Brotherhood of Locomotive Engineers and Trainmen

A Division of the Rail Conference — International Brotherhood of Teamsters

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DON M. HAHS
National President

Via Electronic Mail

May 16, 2006

The Honorable Joseph H. Boardman
Federal Railroad Administrator
1120 Vermont Avenue, N.W.
Washington, DC 20590

Dear Administrator Boardman,

I am writing concerning the recently released FRA Final Report on the Safety of Remote Control Locomotive (RCL) Operations. As you know, BLET members have a substantial interest in the subject matter of the report. While there is much in the Final Report that supports the BLET's position concerning this technology, I first want to address a number of areas of disagreement.

FRA goes to great lengths to put the best possible face on RCL operations, claiming that "RCL and conventional train accident rates were virtually identical for those major railroads that made extensive use of both types of operations." Final Report at p. 1. However, FRA concedes that for "the industry as a whole, RCL train accident rates were approximately 25 per cent higher than the train accident rates for conventional switching operations, i.e., 22.42 vs. 17.89 accidents per million yard switching miles (MYSM)." Id. FRA attempts to reconcile this contradiction by claiming the following:

- The higher rate for RCL operations is largely because the railroad that historically has had the lowest human factor train accident rate relies almost exclusively on conventional switching.

- Approximately 85 percent of the yard switching miles were generated by only three (BNSF, CSX, and UP) of the 38 railroads evaluated. A comparison of accident rates for these three railroads indicates a rate of 24.09/MYSM for RCL operations and a rate of 24.52/MYSM for conventional operations.

Id. at pp. 1-2.

Before FRA's claims can be properly considered, I first must address two major flaws in FRA's data analysis.[1] The first is the fact that FRA's use of yard switching miles (YSM) as the analytical metric is inappropriate, because it does not normalize the data to account for the elimination of one position on each RCL switching crew. While no statistical fallacy is claimed here, a definitional issue exists regarding what constitutes operational safety. Reporting conventional and RCL accidents by miles and not by crew work hours overemphasizes the productivity aspects (amount of movement that occurred over time) versus the safety aspects (amount of exposure opportunities faced by crew members over time). Safety should be quantified in terms of exposure risk and not in terms of productivity or distance traveled. Conversely, analyzing the RCL data by use of a metric that emphasizes productivity over exposure provides a built-in bias in favor of RCL that almost guarantees RCL will appear to be safer.

Moreover, the utility of the YSM measure has been questioned for many years. The debatable value of this measure was highlighted several years ago by Foster-Miller, in its July 2001 report *Examination of Railroad Yard Worker Safety*, covering the period from March, 1998, through September, 2000. In the section entitled "Recommendations for Improved Analysis of Worker Safety," Foster-Miller stated that

> More in-depth analysis of yard injury and accident data requires additional injury and accident exposure measures. Number of cars switched per month is a candidate exposure measure for both injuries and accidents. This metric, in contrast to the currently reported "yard switching miles," would be a measure of actual operations rather than an estimated measure, which may be the case for number of switching miles.

See DOT/FRA/ORD/01-20 at p. 139.

This report echoed what FRA, itself, had acknowledged six months earlier. On February 14, 2001, FRA published Notice of Safety Advisory 2001-01, which established "recommended minimal guidelines for the operation of remote control locomotives." 66 Fed. Reg. 10340. In reviewing the material and comments presented at a technical conference on RCL held the previous summer, FRA noted that

> Several commentors (sic) submitted data that indicate accidents and incidents dropped dramatically as RCL operations increased. Although FRA commends these commentors

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[1] FRA claims that "[a]ll of the data presented in this report was provided to the Operating Rules Working Group of the RSAC during the summer of 2005 for its consideration," apparently implying that industry stakeholders had some input into the analysis and reporting of data. Id. at p. 9. This assertion is factually erroneous. At the July 12-13, 2005 meeting of the Railroad Operating Rules Working Group, a total of forty (40) documents were introduced. One of those documents — RROPR05-0712-27 — contained only five (Tables 1-1, 1-2, 1-4, 3-1, and 3-2) of the nineteen tables that appear in the Final Report. Moreover, no input was solicited, and delays in publishing the Final Report forced us to withhold comment until the final product could be reviewed and the data considered in their proper context.

> (sic) for their efforts in gathering such data, FRA notes that the data used were obtained without equal exposure metrics to allow valid comparisons between remote control and manual operations (i.e., ***comparisons were not equalized for the number of labor hours and number of employees***). ***Normalizing safety data is necessary to clarify our understanding of the potential safety risks.***

66 Fed. Reg. 10341 (emphasis added).

Furthermore, FRA Guideline C.4 recommended "***that the railroad keep a record of the total number of labor hours*** and the total number of employees by location ***for both RCL and manual switching operations to ensure that accidents and incidents are accurately measured, and that valid comparisons between the two types of operations can then be made***." 66 Fed. Reg. 10344 (emphasis added). FRA's RCL Final Report also concedes that data analysis based upon "200,000 work hours is preferable" to utilizing one million yard switching miles ("MYSM").[2] Final Report at p. 9.

FRA states that it was forced to analyze the data on the basis of MYSM because it "did not have access to work hour data disaggregated in the manner that would have been required to perform this analysis." Id. In other words, the industry simply ignored Guideline C.4 and submitted only the data it chose to submit, notwithstanding the fact that railroads maintain electronic timekeeping, payroll and hours of service records that easily could have been culled to provide work hour data. As a matter of fact, FRA admitted it received only "monthly reports from each railroad that indicate total yard-switching-miles for that month." Id. at p. 7.

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[2] Indeed, the propriety of this metric has long been recognized by the U.S. Occupational Safety and Health Administration ("OSHA"). Standard OSHA methodology employs human-oriented measures involving numbers of full-time workers and worker days. *See* "Occupational Exposure Sampling Strategy Manual," January, 1977, DHHS [NIOSH] Publication No. 77-173. The OSHA Glossary of Terms provides the following guidance:

> "**Exposure.** The reasonable likelihood that a worker is or was subject to some effect, influence, or safety hazard; or in contact with a hazardous chemical or physical agent at a sufficient concentration and duration to produce an illness.
>
> "**Incidence rate.** The number of injuries, illnesses, or lost workdays related to a common exposure base of 100 full-time workers. The common exposure base enables one to make accurate interindustry comparisons, trend analysis over time, or comparisons among firms regardless of size. This rate is calculated as:
>
> N ÷ (EH x 200,000) where:
>
> N = number of injuries and/or illnesses or lost workdays; EH = total hours worked by all employees during calendar year; 200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year)."

Id. at Appendix A.

For the future, FRA notes that it "is exploring options for pursuing work hour data that would be more suitable for this purpose." Id. at p. 9. In this regard, it should be noted that BLET specifically requested — as part of the comment process concerning Part 225 data collection made pursuant to OMB Control No. 2130-0500 — that FRA revise certain of its reporting forms to require railroads to submit work hour data broken down by type of service and whether RCL or conventional operations are involved. *See* 71 Fed. Reg. 9411. Commendably, FRA has committed to attempting to fund an independent study on our request either this fiscal year or next. Id.

However, neither FRA's failure to require the industry to provide appropriate data as a result of its decision not to directly regulate RCL, nor the industry's refusal to provide the data requested in Guideline C.4, force us to consider the data solely on the basis of a flawed analysis. After all, as the late John W. Tukey — noted Princeton statistician — famously said: "Better to have an approximate answer to the right question than a precise answer to the wrong question."

At the aforementioned Railroad Operating Rules Working Group meeting in July of 2005, FRA stated that each yard crew start is credited with forty-eight (48) YSM. Thus, the summary YSM data for each railroad can be converted into starts by dividing 48 into the total YSM. Further, as FRA notes in the Final Report

> Typically, conventional yard switching operations are conducted with three crewmembers – two stationed on the ground to operate switches and couple or uncouple cars, and one stationed in the locomotive cab to operate the locomotive. By using RCL technology, the operator (engineer) on board the locomotive may be eliminated because the locomotive can be remotely controlled by either of the two crewmen on the ground.

Final Report at p. 10.

The number of starts multiplied by the crew size, multiplied by eight produces the number of work hours. Converting FRA's YSM accident rates to rates based upon the 200,000 crew work hours ("CWH"), which FRA acknowledges is the more appropriate metric, produces the following accident rate changes for the four largest Class I railroads, which generated nearly 83% of all reported yard switching miles:

Accident	per MYSM			per $2E^5$ CWH		
Rates	RCL	Conv.	Ratio	RCL	Conv.	Ratio
BNSF	23.08	18.03	1.28	110.78	57.68	1.92
CSX	13.81	19.69	0.70	66.28	62.99	1.05
NS	12.69	9.56	1.33	60.93	30.60	1.99
UP	28.23	36.05	0.78	135.51	115.37	1.17

When properly normalized, the data establish that RCL accident rates are higher on each of these railroads, and on two of them — BNSF and NS — the RCL accident rate is nearly twice the conventional accident rate. Also, normalizing the injury data establishes that RCL rates are higher on two (BNSF and UP) of the four largest Class I carriers, contrary to the implication on this subject in the Final Report.

The other flaw in FRA's analysis was its decision to portray accident rates "for the industry as a whole." Id. at p. 1. Each railroad reported summary data. It is improper to calculate a mean rate for the industry by adding the summary data and then determining a single rate, because each railroad utilizes RCL based on its individual requirements, finances, and operating philosophy. The proper methodology is to calculate the mean accident rate by adding all the individual accident rates, and then dividing the sum by the number of accident rates contained in the summary.

Making this correction changes FRA's reported accident rates of 22.42 for RCL operations and 17.89 for conventional operations to 22.08 for RCL and 9.56 for conventional. The true mean RCL accident rate is more than 2.3 times the mean conventional accident rate, rather than 25% higher, as FRA claims, even utilizing the non-normalized YSM data. Further, if CWH is used — in order to normalize the data to account for different crew sizes — the mean RCL accident rate is 105.99 per 200,000 CWH, nearly three and one-half times the 30.59 mean conventional accident rate.

These two analytical flaws underlie numerous assertions appearing throughout the Final Report. For example, FRA claims that accident rates for the three Class I railroads generating approximately 85% of YSM — BNSF, CSX, and UP — are 24.09 for RCL and 24.52 for conventional. From this calculation, FRA invites the inference that RCL and conventional operations are equally safe, for the most part. However, correcting for the flaws in FRA's calculation, the true mean rates for these three railroads are 133.27 for RCL and 74.18 for conventional, a ratio of almost 1.8:1.

Likewise, FRA asserts that the mean injury rates for these three railroads are 6.58 for RCL and 9.54 for conventional; i.e., the rate for conventional switching operations is 45% higher than the RCL rate. Once again, however, correcting for the improper methodology produces mean injury rates of 29.56 for RCL and 31.39 for conventional, which are roughly equivalent. For the industry as a whole, FRA claims mean injury rates of 6.49 for RCL and 8.14 for conventional, and hypothesizes that "[o]ne obvious reason for the rate difference is the reduction of crew size from three to two individuals; this certainly reduces injury exposure." Id. at p. 9. Normalizing the data for crew size and calculating the mean rates using proper methodology produces mean injury rates of 31.17 for RCL and 26.05 for conventional.

Thus, not only is the mean RCL accident rate significantly higher than the mean conventional accident rate, the mean RCL injury rate is nearly 20% higher than the mean conventional injury rate. Moreover, normalizing the fatality data reported establishes that the RCL fatality rate is not 2.25 times the conventional fatality rate as reported by FRA (0.09 versus 0.04). The industry-wide RCL fatality rate normalized for crew size is 0.46, which is over 3½ times the normalized conventional fatality rate of 0.13.[3]

The Final Report also is misleading with respect to accidents involving the release of hazardous materials. FRA reports that, when "weighing the data by allocated switching-miles, the hazmat-release accident rate for RCL (.19) is higher than for conventional (.10)." Id. at p. 10. Normalizing the data to account for different crew sizes — and calculating accident rates on the basis of 200,000 crew work hours — the RCL rate is 0.91, almost three times the conventional rate of 0.32. However, that is only part of the story: the primary cause in 75% of RCL accidents resulting in a hazardous material release was reported to be a human factor (switch improperly lined, failure to control shoving movement, and "other"), while none of the conventional accidents resulting in a hazardous materials release involved human factors as a primary cause. Id. at p. 61 (Tables 2-1, 2-2).

Having analyzed the data utilizing more appropriate methodologies, the context now is established for addressing the two reasons proffered by FRA that purport to explain why the RCL accident rate is higher than the conventional accident rate. First, FRA claims, "[t]he higher rate for RCL operations is largely because the railroad that historically has had the lowest human factor train accident rate relies almost exclusively on conventional switching." Id. at p. 1. Although this railroad is not identified, FRA apparently is referring to Norfolk Southern ("NS"), which ranks third in total YSM, of which 6.2% are reported as being in RCL operations, and ranks second in CWH, 4.2% of which are in RCL operations.

FRA's rationale falls short of the mark for several reasons. The accident report data FRA seeks to clarify includes accidents from all causes; therefore, the "historical" rate of NS human factor-caused train accidents does not relate to a 12-month review of switching accidents from all causes. The ratio of the RCL accident rate to the conventional accident rate for NS is approximately 1.33:1 (12.69:9.56) utilizing YSM data. This ratio is higher than the 1.09:1 ratio (22.84:20.88) for all other railroads, using YSM data and FRA's mean accident rate methodology. Similarly, the ratio of the RCL accident rate to the conventional accident rate for NS is approximately 1.99:1 (60.93:30.60) utilizing CWH data, and is higher than FRA's "average"

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[3] Railroad-specific fatality data was not included in the Final Report, making it impossible to calculate mean fatality rates using proper methodology. However, even if fatality data had been broken down by railroad, the number of fatalities is such that the value of a mean fatality rate is questionable. The same is true of the hazardous material release data and human factor accident rates, both of which are addressed below.

industry-wide ratio — excluding NS — of 1.64:1 (109.61:66.82). Thus, even FRA's methodology belies the accuracy of the claim that NS data distort overall rates to the detriment of RCL.[4]

We also note that Table 1-2 demonstrates that human factors were the primary cause in 60.25% of RCL accidents, but in only 52.6% of conventional accidents. Since these data were not broken down by railroad, it is impossible to define the extent to which the low "historical" NS human factor accident rate contributed to this difference during the 12-month review period. However, the following facts are significant in this regard: NS RCL accidents accounted for 2.3% of all RCL accidents; NS YSM and CWH represented 4.1% of all RCL YSM and CWH; NS conventional accidents accounted for 14.1% of all conventional accidents; and NS YSM and CWH represented 26.4% of all conventional CWH and CWH. These relationships are nearly identical, and certainly do not support the notion that NS data somehow tilts the figures in the direction of conventional operations.

Similarly, FRA acknowledges that "[w]here human factors are concerned, RCL accident rates overall are higher than conventional operations; i.e., 13.51 for RCL vs. 9.41 conventional/MYSM." Id. at p. 8. Thus, the 43.6% higher RCL rate for human factor accidents is almost double the 25% higher RCL rate for all accidents, based on FRA's calculations. Normalizing the data for crew size differentials, the human factors RCL accident rate is 115% higher than the conventional accident rate (64.84/30.12), whereas the overall RCL accident rate is "merely" 88% higher than the overall conventional accident rate (107.61/57.26) when using FRA's method of calculating the industry mean. *See* n. 2, *supra*.

The second point argued by FRA is that the 25% higher RCL accident rate — by FRA's calculation — is not the appropriate measuring stick. Instead, FRA urges, the relevant benchmark is averaging accident rates for BNSF, CSX, and UP, which account for approximately "85 percent of the yard switching miles." Id. at p, 1. These three railroads **do not** account for approximately 85% of YSM; they account for 85% of **RCL YSM only**. However, the purpose of the study was not to evaluate RCL in a vacuum, but to compare RCL and conventional operations. In fact, the charge of Congress requiring FRA to report was not limited to assessing only major railroads that made extensive use of both types of operations, but to assess RCL operations in the universe it occupies.

These three railroads account for less than 54% of all conventional YSM, and 63.2% of total YSM.[5] Thus, FRA's mean conventional accident rate for these railroads bears little significance for the industry as a whole, while FRA's RCL accident rate for these railroads dispropor-

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[4] A similar comparison of injury rates is not possible because NS reported no injuries in RCL operations.

[5] When the data are normalized for crew size, the BNSF, CSX, and UP CWH comprise 60.8% of all CWH.

tionately reduces the RCL accident rate industry-wide. Consequently, far from being a better indicator of the relative safety of RCL and conventional operations, the data from these three railroads provide a distorted, and unreliable, picture. Regardless of metric used in the analysis, or how mean rates are calculated, this much cannot be disputed: 34.8% of all accidents occurred during RCL operations, while that operating method accounted for only 29.9% of yard switching miles and 22.1% of crew work hours.

Nonetheless, we fully concur with FRA's statement that

> If the promise of RCL — better control of switching movements — were being realized, human factor train accidents would have fallen significantly over the last several years as RCL operations have become more prevalent. Instead, human factor-caused events have remained the most prominent category of train accidents.

Id. at p. 2.

Although FRA's reliance on the quantitative data contained in the Final Report to explain the 25% higher RCL accident rate is misplaced, the Final Report does account for this difference because of a wealth of qualitative data contained therein. The BLET believes that the differential lies in the following factors: attempts by some railroads to "push the envelope" by utilizing RCL for operations at or beyond the margin of its capabilities — often without deigning to inform the regulatory agency — and the use by some railroads of operating employees who are insufficiently experienced and/or trained. The Final Report is replete with evidence of both practices.

FRA consciously chose to issue "recommended guidelines" for RCL operations, codified in Safety Advisory 2001-01, rather than promulgate mandatory regulations governing the use of the technology. The industry immediately seized upon FRA's decision to limit its regulatory authority, and the history of RCL expansion that followed is nothing less than one abuse after another.

FRA acknowledges that "not all of [its] recommendations have been adopted by all of the railroads." Id. at p. 4. Even in those areas where FRA has limited enforcement authority — such as locomotive engineer certification requirements contained in Part 240 — the railroads have pushed the issue to the extreme. For example, FRA reports that the original RCL training programs submitted by "Amtrak and six of the Nation's largest freight railroads" were disapproved for insufficiency, and the training program length had to be **doubled** in order to pass Part 240 muster. Id. at p. 6.

Similarly, a Class I railroad implemented the installation and use of remote cameras to provide highway-rail crossing protection for RCL movements that would have no human presence on the leading end of the movement. *See* id. at pp. 13-15. This action was taken in the absence of consultation with — or even notification to — FRA. Subsequently, "[o]nce FRA became aware that this system was being implemented, it immediately requested that the railroad cease any further installations until an evaluation of the system could be conducted." Id. at p. 14.

FRA states that "Safety Advisory 2001-01 was written to address RCL yard switching operations only," and that FRA "never contemplated that this technology would be used in train operations on the main track." Id. at p. 15 (emphasis in original) Furthermore, "FRA believe[d the] definition [of an RCO supplied by the aforementioned six largest freight railroad] restricts RCOs to performing yard-switching-type operations, which are conducted at traditional yard speeds (slow) and within the immediate vicinity of the yards[, and, impliedly,] some limited main-track movements to move a few cars a short distance to gain access to an industrial park or shipper." Id. at p. 6.

Once again, some railroads plunged head first into the regulatory chasm by initiating main track RCL operations. It was only after "FRA became aware that these operations were migrating to main tracks, [FRA] asked the railroads to cease expansion until [it] had a chance to evaluate them." Id. at p. 15. FRA described this latest abuse in there terms:

> In FRA's interim report to Congress, FRA recognized how the major railroads defined the duties of an RCO in the programs filed with FRA and noted that these programs, as understood by FRA, did not contemplate extensive movements on main track. Interim Report at 4. In hindsight, it is clear that some railroads take a broader view of the description of RCO duties ….

Id. at p. 17. In our view, the link between higher RCL accident rates and the fact that railroads clearly have expanded RCL beyond the uses contemplated by the regulator is apparent and undeniable.

The Final Report again emphasizes the legitimate and shared "concern[] that railroads have experimented with the use of RCL technology to accomplish movements that require use of automatic brakes" because the technology "is not properly configured for main track operations or even for movement of very long or heavy drafts of cars where train air brakes are a necessity." Id. at p. 3. Further, FRA acknowledges that RCL modification to support main track operations is a dubious proposition, because of latency between issuance and execution of commands, unintended and unanticipated loss of communication, and the need for the RCO to "be in the cab to enjoy protection from both normal and crash-related hazards." Id.

FRA states that it "believes strongly that remote control technology should not be expanded beyond yard switching operations, with limited exceptions that involve short distances, limited tonnage and grades, and with appropriate attention to training of RCOs assigned to these trains." Id. at p. 27. Among the specific concerns FRA rightly voices are that current technology might not be suitable to control in-train forces during train movements, and that the RCL braking system is primarily designed for yard switching movements and for small trains over flat terrain for limited distances. Id. at pp. 15, 17.

Further, "FRA is concerned that — under the best of circumstances — signal latency between the beltpack and the RCL would introduce an additional, and unnecessary, element of delay between initiation and execution of commands by the operator." Id. at p. 17 (emphasis in original). Also, "that the 'fail-safe' feature that acts to stop the locomotive, when command signal interference is experienced, denies the RCO adequate control over the train movement." Id. As FRA properly recognizes, "there is no sound reason to introduce additional causes of undesired air brake applications." Id. (emphasis in original).

For these reasons, FRA has modified the "recommended guidelines" set forth in Safety Advisory 2001-01 to include limitations on locomotive horsepower, train length, speed and grade. Id. at p. 18. However, experience compels us to ask: Given the history of proven abuse by numerous railroads of the latitude afforded by FRA guidelines in place of FRA regulations, is there any reason whatsoever to believe that these modified guidelines will be heeded in letter and in spirit? Sadly, the Final Report concedes that an effort already has begun to eviscerate these restrictions:

> A major freight railroad has presented to FRA its alternative limiting conditions for RCL train movements, and FRA is awaiting additional technical information that would permit the agency to determine the reasonableness of those conditions. The same railroad has brought to FRA's attention additional plans for refining RCL technology that would actively involve the electronic control system in train handling decisions. Again, FRA has responded with further questions related to the intended application of the technology and issues of user interface.

Id. at pp. 18-19.

Indeed, the men and women who place their lives on the line on a daily basis as RCOs have consistently voiced the same concerns resulting from the abuse of FRA's guidelines, which concerns are well-documented. Appendix 2 of the Final Report contains a study of RCL commissioned by FRA and performed by Foster-Miller. The study "found a difference between RCL and conventional methods of yard switching operations, with RCL operations being somewhat less reliable, i.e., more risky." Id. at p. 79.

The study was undertaken by conducting focus groups with RCOs in the very early stages of RCL implementation in the U.S. railroad industry. However, the RCOs who participated in the focus groups were not statistically sampled to be representative of all RCOs in the U.S. or Canada. Accordingly, the results may not be representative of all RCL operations or all RCO experiences. Id. Nonetheless, as Foster-Miller noted:

> Focus groups provide a qualitative approach to studying RCL operations. The advantages of focus groups are found in the richness or quality of information gathered, and the broad range and depth of information and insights, sometimes unanticipated, that can be obtained from participants. Focus groups tap participants' experiences, opinions, and attitudes toward a topic, and are well suited to examine RCO experiences and identify industry best practices.

Id. at p. 80.

The methodology employed by Foster Miller is similar to the ethnographic, self-reported narratives that formed the basis of the *Hazard Survey of Remote Control Locomotive Operations on the General System of Railroads in the United States*, which BLET published last summer. Your April 17, 2006 response to me criticized the *Hazard Survey* because "researchers do not attempt to validate any statements made by employees as participation is often premised on the condition that employees remain anonymous." You also stated that, "without validation, the comments recorded must be understood as merely a collection of individual opinions and perceptions as opposed to objective, factual determinations," and referred to the data as "anecdotal."

I presume that you believe the Foster-Miller study suffers from the same infirmity, inasmuch as the information gathered therein also was not validated. However, I respectfully disagree with your position as to the value of these studies. The utility of anonymous, self-reported narratives as a means of identifying precursors to accidents is well-established in both the aviation and the health care industries. Indeed, based on those successes, FRA is currently funding a pilot project — called the Confidential Close Call Reporting System ("C^3RS") — that will kick off in North Platte, Nebraska, on the Union Pacific Railroad this summer.[6]

Furthermore, as your letter acknowledges, there is a remarkable degree of consistency with respect to the comments by the RCOs who participated in the two studies. Among them are the following:

- reliability problems, including communication failures between the beltpack and on-board control computer, frequent error messages, delays in RCL re-

[6] As a matter of fact, the methodology to be employed by C^3RS is identical to that used in producing the *Hazard Survey*. Anonymity only with respect to public disclosure of the subject's identity is provided. Thus, it is incorrect to conclude from the mere granting of anonymity that the identities of the subjects of research are not known to the researcher. To the contrary, any narrative submitted to Dr. Gamst that did not include a verifiable personal identity was not used in any way in the *Hazard Survey*, which is at least as restrictive as the C^3RS methodology. Moreover, Dr. Gamst followed up on a narrative, if information was not clear, with a request to provide further clarification. (Gamst and Gavalla 2005:146). C^3RS methodology includes an identical follow-up feature. I also hasten to point out that the narrative reports upon which the *Hazard Survey* was based were provided by both "management officials and rank-and-file employees." Id. at p. 9.

sponses, updates to some, but not all, RCL equipment, and RCL overspeed (the RCL operates at a speed greater than that selected by the RCO);

- "herky-jerky" control caused by the manner in which the on-board control computer maintains the set speed;

- the risk that one of the beltpack safety features may be inadvertently by-passed;

- the frequent inadvertent activation of beltpack controls; and

- RCO situational awareness.

Id. at pp. 82-83.

We further submit that both the *Hazard Analysis* and the Foster-Miller study have been validated in the field. In point of fact, the qualitative data contained in these reports provide a far more sound explanation for the higher RCL accident rate that those proffered by FRA, and offset the pro-RCL bias inherent in the data the industry selectively filtered and reported. Indeed, FRA has embraced several of the concerns identified in the reports, including task overload, reduction in RCO situational awareness (e.g., reduction in bodily situational awareness, reduction in RCL situational awareness, loss of locomotive orientation awareness, lack of RCL response feedback), RCO training/preparation/experience, and inadvertent/accidental activation of the beltpack. Id. at pp. 24-26.

These reports also are valuable with respect to RCL use on main track. The Foster-Miller report notes that

> "a majority of RCOs was not comfortable [with the prospect of main track RCL operations], citing among their main reasons that they felt the equipment is currently too unreliable, and they lack the required knowledge and skills to operate on the main track. Equipment reliability problems (e.g., delays in RCL braking response) can be amplified on the main track where heavy trains are traveling at high speeds, and it may be necessary at any time to stop short of an absolute signal, highway-rail grade crossing, or other unanticipated hazard.

Id. at p. 83. This statement correlates fully with concerns FRA expressed in the Final Report.

The qualitative data in both the Foster-Miller report and the *Hazard Survey* also validate serious training concerns voiced in the Final Report:

> Many railroads are experiencing a large influx of new, inexperienced workers into rail operations. FRA seeks assurance that these new workers will be afforded the traditional breaking-in periods when learning their jobs, especially RCO jobs. FRA recommends that any employee with less than one year in train service should be considered a new-hire for special training purposes.
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> Since many yards are operated exclusively with RCLs, conductor trainees are more apt to be confronted with the necessity to operate RCLs early in the yard-switching phase of training. Accordingly, FRA believes adequate time should be spent learning one job before moving on to the other. Because trainees will be spending longer time in yards learning RCL operations, they should be extended additional time to learn their other duties and responsibilities related to local and through-freight service. RCL training should be a supplement to traditional conductor training programs and should not be subtracted from them.

Id. at p. 20.

We also concur with, and fully support, FRA's conclusion that the "major exception where … current RCL implementations do not provide adequate security services is in the area of access control." Id. Accordingly, we applaud FRA recommendations (1) calling for the addition of access control capability to the RCL control unit and/or the RCL locomotive, (2) that the manufacturers prepare future RCL designs to support rapid implementation of symmetric and/or asymmetric key cryptography with the associated key management infrastructures should there be a significant or rapid change in the threat environment, (3) that a site-specific security analysis be undertaken prior to the implementation and activation of any RCL system, and (4) periodic reevaluation of RCL system security. Id. at p. 24.

Lastly, I would be remiss if I did not address the acknowledgement, contained in the Executive Summary, "that this issue is complicated by the constraints of collective bargaining agreements and an arbitration award, but FRA believes that all parties to the collective bargaining process have an overriding responsibility to provide for work rules that serve the interest of safety." Id. at p. 3. As you may be aware, labor-management relations in the railroad industry are at their lowest ebb in at least forty years.

The industry's history of introducing only those technologies that benefit its bottom line is well documented. Moreover, the decade-long foot dragging by the industry between elimination of the caboose and FRA forcing the use of two-way end of train devices is only one example that the technology introduced is limited to only those features that serve the industry's economic interests, unless railroads are otherwise compelled or coerced. The BLET firmly believes the past five years of RCL abuse, facilitated by a lack of direct FRA regulation, is merely the latest episode in this sordid history.

Collective bargaining has all but halted because of the industry's insistence on reducing the size of road freight train crews. The conduct of the industry's bargainers has been nothing short of reprehensible; in fact, their behavior has been so outrageous that — after nearly a decade of almost constant conflict — the BLET and the UTU have banded together to repel their efforts. Indeed, the industry's abuse of the processes of the Railway Labor Act had degenerated to a level whereby the National Mediation Board was well on its way to permanently impairing, if not completely destroying, its own legitimacy. Only the intervention of bipartisan leaders of Congressional committees of jurisdiction put a halt to this travesty.

I point this out because decisions to deploy technology on a large scale, particularly expensive technology such as RCL, are made by top level railroad executives. Their decisions drive the industry's bargaining position, and their decisions drive the industry's regulatory position. Thus, for example, concurrent with BNSF's collective bargaining position that road freight train crews needed to be reduced to engineer-only, the Railroad Safety Program Plan submitted in January by BNSF for its Electronic Train Management System proposed to test engineer-only operations.

In my view, main track RCL operation is the industry's new wedge issue. Notwithstanding numerous FRA cautionary statements about RCL technology not being suited to main track operations, the industry is hell-bent for leather on expanding the technology on its own terms. There is absolutely no question in my mind that economics — without regard to the impact on safety — underlies the industry's position on main track RCL operations. Frankly, I believe the industry has been "playing" FRA by arguing against regulating new technology so as not to stunt its development. Having succeeded in such persuasion, the industry then plunges ahead with its agenda, keeping FRA in the dark until the latest "new wrinkle" is discovered after it has been implemented.

The Final Report contains several instances where railroads have engaged in these shenanigans. Time and again FRA has been presented with a fait accompli, and has declined to "un-ring the bell." Thus, the BLET believes there is a more than ample record that the industry simply cannot be trusted to safeguard — much less foster — safety if left to its own devices. I cannot urge you strongly enough to heighten scrutiny of RCL operations. If the past is prologue, continued railroad abuse of FRA guidelines will result in an accident serious enough to compel a rulemaking. Hopefully, FRA will recognize the warning signs well in advance, and take affirmative action to stop the abuse. You can rest assured of our support for that effort.

Sincerely,

Don M. Hahs

National President

cc: The Honorable Ted Stevens, Chairman, Senate Committee on Commerce, Science, and Transportation
The Honorable Daniel K. Inouye, Ranking Member, Senate Committee on Commerce, Science, and Transportation
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