



Brotherhood of Locomotive Engineers & Trainmen

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December 5, 2006

Docket Clerk
DOT Central Docket Management Facility
Room PL-401
400 7th Street, SW (Plaza Level)
Washington, DC 20590-0001

Re: Docket Number FRA-2006-23687

Dear Docket Clerk:

Attached hereto please find the Second Supplemental Comments of the Brotherhood of Locomotive Engineers and Trainmen and the United Transportation Union with respect to the above-referenced docket.

Respectfully submitted,

Don M. Hahs
National President

Paul C. Thompson
International President

attachment

Federal Railroad Administration

in re

**BNSF Railway Company
Product Safety Plan
DOT DMS Docket No. FRA-2006-23687**

**Second Supplemental Comments of
Brotherhood of Locomotive Engineers and Trainmen
and
United Transportation Union**

The United Transportation Union (“UTU”) and the Brotherhood of Locomotive Engineers and Trainmen (“BLET”), a division of the Rail Conference of the International Brotherhood of Teamsters, are filing second joint supplemental comments concerning the above-referenced docket. BLET and UTU are the duly recognized collective bargaining representatives, under the Railway Labor Act (45 U.S.C. §§ 151 *et seq.*), for approximately 20,000 operating craft employees and yardmasters employed by the BNSF Railway Company (“BNSF”), all of whom are directly affected by the subject matter of the docket. For the reasons set forth below, UTU and BLET submit that FRA should not approve the petition without, first, requiring the amendments and changes we detail herein.

On October 12, 2006, FRA published Version 2.1 of the BNSF Product Safety Plan (“PSP”) for its Electronic Train Management System (“ETMS”). *See* FRA-2006-23687-17. Concurrently therewith, FRA published the appendices associated with the PSP. *See* FRA-2006-23687-18. The redacted documents that have been included in the public docket

number over 2,500 pages. BNSF has made substantial progress addressing issues raised by us and by FRA, which we commend.

Nonetheless, we believe that additional revisions to the amended PSP are necessary prior to approval by FRA. On May 11, 2006, we submitted joint comments with respect to the original PSP that was published. *See* FRA-2006-23687-8. Those comments were supplemented on August 4, 2006, which supplemental comments responded to BNSF's first revision of the PSP. *See* FRA-2006-23687-15. To the extent that various objections and concerns raised in those comments have not been addressed by BNSF in a satisfactory manner in the second amended PSP, we restate and renew those objections and concerns.

Section 4.2 of the PSP states that fault tree event code SCOPE019 has been set to “zero yearly occurrences as [it is] out of scope and do[es] not affect ETMS.” PSP at p. 22. Code SCOPE019 pertains to roadway workers exceeding their Form B time limits. *Id.* at p. 25. We note that the current version of the PSP states that ETMS will provide for work zone enforcement, by which the system “[p]redictively enforces entrance into unacknowledged Work Zone” and reactively enforces continued movement after stopping within a work zone. *Id.* at p. 17.

Presumably, ETMS work zone enforcement operates as to both time and location. If the system is to work properly, data must be provided concerning both the limits of a work zone and the duration of time for which roadway worker occupancy is granted. Setting SCOPE019 to zero assumes that no roadway workers ever will exceed a Form B time limit, and indicates that clear-

ing a work zone at the expiration of the time granted in BNSF's CAD system may be automatic, and not the result of action by a train dispatcher resuming authority over the limits after the roadway worker in charge has reported in the clear at or before the expiration of the allotted time.

If a roadway work group exceeds the time limit it has been granted, it appears that (a) the crew of an approaching train will be mistakenly led to believe the track is clear, and (b) predictive enforcement will not occur. Such an event would expose such a roadway work group to an imminent hazard that could otherwise be prevented. Accordingly, we urge that the PSP be revised to set the SCOPE019 failure rate to reflect either actual experience or an appropriate estimate.

We also question the basis for BNSF's estimate that a crew will become reliant on ETMS (Event HF 003) to the extent that there will be 250 equivalent rule violations per year. Id. at pp. 23, 134. In our previous comments we voiced a concern that the "constant display" of ETMS information could lead to over-reliance by and distraction of crews, and noted that BNSF's own Human Factors Analysis shared this concern.¹ However, each of the previous versions of the PSP also assumed an over-reliance rate of 250 per year. It does not appear that BNSF has addressed this concern.

¹ Indeed, BNSF, itself, acknowledges the problem, stating that it "recognize[s] that locomotive engineers could come to rely on ETMS operations and information." Id. at p. 45. Moreover, BNSF states that it has "developed training material and management oversight processes to mitigate this possibility." Id. However, the PSP fails to set forth in detail what training material and oversight processes will be employed, other than disciplining a locomotive engineer who experiences "too many" ETMS enforcement actions.

With respect to sounding the locomotive horn at a highway-rail grade crossing, the PSP notes that the ETMS II configuration includes an option “designed to automatically begin horn sequence at highway crossings if the locomotive engineer fails to initiate the horn sequence.” PSP at p. 42. As FRA knows, failure to sound the locomotive horn at a grade crossing, or failure to sound the horn in the proper pattern, exposes the violator to individual liability for a civil penalty. 49 CFR Part 222 at App. G. Because this option apparently is not equipped with a warning prior to automatic sequencing of the horn, and because the locomotive engineer’s judgment as to when to begin sounding the horn may differ from how the on-board computer is programmed, we request that any waiver granted by FRA specifically state that activation of the automatic sequencing feature will be deemed as crew compliance with 49 CFR Section 222.21.

Section 15.5 of the PSP — entitled “Parameters” — states that “[t]he braking algorithm takes into account 5% inoperative brakes,” and notes that a 15% inoperative brake assumption initially was factored in, “but was found to be too conservative.” PSP at p. 82. FRA’s Brake System Safety Standards for Freight and Other Non-Passenger Trains and Equipment specify that “[a] train shall not move if less than 85 percent of the cars in that train have operative and effective brakes.” 49 CFR § 232.103(e). Because of this disparity, an ETMS-equipped train could have three times as many inoperative brakes as assumed in the software’s braking algorithm, and yet be in compliance with FRA regulations. Therefore, any waiver granted by FRA should include a provision requiring that an ETMS-equipped train shall not move with the system activated if less than 95 percent of the cars in that train have operative and effective brakes.²

² BNSF should have no objection to such a condition, because it has represented that “experience has shown that control valves (sic) failures never even get close to the 5% number.” PSP at p. 82.

BNSF's report entitled *Electronic Train Management System: Evaluation and Test Report for Phase 1 Testing (Braking Calculation Tests)* ("Braking Distance Report") — included in the PSP as Appendix H.1 — documents the results of testing to determine “train stopping distance with different braking distance scenarios and train consists.” This provides the methodology by which the ETMS braking algorithm was developed. Several limitations are indicated by the matrix shown in Section 3 of the report. Braking Distance Report at p. 8. The heaviest train tested was 80 loaded cars, weighing 9,995 tons. The maximum speeds for which tests were performed were as follows: 30 mph downhill; 35 mph uphill; and 49 mph on flat track. It is unclear to us how the braking algorithm was calculated for (1) trains longer and/or heavier than those tested, and (2) for speed/grade conditions in excess of those tested. We request that FRA pay special attention to algorithm development for scenarios beyond the limited ones for which tests were performed.

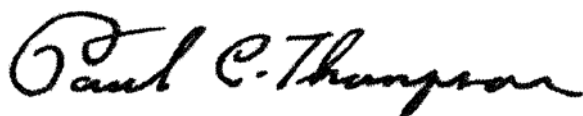
Before closing, we also wish to reiterate past concerns we have voiced on the subject of the distraction aspect of reliance, because it appears that BNSF has not addressed our concern. BNSF's own *Workload Analysis Document*, which is included in the PSP at Appendix U.2, makes the point in a way we would be hard-pressed to improve:

[I]t should be noted that issues of maintaining situation awareness and the potential for distraction are also related to workload. For example, locomotive engineers may come to rely on the ETMS map display and therefore devote attention to it in situations where they would not strictly need to because of its status as an overlay system. They may also monitor the display to stay within the ETMS braking curve in order to avoid multiple warnings and enforcement. In this way, the ETMS may draw the locomotive engineer's attention at times when that attention is not strictly necessary.

See p. 7.

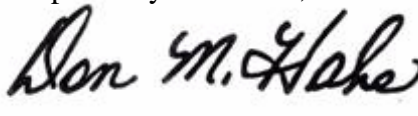
Distraction may cause the locomotive engineer to fail to observe something along the right-of-way that would prompt a necessary action on his/her part, and may lead to unanticipated negative consequences. Accordingly, we reiterate our previous request that FRA's next test waiver require BNSF to split its testing trips equally between constant display and warning/enforcement-only display in order to study whether constant display contributes to distraction. In the warning/enforcement-only display mode, the only time the monitor would display continuously is when the system is (1) not activated, (2) cut out, (3) in failure mode, (4) in warning mode, or (5) in enforcement mode.

Our support for the use of positive train control is second-to-none, because our members suffer the most severe consequences in incidents that PTC can prevent. We continue to believe that a properly developed and implemented PTC system can greatly enhance safety in the railroad industry. That development process necessarily requires that meticulous design, testing and demonstration precede full-scale implementation. We appreciate the diligence shown by FRA in analyzing BNSF's PSP in every detail, and urge that FRA continue to demand strict adherence to the rigorous standards set forth in Part 236.



Paul C. Thompson
International President
United Transportation Union

Respectfully submitted,



Don M. Hahs
National President
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Engineers and Trainmen