

**FEBRUARY 23, 2006 PUBLIC HEARING**

**BEFORE THE FEDERAL RAILROAD ADMINISTRATION**

**IN RE BNSF RAILWAY COMPANY**

**PETITION FOR EXEMPTION FROM COMPLIANCE**

**DOT DMS DOCKET No. FRA-2003-15432**

**PUBLIC DOCKET DOCUMENT No. 18**

**TESTIMONY OF**

**BROTHERHOOD OF LOCOMOTIVE ENGINEERS AND TRAINMEN**



Good afternoon. My name is Thomas Pontolillo. I am the Director of Regulatory Affairs for the Brotherhood of Locomotive Engineers and Trainmen, which is a Division of the Rail Conference of the International Brotherhood of Teamsters. The BLET represents the thousands of men and women who work as locomotive engineers on the BNSF Railway Company and, therefore, are directly affected by the waiver petition that is the subject of today's public hearing.

On January 17<sup>th</sup>, the BLET submitted preliminary comments concerning the petition, which have been published as Document 20 in this docket; those comments are incorporated into this afternoon's testimony by reference. Furthermore, the BLET plans to submit additional comments for the record prior to the March 2<sup>nd</sup> deadline that will reflect what is developed and submitted at this public hearing.

At the outset, I want to underscore Mr. Stem's statement that today's testimony is offered jointly with that of the United Transportation Union. Our two Organizations share a common position on this petition — and, indeed, on the core issues raised by ETMS and similar positive train control systems — which enables us to focus on different aspects of the petition. Therefore, FRA should view the BLET and UTU presentations as a whole.

Before reviewing the specific questions and concerns the petition has raised, I also think it would be helpful to provide FRA with the central principles that define our position. We have consistently expressed support for the development of PTC systems that have the potential to reduce the number of railroad accidents and injuries. However, we believe that the development of such technology must proceed within defined parameters.

First, we believe that PTC should be developed as an overlay on existing train control systems. Second, we believe that PTC — **as an overlay** — is properly used when it enhances the performance of the locomotive engineer, and not as a means to automate the work of the locomotive engineer. Third, we believe that the most effective PTC is one that complements and supplements the work of today's two- or three-person train crew, and that PTC as a means of further reducing crew size will diminish — rather than enhance — safety.

Fourth, that the collision-avoidance systems built into PTC should go beyond providing train-to-train protection, and should include protection for roadway workers. And, fifth, because of the predominance of inter-railroad use of locomotives, an economic and operational efficiency we have facilitated with modifications of our collective bargaining agreements, PTC systems on different railroads should be fully compatible with one another.

With respect to the petition that the subject of today's hearing, we do not believe FRA is in a position to grant BNSF the requested waiver for several reasons. In its petition, BNSF proposes to be governed by the waiver granted for the Beardstown project, and further proposes a three-phase implementation similar to that employed on the Beardstown project. These proposals would appear reasonable, if the Beardstown methodology and waiver provided a sufficient basis for determining the safety and reliability of ETMS.

However, the BLET submits that FRA is not in a position to pass judgment on the sufficiency of the Beardstown methodology and waiver because that project has not yet been

completed. Indeed, Phase 3 of the demonstration is proceeding at a far slower pace than the first two phases.

According to data submitted by BNSF for the public record:

- Phase 1 began on October 13, 2004, and ended 153 days later, on March 14, 2005; during this period, BNSF operated 1,853 trains, of which 887 — nearly 48% — were ETMS trains.
- Phase 2 began on March 16, 2005, and ended 193 days later, on September 24, 2005; during this period, BNSF operated 2,523 trains, of which 667 — almost 26½% — were ETMS trains.
- Phase 3 began on September 25, 2005, and has not yet been completed; during the 128 days up to and including January 30, 2006, the last date for which BNSF has submitted data, BNSF operated 1,644 trains, of which only 79 — less than 5% — were ETMS trains.

Since the Beardstown project began, BNSF has averaged roughly 12 to 13 trains per day over the line: 12.11 during Phase 1, 13.07 during Phase 2, and 12.84 during Phase 3. However, as the demonstration has progressed, the number of ETMS trains per day has declined precipitously: from 5.8 per day during Phase 1, to 3.46 per day during Phase 2, to 0.62 per day during Phase 3. In fact, at the rate reported by BNSF, Phase 3 will not attain the minimum 666 trips specified in the governing waiver until September of 2008.

Chart 1, which is attached to the written submission of our testimony, shows a month-by-month comparison of the number of ETMS trips across each of the three phases. It clearly demonstrates that there has been a vast reduction in the number of trips per month during Phase 3, as compared to the earlier phases.

Not only have there been far fewer ETMS trips in Phase 3, as compared to the corresponding months in the earlier phases, but the median trip time also has decreased markedly. The median trip length during Phase 1 was 5:13, and the median trip length during Phase 2 was 5:23. The median trip length for Phase 3, thus far, has been 4:40, which is 10½% shorter than the median Phase 1 trip length and over 13% shorter than the median Phase 2 trip length. Chart 2 shows a month-by-month comparison of median ETMS trip length across each of the three phases.

The dramatic decline — both in the number of trips (the quantity of testing) and in median trip length (the quality of testing) — should give FRA pause in considering BNSF's petition. Not only did the number of Phase 1 trips exceed by one-third the number prescribed for minimum satisfaction of the Phase 1 conditions, Phase 3 has proceeded at a snail's pace. While no clear cause for this significant change is apparent from the publicly available data, we submit that the record does not support a conclusion that the Beardstown waiver conditions provide an appropriate basis for assessing ETMS safety and reliability; much less that ETMS has satisfied those conditions.

We also note that the public docket fails to include an updated version of BNSF's Railroad Safety Program Plan, or RSPP. This has raised several additional questions and concerns, which are premised on our review of the RSPP docketed in connection with the Beardstown waiver petition.

Section 4.1.3(a) of the Beardstown RSPP, which establishes the minimum risk design standards for ETMS system safety precedence, states that said design shall “[m]inimize **or eliminate** the use of human input for safety-critical functions.” In its Final Rule on processor-based signal and train control, FRA noted that the “overriding conclusion from the research is that processor-based signal or train control systems that have been designed with human-centered design principles in mind — **system products that keep human operators as the central active component of the system** — are more likely to result in improved safety.” *See* 70 Fed. Reg. 11090. For this reason, FRA promulgated design criteria for the human-machine interface, or HMI, as Appendix E to Part 236.

In particular, FRA promulgated paragraph (c)(1), which “addresses ‘reduced situation awareness and over-reliance,’ which can result when products transform the role of a human operator from an active system controller to a passive system monitor. Essentially, a passive operator is less alert to what the system is doing, may rely too heavily on the system and become less capable of reacting properly when the system requires the operator’s attention.” *Id.*

To safeguard against over-reliance and loss of situational awareness, FRA’s HMI design requires that a locomotive engineer must “remain ‘in-the-loop’ for at least 30 minutes at a time,” as specified in paragraph (c)(1)(i) of Appendix E. We question whether the design standard set forth in Section 4.1.3(a) of the Beardstown RSPP meets the requirements of Appendix E, paragraph (c)(1)(i).

We also note that the Beardstown RSPP was identified as a draft document, version 1.1. This observation leads to the following general questions: Has the RSPP been revised and, if so, how many times? What were the specific revisions and the reasons therefor? What have been the implications and effects of those revisions on the safety, reliability, and functionality of ETMS?

Besides these general concerns, we have several other specific questions. Section 4.1.2 of the Beardstown RSPP established general parameters for the risk assessment of ETMS. Four classifications of hazard severity were defined, ranging from negligible to catastrophic. Five classifications of hazard probability were identified, ranging from improbable to frequent. A hazard risk resolution matrix was created, comprised of the twenty possible combinations of severity and probability, for which four risk resolution categories were specified. BNSF’s Beardstown hazard risk assessment rated six of the severity/probability combinations as unacceptable, five as undesirable, six as acceptable with review by BNSF management, and three as acceptable without managerial review. We have the following questions concerning ETMS risk assessment:

- What modifications, if any, have been made to the hazard severity classifications, and why were they made?

- What modifications, if any, have been made to the hazard probability classifications, and why were they made?
- What modifications, if any, have been made to the risk resolution categories, and why were they made?
- What modifications, if any, have been made to the risk assessments for the twenty possible combinations of severity and probability, and why were they made?

Section 6.3 of the Beardstown RSPP states that “changes in railroad operations such as increased train volumes, passenger volumes, and/or operating speeds resulting from the implementation of [ETMS] must be analyzed for the total change in risk, and then separately to identify and distinguish risk changes associated with the use of [ETMS] from risk changes due to changes in operating practices.” This leads to the following questions:

- What modifications, if any, have been made to this requirement, and why were they made?
- The petition before FRA establishes that traffic volume on the routes covered by the petition is approximately twice that of what is established by the Beardstown data. Have the additional analyses specified in Section 6.3 been performed and, if so, what do those analyses show?

Section 5.2 states that ETMS “may be overlaid on Non-Abs, ABS, and CTC and is independent of train volume, load volume, passenger train volume, hazardous material volume, operating speeds, and other physical and operating characteristics” and that the Product Safety Plan — or PSP — “will also describe the maximum train volume, train frequency, operating speed, and other physical capacities as applicable, for which the system is designed.” The following questions apply to this RSPP provision:

- What modifications, if any, have been made to this requirement, and why were they made?
- Did the Beardstown PSP specify volume, frequency, speed, and other relevant physical capacities at the level required for the much busier routes covered by the petition now before FRA?
- If not, has BNSF submitted a revised PSP that meets the requirements of Section 5.2?
- If the revised PSP meets the requirements of Section 5.2 I just detailed, what data has BNSF provided that would support such a dramatic increase in the capacities of the system?

Section 6.3 also states that “[i]nstallation of [ETMS] as a non-vital overlay in Non-ABS territory in connection with major increases in traffic, or speed must be adjusted to assume

installation of a traffic control system (ABS) that would be required to support such increases to establish a baseline and prevent a worsening of the safety situation.” Has BNSF established an independent baseline for the routes covered by the petition and, if so, does the supporting data meet the requirements of Section 6.3?

With respect to all of these issues, we submit that any material change in the RSPP that served as the basis for the Beardstown waiver renders the instant petition as something significantly different than an “expansion of] the current waiver,” as BNSF has represented. Therefore, even if the Beardstown project had been completed — and the Beardstown conditions were deemed to be a sufficient basis for demonstrating the safety and reliability of ETMS — we believe that the Beardstown model is not appropriate because of one or more material changes in the RSPP, and that FRA should consider this petition as new and different from the Beardstown demonstration.

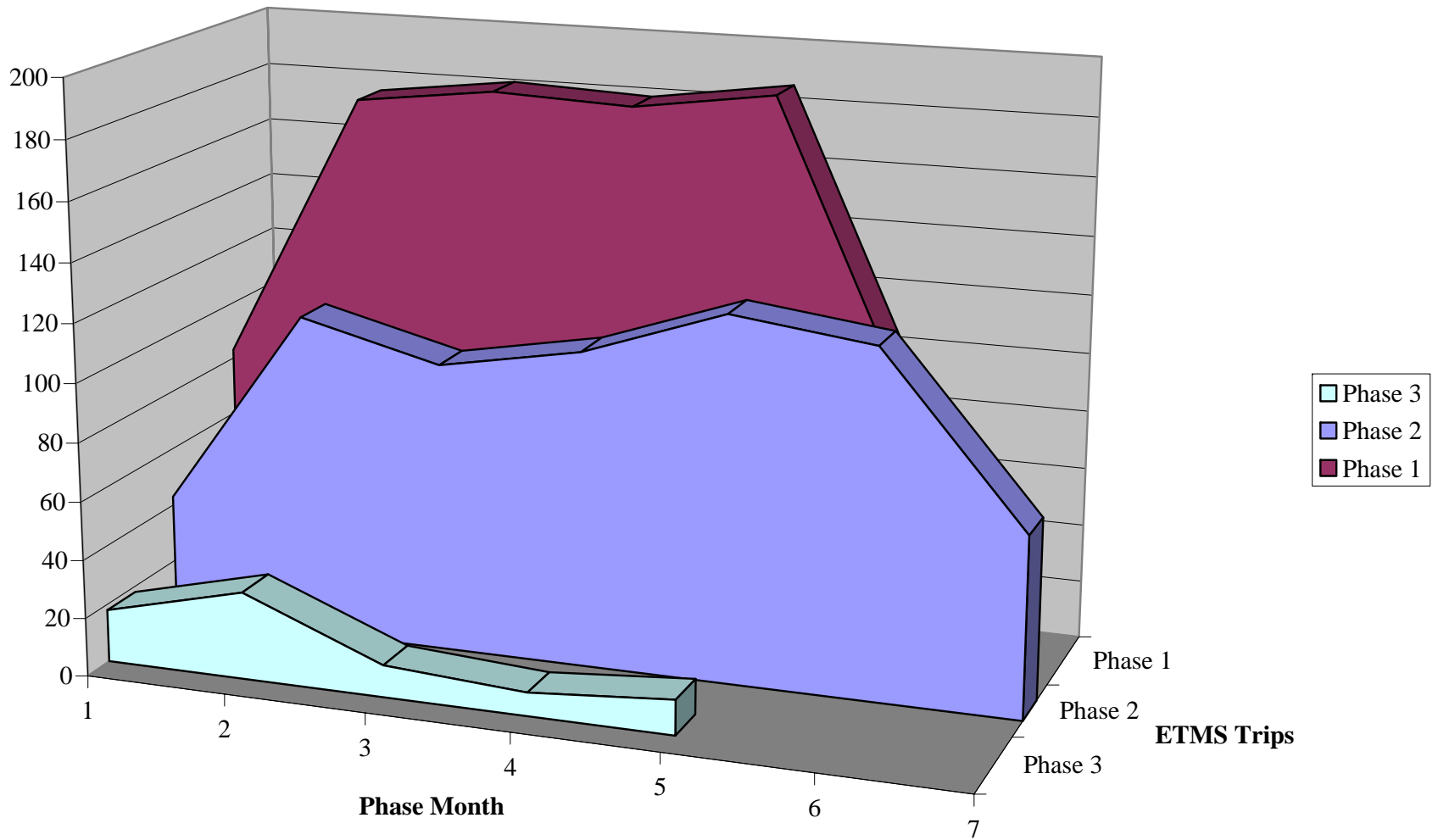
In addition to these issues and questions, we raised more than two dozen questions in our January 17<sup>th</sup> preliminary comments. Those questions continue to be relevant to the disposition of BNSF’s petition, and we restate them for the record by reference here.

Before ending, I want to briefly return to the related issues of over-reliance and loss of situational awareness, concerns we share with FRA. The ETMS in-cab display during the Beardstown demonstration has been active at all times the system is in operation. In contrast, the Communications Based Train Management system — or CBTM — being tested by CSX activates the in-cab display only when a brake warning is given or when a CBTM-initiated braking event occurs.

We believe, because of these different display configurations, that ETMS is more likely to cause over-reliance and loss of situational awareness than CBTM. At the very least, we submit that this issue needs further study. Accordingly, we propose that, should BNSF ultimately be granted a waiver to expand testing of ETMS, the waiver conditions should require parallel testing for both constant display mode and brake warning/braking event-only display mode, to develop data to better assess the potential for over-reliance and loss of situational awareness inherent in the system.

For all of the reasons previously stated, as well as for those we have presented today, we respectfully request that FRA deny BNSF’s petition because it is insufficient. In the alternative, we request that FRA hold the petition in abeyance until all of the issues and questions raised by the BLET and the UTU are satisfactorily resolved. We thank you for the time you have afforded today, and are prepared to answer any questions you may have.

**Chart 1. Month to Month Comparison**



**Chart 2. Median ETMS Trip Length**

