[51] See BNSF COALDUSTII 00115935.

[52] See Dust I, BNSF COALDUST 0020969-991.

[53] (BNSF COALDUSTII 00006966; BNSF COALDUSTII 00008031; BNSF COALDUSTII 00152442; BNSF COALDUSTII 00305049; BNSF COALDUSTII 00369264)

[54] See BNSF COALDUSTII 00305529; UP-AECC-00006740.

pricing will not become less aggressive after individual vendors become the sole source of topper supply at individual mines.

On the benefit side, one of the key components of my analysis was incorporation of the {[redacted]} percentage that coal dust formed of the material fouling the ballast. While BNSF relied on {[redacted]} chemical analysis of the undercutter spoils revealed that they were made up predominantly of {[redacted]}

In Dust I, I relied on an estimate that coal dust constituted {[redacted]} percent by volume of the undercutter waste on the Joint Line.[56] The discovery material produced by the railroads in this proceeding {[redacted]} that estimate. UP specifically studied {[redacted]} had been provided.[58]

[55] A BNSF employee explained this through an analogy between the {[redacted]} See Dust I, BNSF COALDUST 0016160+; 0020626.

[56] See Dust I, AECC Rebuttal VS Nelson at 36. {[redacted]}

[57] See UP-AECC-00000534.

[58] See BNSF COALDUSTII 00305933; UP-AECC-00005236. 6/56 = 0.107; 13/56 = 0.232.

My analysis in Dust I also took into account the fact that toppers would not prevent the release of all fugitive coal, so significant quantities of such coal would still need to be removed from the right-of-way. The specific figures I used in Dust I were based on figures that had been {[redacted]}[59] As discussed further below, the information developed in more recent testing indicates that the use of toppers would permit the release of {[redacted]}, so the results I developed in Dust I, if anything, {[redacted]}

In addition, new information regarding the tendency of the toppers to {[redacted]}

[59] See Dust I, AECC Rebuttal VS Nelson at 36-37.

[redacted] an economically unsound method for accomplishing retention of fugitive coal.

7. Infrastructure Stability

In Dust I, BNSF promoted the proposition that coal dust {[redacted]} As the foundation for that proposition, BNSF cited a study performed by Prof. Erol Tutumluer.

In Dust I, I pointed out that Prof. Tutumluer's stated conclusions were not supported by the data he presented, because the comparisons on which they relied were made using measures that did not properly reflect the role of cubic volume rather than weight as the relevant determinant of the extent of fouling produced by a ballast contaminant. Cubic volume (not weight) was affirmed by other witnesses in Dust I as being the proper basis for consideration of ballast fouling by coal dust vs. other foulants due to the distinct density characteristics of coal dust.[61]

Even though, in my view, Prof. Tutumluer's study had not demonstrated the proposition for which it had been cited, in Dust I the railroads continued to claim that coal dust is unusually harmful, especially when mixed with water. Pursuant to Section 10101(4), the Board has a mandate "... to ensure the development and continuation of a sound rail transportation

[60] BNSF's own consultants describe the order of magnitude of maintenance cost savings as {[redacted]} (BNSF COALDUSTII 00116823)
[61] See Dust I, AECC Rebuttal VS Nelson at 15-17.

system...". In the context of the status of evidence and rhetoric on this issue at the conclusion of Dust I, the Board properly treated the issue of infrastructure stability cautiously.

In the discovery materials supplied by the railroads in this proceeding, important clarifying evidence on the {[redacted]}[62] This comports with the evidence I provided in Dust I that showed {[redacted]} the known engineering challenges posed when a heavy-haul line is built on clay, as is the case with most of the Joint Line.[64]

Clay will migrate into the subballast and ballast at approximately the same rate with or without control of fugitive coal, so {[redacted]} As a result, it is appropriate for the Board to give full weight to tangible cost/benefit measures associated with the use of toppers, {[redacted]} and by that standard are unreasonable.

[62] See BNSF COALDUSTII 00305910-11; UP-AECC-00006349-52.
[63] See Dust I, AECC Rebuttal VS Nelson at 20, referencing a tabulation presented at Dust I, AECC Rebuttal VS Nelson at 12 based on data drawn from Dust I, BNSF COALDUST 0082798.
[64] See, for example, Dust I, AECC Opening VS Nelson at 12-13.

8. Environmental Concerns

BNSF has at times sought to portray coal dust as {[redacted]}

It is true that EPA requires a plan to control dust releases from open coal storage piles, and that application of "chemical dust suppression agents" has been used for that purpose. However, such use of chemical agents certainly is not mandated, and in fact can only be used when specific limiting provisions are met.{[redacted]} For example, the chemical agents may enter ash settling ponds or water run-off from coal piles. None of the other options enumerated by EPA, including water spray/fogging, partial enclosure, wind barriers, compaction or vegetative cover, must satisfy such provisions. Put another way, EPA's view is that use of chemical agents introduces unique environmental problems that {[redacted]

[65] See BNSF COALDUSTII 00117328.
[66] See BNSF COALDUSTII 00329139-40.

[redacted]

In the case of PRB coal dust leaving railcars, {[redacted]} local erosion and sedimentation issues.

Likewise, there is no evidence that {[redacted]

[67] See BNSF COALDUSTII 00117328.
[68] See BNSF COALDUSTII 00016104-07.

[redacted]

While use of toppers would serve {[redacted]} VOC's are a contributor to ground level ozone, a recognized health hazard that is monitored by the EPA, and understood to already be at or near {[redacted]

[69] See BNSF COALDUSTII 00003571.
[70] See BNSF COALDUSTII 00007318.
[71] See, for example, BNSF COALDUSTII 00336450-55. {[redacted]} (BNSF COALDUSTII 00329132-33)
[72] See BNSF COALDUSTII 00117330.

[redacted]

9. Progress Already Made

The rationale for imposing an expensive method of controlling fugitive coal releases, such as the safe harbor toppers, has been {[redacted]

[redacted]

[73] See BNSF COALDUSTII 00329182.
[74] See BNSF COALDUSTII 00581049; UP-AECC-00003869. {[redacted] }See UP-BNSF-00003989.
[75] {[redacted] } See BNSF COALDUSTII 00007183.
[76] As shown at BNSF COALDUSTII 00581651, {[redacted] }

[redacted]

[77] See BNSF COALDUSTII 00581049; UP-AECC-00003869.
[78] See Dust I, BNSF COALDUST 0000666.
[79] See BNSF COALDUSTII 00581049; UP-AECC-00003869. {[redacted]} See Dust I, BNSF COALDUST 0003244.
[80] See BNSF COALDUSTII 00581049; UP-AECC-00003869.
[81] See Dust I, UP AECCBN-0001640 {[redacted]}
[82] See BNSF COALDUSTII 00007806.

{[redacted]}

10. BNSF's Arbitrary Standards

The standard BNSF used to select the safe harbor toppers {[redacted]} on the intuitive rationale that too much coal was leaving railcars, and that something needed to be done to curtail a significant proportion of those losses.

In the early stages of planning for the Super Trials, the stated standard {[redacted]}

[83] {[redacted]}

[redacted]

[85] See BNSF COALDUSTII 00003420.
[86] See BNSF COALDUSTII 00574002.
[87] See BNSF COALDUSTII 00142151; BNSF COALDUSTII 00146329; BNSF COALDUSTII 00153719.
[88] See BNSF COALDUSTII 00015619 {[redacted]} See BNSF COALDUSTII 00006800.

[redacted]

[redacted]} BNSF has no basis for believing that comparatively minor imperfections of these types – which do not appear in BNSF's profiling requirement, and have not since Day 1 – {[redacted]}

[89] See BNSF COALDUSTII 00016052.
[90] See BNSF COALDUSTII 00015620.
[91] Descriptions of the specific conditions that may cause a{[redacted]}

Ultimately, the multiple {[redacted]} reflect nothing more than the extent of the power BNSF exerts over dust control issues. BNSF decided that its primary objective in the Super Trials was to show that {[redacted]} To achieve that objective, BNSF then was able to turn a {[redacted]}

Fortunately, the Board is under no obligation to follow BNSF's arbitrary decisions, or BNSF's attempt to {[redacted]} While BNSF might wish to tempt the Board with the idea that it can put coal dust issues to rest simply by approving use of this small set of toppers, {[redacted]} the acceptance of alternative approaches.

11. Actual Topper Performance Falls Far Short of Stated Standards

The actual performance of the safe harbor toppers in real-world conditions is {[redacted]}

[92] As reported at BNSF COALDUSTII 00003276, {[redacted]}

[redacted]

Specific circumstances or conditions that have not properly been accounted for in the testing and analysis underlying the selection of the safe harbor toppers include the following:

- {[redacted]} it should not surprise anyone that water-based toppers may experience application and performance problems when applied in Wyoming in the winter.[96] {[redacted]} For someone sitting in Fort Worth, where the average daily low temperature never goes below freezing, these considerations may look like nothing more

[93] See BNSF COALDUSTII 00015683-85.
[94] See, for example, BNSF COALDUSTII 00008562, where {[redacted]}

than academic concerns. For someone applying toppers in the PRB, these considerations are an unpleasant reality, as the average temperature in Gillette, WY is below freezing for over 100 days each year (Nov 21-March 3), and for almost half the year (October 23–April 19) the average low temperature each day is below freezing.[98] Indeed, when the temperature is on its way to 87 degrees on a beautiful spring day in Fort Worth,[99] it can easily be snowing in Gillette.[100] The claim of an 85 percent reduction {[redacted]} the cold weather conditions that prevail for a significant proportion of the year in the PRB.

- {[redacted]}

[98] Source: http://www.weather.com/weather/wxclimatology/daily/USWY0067 . {[redacted]}
[99] http://www.almanac.com/weather/history/TX/Fort%20Worth/2010-05-12 .
[100] See BNSF COALDUSTII 00006239.
[101] See BNSF COALDUSTII 00329127.

[redacted]

[102] For example, BNSF COALDUSTII 00003277 indicates that [redacted]

[redacted]

[104] See BNSF COALDUSTII 00157227-28.
[105] See BNSF COALDUSTII 00007331.
[106] BNSF {[redacted]}(BNSF COALDUSTII 00149802).

[redacted]

[107] See BNSF COALDUSTII 00311350-63 (Line 23).
[108] See, for example, BNSF COALDUSTII 00573216, which shows {[redacted]}
[110] See BNSF COALDUSTII 00572469.
[111] See BNSF COALDUSTII 00007275.

[redacted]

Overall, the appearance of 85 percent effectiveness, where it has been achieved, has only occurred because {[redacted]}

12. Confident Performance Falls Far Short of 85 Percent Claim

Even if the testing and analysis had encompassed the conditions referenced in the preceding section, the performance of the safe harbor toppers in which confidence can be placed would be {[redacted]}

[112] See BNSF COALDUSTII 00580441.
[113] See, for example, BNSF COALDUSTII 00000439.
[114] {[redacted]} (BNSF COALDUSTII 00016195)

[redacted] Put another way, if the true likelihood of success is 65 percent, the likelihood of a sequence of 7 successes is $(0.65)^7 = 0.05$, so the likelihood of a sequence of 7 successes is less than 5 percent if the true likelihood of success is under 65 percent.

While this math looks pretty noncontroversial, {[redacted]}

Confidence in the performance assessment is also {[redacted]} If 7 test trains each show an untreated loss of 2 grams of coal in the PC's, and the 8th train shows a loss of 14 grams, the 8th train alone would account for half of the measured coal loss (=(14)/(14 + (7x2))). Just as the Board's Waybill

[115] See BNSF COALDUSTII 00001135.

Sample is stratified to sample disproportionately from the rail waybills that account for the most loads, a valid analysis of fugitive coal must give appropriate attention and weight to the observations that generate the most fugitive coal. {

[116] See BNSF COALDUSTII 00157829.

[117] I believe the considerations I've discussed related to the methodology BNSF used to analyze the PC data are more than sufficient for the Board to conclude that BNSF has not substantiated its claims regarding the performance of the safe harbor toppers. While I have not delved deeply into specific criticisms of the computations BNSF performed on the observations it elected to use, that should not be interpreted as an endorsement of the propriety of those computations.

[118] See, {

[redacted]

A similar situation arises regarding the second train in the same set of samples. The samples from that train were {[redacted]

[redacted] } (BNSF COALDUSTII 00157765)

[119] {[redacted]}

[120] This problem arises again at BNSF COALDUSTII 00324202.

[121] See BNSF COALDUSTII 00158264.

[redacted]

it would be impossible for the Board to ascribe credibility to BNSF's topper performance claims. The apparent willingness of {[redacted]}

[122] See BNSF COALDUSTII 00158265.
[123] See BNSF COALDUSTII 00158264.
[124] See BNSF COALDUSTII 00158270.
[125] {[redacted]}

{[redacted]} obstacles they create for cost-effective options other than toppers that, in combination with actions already taken, would satisfy the original objective. With one hand, BNSF {[redacted]} This may make sense if you are a monopolist who has decided that {[redacted]} and are willing to {[redacted]} but it bears no relation to even-handed assessment of fugitive coal control methods or to the public policy considerations that guide the Board's actions.

13. The Safe Harbor Toppers Fail BNSF's Own Dusting Test

Notwithstanding BNSF's claims that the safe harbor toppers achieve 85 percent reductions in fugitive coal above and beyond savings that already have been achieved through other means, trains treated with the safe harbor toppers {[redacted]}

[redacted] should qualify for some type of award for irony, since (a) one of BNSF's stated goals for the Super Trials was to affirm the validity of the {[redacted]}; and, (b) BNSF has used {[redacted]}

I agree with the Board's rejection of BNSF's planned application in Dust I of results from the trackside monitors, and am on the record in that proceeding with numerous concerns regarding the IDV.2 measurements. That said, the trackside monitoring system appears to be {[redacted]} rationale for the toppers.

14. Issues BNSF Has Not Addressed

BNSF apparently has undertaken {[redacted]} several important issues associated with the use of toppers that arise at or enroute to the destination of the load. These include:

[126] See BNSF COALDUSTII 00343726.

[127] {[redacted]}

[redacted]

[128] {[redacted]

[redacted]}

[130] See BNSF COALDUSTII 00143310.
[131] See BNSF COALDUSTII 00007984.
[132] See BNSF COALDUSTII 00117328-29.

(e) [redacted]

Without reasonable transparency regarding these significant consequences of topper use, which {[redacted]} it would be impossible for the Board to find such use to be consistent with the public interest.

15. Reasonable Alternatives That BNSF Has Ignored

There is no doubt that shippers and railroads have committed significant resources to the investigation of coal dust issues. As is the nature of research, some of the information developed has come at considerable expense, but has had the effect of removing from consideration options that once held promise. For example, {[redacted]}

However, it is also the nature of research that new discoveries may introduce new perspectives and options for effective ways to address problems. UP's research {[redacted]}

[133] Coal that remains in the railcar after the dumping operation at the destination is known as "carryback", and most typically occurs in cold weather when portions of the load become frozen to railcar components. The addition of water associated with the application of toppers in cold weather can reasonably be expected to contribute to increased carryback.

[134] See BNSF COALDUSTII 00368423; BNSF COALDUSTII 00368430; BNSF COALDUSTII 00368439; BNSF COALDUSTII 00368444; BNSF COALDUSTII 00368449.

[redacted]

Specific options for reducing the release of fugitive coal that provide efficiency, cost-effectiveness, environmental and/or other advantages relative to the use of safe harbor toppers include the following:

1. {[redacted]} develop an enhanced understanding of the locations and causes of fugitive coal releases for a representative sample of movements.
2. Review speed limitations on PRB coal trains. The discovery material supplied by the railroads suggests that {[redacted]}
3. Pursue and implement improved monitoring and management of modulus changes, including the types of {[redacted]}.
4. Pursue and implement improved monitoring and management of vibrations from other sources, {[redacted]}.
5. Monitor slack action impact locations and severity on PRB coal trains. Heighten crew awareness of the need to minimize slack action, and examine and improve trainhandling procedures in identified problem areas.
6. Consider changes in load profile specification, including enhanced {[redacted]}

[135] As referenced by the Board in Dust I.

[redacted]

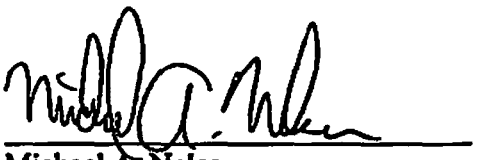
7. Increase use of 3" coal, including possible use of {[redacted]}
8. To make beneficial use of the {[redacted]} test use of a small quantity of water under pressure to move fines down from the exposed surface.
9. To make beneficial use of the {[redacted]} introduce deliberate passive vibration (e.g., by installing a short length of corrugated rail) to remove loose fines or shake them down into the load at a designated location before the train enters the mainline.
10. Test low-tech vacuum-type methods for removing fines from the exposed top surface of loads.
11. Examine the impact on fugitive coal releases of the type of {[redacted]}
12. Modify the sampling procedure used by {[redacted]}

[136] See UP-AECC-00005599-601.
[137] See UP-AECC-00005242.
[138] See BNSF COALDUSTII 00012625-30. {[redacted]}
[139] See UP-AECC-00006965.

In light of the availability of these options, which promote the economic efficiency of rail transportation of PRB coal, the Board should not acquiesce in the multiple demonstrated infirmities of the safe harbor toppers, and instead should find the safe harbor provisions to be unreasonable.

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 September 15, 2012

APPENDIX B

PUBLIC

STB Finance Docket No. 35557

Reasonableness of BNSF Railway Company
Coal Dust Mitigation Tariff Provisions

Arkansas Electric Cooperative Corporation's Replied Verified Statement of Michael A. Nelson
STB FD 35305

Chicago, B. & Q. R. Co., 34 I.C.C. 60). In contrast, ever since coal has been shipped in bulk, it has been shipped in open-top cars, a factor that supports opposition to the coal dust tariff. See, e.g., Opening Evidence of Ameren Fuels and Service Co. (Ameren Opening), at 2.

The complaining grain shippers in Chicago Bd. of Trade wanted the Commission to require the railroads to pay for installing the grain doors, on the theory that the railroads were obliged to furnish suitable cars, and cars weren't suitable for bulk grain unless the grain doors were installed. The Commission disagreed, because it saw the installation of the doors as "an incident of loading bulk grain", and the shipper, not the railroad, is responsible for loading the car. 220 I.C.C. at 761. Preventing fugitive coal dust from blowing off the tops of coal cars in transit is not "an incident of loading" the coal, but an incident of transporting it, for which the railroad, not the shipper, should be responsible.

These ancient cases do not support BNSF's claim that "[l]ong-standing case law supports" BNSF's power "to adopt the very sort of operating rule that is at issue in this proceeding", nor the "broad authority" of railroads to dictate rules for "packing and loading freight in railcars". BNSF Opening Argument, at p. 18.

Looking for prior decisions to determine whether the coal dust tariff is valid or not is a fool's errand, because the statute is clear that railroads may adopt "reasonable" rules, and this Board is here to determine whether a challenged rule is reasonable or not. The reasonableness of any rule must depend on the specifics of each rule and the objectives it is intended to advance. Another great railroad puts in well in its filing in this case:

> Railroads' statutory right to establish reasonable rules and practices is subject, of course, to the Board's power to adjudicate the reasonableness of such rules and practices upon complaint. 49 U.S.C. § 10704(a)(1). Congress did not set a standard for determining what constitutes an

> "unreasonable" practice, and instead left that question to the Board's discretion. See id; Granite State Concrete Co. v. Surface Transp. Bd, 417 F.3d 85, 92 (1st Cir. 2005) ("[S]ection 10702 does not define what would be reasonable rules and practices.").The Board has recognized that the best way to exercise its discretion is to consider unreasonable practice complaints on a case-by-case basis that accounts for the specific facts at issue.

Opening Comments Of Norfolk Southern Railway Company, at 2.

BNSF ought to know that. Rather than claim that old cases establish that a railroad has some inherent power to "adopt the very sort of operating rule" that is at issue here, BNSF should have consulted its own recent experience before the Board in North America Freight Car Ass 'n v. BNSF Ry. Co., STB FD 42060 (Sub-No. 1), (served Jan. 26, 2007). There, BNSF submitted extensive evidence that persuaded the Board that the challenged rule was reasonable.

As the discussion in the next section shows, this is precisely what BNSF has not done in this case.

C. BNSF Has Failed To Produce Any Substantial Evidence On Crucial Issues.

Railroads are not required to seek Board approval of proposed rules before putting them into effect, but where a proposed rule would make a dramatic change in the status quo for a particular class of traffic or group of customers, a railroad may take the initiative to bring the matter before the Board. For example, last year, when UP decided that it wanted to make it a policy to minimize transport of certain hazardous chemicals long distances through heavily-populated areas, it first filed a petition with the Board for a declaratory order that doing this would not violate its common carrier obligations. Union Pacific RR – Petition for Declaratory Order, STB Fin. Dkt. 35219, served June 11, 2009.