U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATRION
DOCKET No. FRA–2009–0094
RIN 2130–AC16

COMMENTS OF BROTHERHOOD OF LOCOMOTIVE ENGINEERS AND TRAINMEN AND UNITED TRANSPORTATION UNION WITH RESPECT TO PROPOSED RULES FOR LOCOMOTIVE SAFETY STANDARDS 49 C.F.R. PARTS 229 & 238

These comments are submitted by the Brotherhood of Locomotive Engineers and Trainmen, a Division of the Rail Conference of the International Brotherhood of Teamsters ("BLET"), which is the duly designated and recognized collective bargaining representative for the craft or class of Locomotive Engineer employed on all Class I railroads, and the United Transportation Union ("UTU"), which is the duly designated and recognized collective bargaining representative for the various train service crafts and classes, hostlers, remote control operators, and yardmasters employed on all Class I railroads. Thus, UTU and BLET are the duly designated and recognized collective bargaining representatives for all train employees on all Class I railroads. BLET and UTU also represent operating and other employees on numerous Class II and Class III railroads. Consequently, the proposed rule for Locomotive Safety Standards published by the Federal Railroad Administration ("FRA") has a significant impact upon our members. We would like to thank FRA in advance for their consideration of these comments.

Remote Control Locomotives

FRA has decided to promulgate rules regulating the appliances that are used on remote control locomotives. While we understand that FRA may not consider all of our comments on this issue within the realm of the task statement, we believe that a comprehensive approach to remote control that includes operational practices and record keeping issues is necessary and appropriate. Restricting the regulation to the confines of a task that was expected to be completed years ago is unproductive and inefficient. Moreover, since FRA made its report to Congress in 2006, and since the time the task statement for this rulemaking was approved by the full RSAC, the industry has seen significant expansion and utilization of remote control operations that were not contemplated when it was written. Labor is concerned that even if FRA acted today and approved an RSAC task that encompasses the operating practices of remote control locomotives, it will be another five years before FRA addresses the issues identified in Safety Advisory 2001-01, its 2003 letter to the AAR on Remote Control Technology and the 2006 report to Congress.

Single person remote control operation today remains the biggest threat to the safety of switching crews and continues to be unregulated by FRA. It is past time for FRA to promulgate a regulation on remote control operations and the safety of the operating crews that are required to use that equipment. Single person operation with remote control equipment was not anticipated by the manufacturer of the devices and is only permitted because FRA has no regulations governing the operation of that equipment. Multiple fatalities and many career ending injuries to operating employees have already occurred due to the absence of any regulation on remote control operations.

Main track RCL operations

The use of remote control locomotives remains one of the most dangerous methods of operation, if not the most dangerous. Most of the analysis, reports and research FRA has conducted on remote control locomotives have addressed operational issues, specifically operation of remote control locomotives on yard tracks. This rulemaking is absent any regulations or even discussion on establishing mandatory operational practices for the use of remote control locomotives (RCL) in mainline operations. The manufacturers of the remote control locomotive technology in use today designed the software and equipment for switching operations, not main line movements.

Therefore, we believe FRA should establish regulations for the methods of operation and the locations where remote control locomotive can be used.

FRA has studied and reported on remote control locomotives, as well as the method of operation, and the training of the remote control personnel on a number of occasions. FRA issued Safety Advisory SA 2001-01 which established "*... minimal guidelines for the operation of remote control locomotives*." However, compliance with the Safety Advisory was and continues to be voluntary, and the Advisory did not in any way address the use of remote control technology in main line operations or uses of the equipment beyond the limited capacity promoted by the manufacturers prior to its implementation.

The decision by FRA to not regulate remote control essentially ignored the railroads' history of exploiting any opportunity to create additional profits at the expense of anyone unfortunate enough to be exposed to the danger it may create.

Subsequently, in a June 2003 letter to the industry, FRA discussed its understanding of the state of the technology and its use in main line track movements. In that letter, FRA stated that it was led to believe by the industry in a previously held meeting on December 7, 2002, that the RCL operations were being used exclusively in yard switching operations.

In their next meeting with the industry on May 7, 2003, FRA became aware that the railroads were already expanding the use of remote control locomotives to include non-incidental main track operations. Based on its review of the various training and certification plans submitted by the railroads, FRA did not believe the state of the RCL technology and the level of Remote Control Operator training were sufficient for the safe operation of RCL trains in such operations, but, astonishingly, neither prohibited nor restricted the operation of RCL on main tracks; rather, the agency merely reiterated its belief that RCL operations should be limited to yard switching

operations. That is what the industry and the manufacturers of the equipment relied upon to persuade FRA to significantly delay any regulations for RCL operations.

On September 5, 2005, and citing a better understanding of the technology, rather than any advancement in the technology, FRA addressed RCL operations with respect to "Non-incidental Main Line Movements" by strongly suggesting that each railroad adopt operating procedures to incorporate the following recommended limitations for all RCL movements requiring brake tests under 49 C.F.R. Part 232:

a. Locomotive consist should not exceed 3000 horsepower, utilizing no more than eight (8) axles.
b. Train length should not exceed 1000 feet (approximately 20 car lengths).
c. Train speed should not exceed 15 mph.
d. Operations should be prohibited on any grade of 0.5 percent or greater that extends for more than ¼ of a mile.

The labor organizations have not been provided with the training plans or operating procedures the railroads have submitted to FRA, but there is no reason to believe that the railroads adopted anything more stringent than the suggestions FRA expressed in its September 9, 2005 letter, which are unenforceable in any event. However, immediately after the letter was published, one Class I railroad contracted for a study into RCL operations. The need to promulgate regulations instead of offering guidelines, suggestions and recommendations was made clear when, amazingly, within a mere three months after FRA's strong suggestions, the railroad industry was advising FRA that it was significantly expanding RCL operations onto mainline operations and offered a simulator study conducted by Rail Sciences Incorporated ("RSI") in support of its expanding RCL mainline operations. FRA reviewed the study and suggested further analysis.

In its final report to Congress dated April 6, 2006, *"FRA [ ] concluded that current RCL technology has limited application to main track operations. It is clear that current RCL systems and training programs are designed for yard switching operations and that enhanced training must be provided where non-incidental main line operations are contemplated."* (Safety of Remote Control Locomotives, Final Report, page 19) However, FRA examined the RSI study and according to FRA's February 23, 2007 letter to Mr. Richard Timmons, President of the American Short Line and Regional Railroad Association, FRA concluded *"[ ] that the RSI simulation analysis is complete and adequately simulates the types of operation that would be encountered in actual RCL main track terminal operations. The RSI report supports the suggested RCL main track terminal operation guidelines. FRA believes that the report's conclusions and the guidelines proposed appear to be generally sound and appropriate for RCL main track terminal operations."*

The expanded guidelines allowed RCL main track operations if the:

a) Locomotive consist should not exceed 6,000 total working horsepower, utilizing no more than 12 actual axles;
b) Train length (excluding locomotives) should not exceed 3,000 feet;
c) Train tonnage (excluding locomotives) should not exceed 4,000 tons;

d) Train should not exceed a total of 50 conventional cars and/or platforms;
e) No more than 20 multilevel (autorack) cars, regardless of whether they are loaded or empty, may be in the train. Any continuous block of more than 5 multilevel (autorack) cars must be placed at the rear of the train;
f) Train speed should not exceed 15 mph;
g) Movements should be restricted from operating on any grade greater than 1.0 percent that extends for more than % mile.

It is extremely doubtful that the industry proposed to conduct main line RCL operations that were less than it could support with the RSI simulator study. If the RSI study had determined that RCL operations could safely support broader operations, the railroad industry would have certainly proposed guidelines that maximized the study's conclusions and proposed that FRA incorporate those conclusions into revised guidelines for the expanded use of RCL operations. Notwithstanding our view that remote control should never be permitted in mainline operations, except to provide headroom in incidental movement, we believe that this represents the outer limits of safe operation for RCL main line operations. Accordingly, FRA should adopt these "guidelines" into the regulations concerning remote control operations so that they can be enforced.

Operator Control Unit, ("OCU")

Operating remote control equipment in switching operations requires constant personal awareness and excellent physical and mental acuity. Remote control operators are required to throw switches, secure hand brakes, couple air hoses, walk long distances, verify switch lists, separate railroad cars, and many other activities - all while wearing and operating an Operator Control Unit. Labor points out to FRA that these RCL operations require a high degree of multi-tasking and require additional regulatory oversight in RCL operations.

The OCU unit itself must be as simple in design and uncluttered with any function not necessary for safe operations. The remote control operator cannot remain stationary, or devote all of his attention to the manipulation of the OCU controls. The simpler the design, and the fewer the inputs available for operation, the safer the operation will be. The manufacturers and railroads have consistently argued that the on-board computer technology was intended and designed to gradually applying throttle and brakes. Therefore, graduated throttle and brake features unnecessarily complicate the device. Moreover, having the RCO manipulate such operational features reduces their situational awareness and their safety.

In the preamble, FRA identified its goals for this NPRM. FRA stated that its goal for the Design and Operation of Remote control Technology is to:

- prevent interference with the remote control system,
- maintain critical safety functions if a crew is conducting a movement that involves the pitch and catch of control between more than one operator,
- tag the equipment to notify anyone who would board the cab that the locomotive is operating remote control, and
- bring the train to a stop if certain safety hazards arise.

We point out that several features proposed by FRA for the OCU are unnecessary. The features we have recommended be removed are not necessary to achieve the design and operations goals FRA cited in the NPRM. We believe the proposed rule should be amended as follows:

§229.15(a)

. . .

(12) Each OCU shall have the following controls and switches and shall be capable of performing the following functions:

(i) Directional control;

(ii) ~~Throttle or speed control~~; Speed selector

(iii) Locomotive independent air brake application and release;

(iv) Automatic train air brake application and release;

(v) Audible warning device control (horn);

(vi) Audible bell control, if equipped;

(vii) Sand control (unless automatic);

(viii) Bi-directional headlight control;

(ix) Emergency air brake application switch;

(x) Generator field switch or equivalent to eliminate tractive effort to the locomotive;

(xi) Audio/visual indication of wheel slip/slide;

(xii) Audio indication of movement of the RCL; and

(xiv))Require at least two separate actions by the RCO to begin movement of the RCL.

(14) Each OCU shall be equipped with ~~one of the following control systems: a~~ a speed selector with a maximum speed selection of 15 mph.

~~(A) An automatic speed control system with a maximum 15 mph speed limiter; or~~

~~(B) A graduated throttle and brake. A graduated throttle and brake control system built after (90 days after date of rule) shall be equipped with a speed limiter to a maximum of 15 mph.~~

Complexity

The labor unions contend that the safest devices are the simplest to operate. There is little debate that a significant percentage of reportable accidents/incidents in the railroad industry includes a human factors element. Every time a new function or control is added to a device, the potential for human error in the use of the device increases. Over-complicating any device by adding unnecessary features unjustifiably reduces safety. The remote control technology was recruited, researched and developed, then relied upon and vehemently defended by the railroads in the proliferation of the technology for the industry. We contend that certain of the features identified above in the proposed regulations diminish the safe operation of remote control locomotives, because they create unnecessary distractions, over-complicate the device and interfere with the remote control operator's situational awareness, in the process exposing the employees and the public to unnecessary danger.

In its June 9, 2003 position paper, FRA referred to its position on riding equipment while transmitting signals to a RCL. FRA pointed out that *"Operating an RCL transmitter is a*

significantly more complex task than operating a radio. There have been numerous incidents where the RCO on the ground has hit the wrong button…" FRA relied upon the fact that the OCU is a more complicated device than a radio. Further, that transmitting signals from an OCU requires more attention than doing so with a radio. Safety demands that FRA should apply that same logic in promulgating this rule by eliminating any unnecessary buttons, dials, switches or options, and by insisting that the OCU be the simplest possible device.

In its Final Report to Congress, FRA recognized the potential for the Remote Control Units ("RCU") or belt packs as contributing to the loss of situational awareness for the RCO. FRA discussed the likelihood for task overload and how that problem negatively affects safety. FRA specifically identified "channelized attention," where an individual becomes focused on a particular task and either ignores other tasks or becomes so focused on the single task that he/she does not process or address other tasks.

FRA also identified the reduction or loss of situational awareness which has two components: 1) the loss of "bodily situational awareness," where the individual losses his/her awareness of where they are relative to their surroundings, and 2) the loss of "RCL situational awareness," where the individual losses the awareness of the operation of the engine regarding its direction and/or orientation. The loss of situational awareness in either manner could result in an accident. Significantly, the existence of two components of situational awareness is something unique to RCL operations, because RCL separates the operator from the locomotive in both time and space. Minimizing potentially negative outcomes from either component should be a primary effort for FRA.

As stated above, FRA has accepted that the technology is capable of making fairly complex operational decisions, such as the gradual increase and decrease of power and brakes. So not only will requiring these features on the OCU unnecessarily complicate the device, it also creates the potential that the RCL power and brake functions could receive conflicting or inconsistent instructions from the on-board computer and the RCO, again to the detriment of safe operations.

Safety is maximized by allowing the RCO to simply select the desired movement, issue the control signal to the RCL and then allow the technology to work as it was designed. At that point the RCO can concentrate on their personal safety and monitor the movement to assure it is being executed as intended. This frees the RCO's attention from the device and permits him/her to focus on their entire work environment to protect them from injury. If the OCU has the same appurtenances as the locomotive and the RCO is manipulating the OCU to operate the train to that fine a degree, then the purpose for the on-board computer is has been defeated.

In its Final Report to Congress, FRA acknowledged *RCOs receive little additional training in air brakes, train handling, signal recognition, track-train dynamics, etc.* (Final Report at p.17) The reasons RCO receive such modified train handling training is clear. The railroads would not provide any training unless it was required by FRA. Indeed after a review of their first RCO training program, FRA required the railroads to double the training for their RCOs.

We contend that the graduated throttle and brake features proposed by FRA ignores the technological basis for current RCL operations and in fact would replace remote control locomotive with remote operation locomotives. Unless the technology is incapable of doing what the industry has claimed it can do for more than a decade — in which case RCL operations should be suspended altogether pending a thorough investigation as to what the failure to regulate has produced — there is no need for FRA to require that the OCU have these features.

Electronic record keeping

As we stated above under normal circumstances issues concerning electronic record keeping of hours of service would be outside the scope of a rule making intended to address appliances and devices on board and associated with locomotives. However this rule making will promulgate rules regulating the use of remote control locomotives and labor believes that it is necessary for FRA to make a holistic effort. Implementing remote control regulations piecemeal will not address the problems with RCL operations effectively and leaves unaddressed issues that FRA has consistently considered in the safety analysis of remote control technology in the railroad industry.

Accurate switching hours must be maintained. The Switching Operations Fatality Analysis ("SOFA") Working Group analyzes fatalities in switching operations. The working group is finalizing their most recent report and will incorporate the data collected since the inception of SOFA in 1992. The group analyzes the progress its recommendations have had on the industry by comparing fatalities from year to year both before and after the recommendations and education efforts were published in their report. However, we believe that since the advent and proliferation of remote control technology an accurate and fair comparison is becoming increasingly elusive.

FRA acknowledged the limitations of the data available. 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 commenters 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).

The data that FRA referred to in the 2001 Safety Advisory was based on Yard Switching Miles ("YSM"), which FRA acknowledged were flawed because the non-normalized did not permit "valid comparisons between remote control and manual operations." Because FRA elected to issue unenforceable guidelines rather than regulations governing RCL operations, it could not force the industry to produce data indicating the number of labor hours and number of employees engaged in conventional switching and in RCL operations. When FRA published its Final Report

to Congress regarding RCL operations, it painted a rosy picture with respect to accident rates that was based on the very same YSM the agency had found insufficient more five years earlier.

The use of flawed data triggered a dispute that remains unresolved to this day. On January 4, 2006, the BLET filed written comments regarding the renewal of OMB Control Number 2130-0500, in which we pointed out that FRA's use of non-normalized YSM data in its 2004 Interim Report to Congress pertaining to RCL operations had unacceptable skewed the data, and requested that FRA broaden its information collection processes to explicitly require railroads to submit employee hours in each class of service. *See* FRA-2006-25267 at Exhibit BLET-2. Then, on May 16, 2006 the BLET wrote to the Administrator to point out that the use of normalized data would lead to just the opposite conclusion reached by FRA in its Final Report. (Attachment 3) In responding to the comments on the Information Collection Request renewal, FRA stated the following:

> Mr. Holmes comments — on behalf of the BLET — touch an area that has been a cause of concern for sometime for FRA. FRA believes that very important issues have been raised in BLET's comments. FRA strives to obtain the most accurate possible data so that it has a clear and complete picture of what is happening in the rail industry on both a current and historical basis. Accurate data are essential in developing and implementing an effective comprehensive rail safety program throughout the country. In the agency's view, the issues raised by BLET need to be looked into carefully. FRA would like to examine these issues by initiating an independent study sometime this year, budget permitting. Such a study raises procurement as well as budget issues that will need to addressed. Also, there will be cooperation issues, and FRA will need to ensure full cooperation with any contractor chosen for such an important study. If funding for this study can not be found in this year's budget, then FRA will attempt to obtain such funding in next year's budget. Once the independent study is completed, FRA will be able to determine any needed changes.

71 Fed. Reg. 9411 (Feb. 23, 2006). However, in the more than five years that have lapsed since this problem was brought to FRA's attention — and was acknowledged as such by FRA — absolutely nothing has been done to correct the problem and demand that the railroads provide the data needed in order to reliably gauge the safety and the risks of RCL operations.

We believe that for accurate comparisons and tracking of improvements in switching operations safety, switching hours must be accurately recorded so that the number of accident, incidents and fatalities can be compared on an apples to apples basis. This is the most appropriate manner to determine the rate of injuries and assess if the industry is improving safety in switching operations.

<u>Availability of electronic records</u>

In the preamble, FRA noted that availability and accessibility requirements require that *To properly serve the interest of safety, the electronic records and the electronic record-keeping system must be made available and accessible to the appropriate people.* We urge FRA to require that such records also must be made available for discovery in certification revocation

hearing proceedings outlined in parts 240 & 242. This should include electronically reported form FRA F 6180–49A that is displayed in the cab of each locomotive.

Locomotive Seats

The impact on the skeletal structure of operating employees caused by whole body vibration and the normal railroad operation at main line speeds was a major topic of discussion at the Working Group meeting held at Overland Park, Kansas on October 22 and 23, 2008. Labor made a presentation on the available technology designed and tested to significantly reduce the effects of whole body vibration on the operating crew.

At the Overland Park meeting, one major manufacturer of locomotive seats made a presentation dealing with their scientific research that preceded the design of their seats. This seat manufacturer also shared with the working group the details of other industries and equipment manufacturers research into how best to deal with whole body vibration.

One of the major Class One railroads shared with the working group that they had empowered a group of operating employees selected by the employees to work as a Locomotive Cab Committee to select the most appropriate seats for new locomotives, and that committee recommended a seat that was specifically designed for locomotives and manufactured to absorb whole body vibrations.

Other railroads also have appointed and empowered cab committees to evaluate seats. Studies establish that prolonged exposure to whole-body vibration contributes to accelerated degenerative spinal diseases, back pain and injuries. But as FRA heard at the meeting in Overland Park, some railroads continue to scrimp on proper seating on new locomotives without regard for the safety or health of their crews to save a mere $220 on a $2.2milion dollar locomotive, something that is shamefully inconsistent with providing a safe working environment. FRA is well aware of this Locomotive Safety Standard problem and should include the specifications for locomotive seats that labor has repeatedly recommended to the working group. This problem will not go away with guidance, strong recommendations or other non-mandated action.

Therefore, labor is extremely disappointed that FRA chose not to even include the words Locomotive Seats in this NPRM on Locomotive Safety Standards. Improper and unsafe seats and seat securements have caused many injuries and illnesses to operating crews in the past decades, and now is the time for FRA to accept the scientific facts and offer requirements for specifications of locomotive seats on occupied locomotives.

Locomotive Cab Temperature

Modern air conditioning was invented by Willis Carrier in 1902 and the concept of air conditioning was first explored by the Romans using circulated water from the aqueducts through the walls of homes. It was added as a feature in automobiles as early as 1939 by Packard. The technology has been perfected in both homes and automobiles over the last half century; however, railroads have been reluctant to put this feature into locomotives. We see the resistance to climate control from the railroads as simply a matter of squeezing every cent of possible profit from its operation. The evidence of the industry's ability to provide climate

controlled environment in controlled spaces on their trains can be seen in the goods the railroad regularly moves across the country. The industry has been able to regulate the temperature in refrigerated or climate controlled cars to move perishable goods across the country for decades, because it is profitable to do so. Therefore, FRA must reject arguments by the railroads that regulating the temperature in occupied operating compartments while under expected operating conditions is not reasonable or possible.

Climate control mitigates fatigue and improves safety

Labor supports FRA's proposal to increase the minimum temperature in occupied cabs of locomotives and encourages FRA to adopt reasonable regulations for the maximum permissible temperature in occupied cabs as well. Regulating the temperature in the operating compartment of any locomotive can be easily accomplished utilizing technology that has been available for decades. The primary reason every locomotive in the United States is not currently equipped with an upper temperature regulating device (Air Conditioner) is because of resistance from the railroads.

We are grateful that FRA recognizes that the locomotive cab is a captive work environment, which we will discuss in more detail below, and must be provided with proper ventilation and heating arrangement and we agree with FRA that the time has come to establish regulations for safe maximum temperatures. Accordingly we recommend §229.119 be further amended as follows:

> ***§ 229.119 Cabs, floors, and passageways.***
>
> ***(d) Any occupied locomotive cab shall be provided with proper ventilation and with:***
>
> ***(1) a heating arrangement that maintains a temperature of at least 60 degrees Fahrenheit 6 inches above the center of each seat in the cab compartment while under normal operating conditions.***
>
> ***(2) an air conditioning arrangement that maintains a temperature not to exceed 80 degrees Fahrenheit 6 inches above the center of each seat in the cab compartment while under normal operating conditions.***

In the NPRM, FRA cited its own 1998 study and other human factor studies that identify safety related issues associated with extreme temperatures. Those studies establish that extreme cold decreases human performance, because it increases response time, creates distraction and hinders the physical manipulation of the controls. Extreme cold also exposes the employees to the dangers of hypothermia and disorientation. Extreme heat likewise has a negative effect on performance because it causes fatigue and lethargy. It also exposes the employees to the dangers of heat exhaustion and stroke. FRA is currently considering promulgating medical standards for the operating employees and is focusing much attention on medical conditions that cause sudden incapacitation. The cognitive impairments associated with heat stroke and hypothermia are

certainly conditions that can cause incapacitation. FRA should not allow the railroads to subject their employees to the health issues associated with prolonged exposure to extreme cold and heat by implementing the changes we recommend above.

Labor made a presentation to the working group on an upper level temperature standard in Silver Spring, Maryland on August 5, 2008. The data we relied upon was acquired from FRA sources and included information regarding all forms of heat related illness and a detailed analysis of the effects of temperature on human performance. We also relied upon data from other industries and the United States Military standards. The presentation contained testimonials from working Locomotive Engineers concerning their experiences with extreme heat and a historical look at heat related illness from 1997-2007. That analysis concluded that prolonged exposure to excessive heat is a safety risk for the individual it impairs their cognitive ability, it could cause sudden incapacitation and is therefore a safety risk to the public in general.

In a subsequent meeting in Overland Park, Kansas, the AAR commented in that they did not accept the information included in the presentation provided by labor. Essentially, AAR rejected FRA's data but offered no alternative data refuting it. FRA has acknowledged that lower level temperature standard protects crews. FRA also has pointed out the areas where they believe improvements would occur with a regulation for upper level temperature. Such as:

1) Minimizing human errors due to heat stress.
2) Reduced cab noise because windows can be closed during warm weather.
3) Improved air quality.
4) Reduced risk of flying or thrown objects entering the cab through open windows.

We agree and think there are additional benefits of a regulation because:

1) Heat related illness is avoidable.
2) Escaping heat is essential to avoiding heat stroke.
3) Better ventilation inside the cab helps ensure the integrity provided in glazing and sanitation regulations.
4) Often the locomotive cab is the only refuge from the weather for operating crews.

So the questions are, what constitutes extreme heat and cold, and what is an appropriate and reasonable range of temperatures for a safe working environment? FRA offered an answer to that question when they wrote, *Current literature regarding the effect of low temperature on human performance indicates that performance decreases when the temperature decreases below 60 °F. Similarly, the literature regarding the effect of high temperature and humidity indicates that performance decreases when temperatures increase above 80° …*

FRA alluded to humidity as a contributor to the performance hindering effect of temperature. FRA cited studies that establish that at 90 degrees Fahrenheit performance is diminished to a greater extent. Later in the NPRM FRA asks questions predicated on the assumption that a 90 degree Fahrenheit ambient temperature threshold is the target temperature. Furthermore, *FRA expects that the maximum cab temperature limit may need to be flexible in extreme weather*

conditions due to the limited ability of existing cooling systems to produce a temperature a vast number of degrees cooler than the external ambient temperature.

Likewise we believe the regulations must take into account that a human's ability to cool themselves will determine the degree that their performance will be affected. The medical community recognizes that human body cools itself when sweat glands release water and air passes over the skin evaporates thereby removing heat from the body. When the air is more full of moisture (humid) sweat evaporates slower and it is harder to cool the body.

The regulation must account for humidity and how human performance is negatively affected by the actual "feel" of temperature. Typically weather forecasters and meteorologists use a "heat index" to advise the public of the forecasted weather conditions. However, temperature is only one variable necessary to determine how human performance will be impacted by the weather.

Allowing "flexibility" for the ambient temperature threshold to be higher to accommodate the railroads cost issue ignores the very safety concerns FRA discussed in the preamble. All indications are that FRA intends to use only ambient temperature as the measurement for requiring operative air conditioners in occupied cabs. Therefore, we believe that FRA should use 80 degrees Fahrenheit as the threshold so that the potential effect of humidity is accommodated. We urge the FRA to accept the reasonable range of temperatures we recommended above.

Captive workplace

FRA correctly concludes that the operating compartment is a "captive workplace". Constant vigilance is required to safely operate a train. Operating crews must observe, process and comply with information they encounter from signal systems, written and verbal communication and signage. Maintaining a constant awareness of their location is also essential to the safe movement of a train as almost every train will encounter highway grade crossings, speed restrictions and work zones where the general public and other employees depend on the alertness of the operating employees. And as the research has established, extreme temperatures reduce vigilance, slow reaction time and cause fatigue. Therefore, the air temperature threshold of 80 degrees Fahrenheit and ventilation of the operating compartment is a safety enhancement that is appropriate for FRA to adopt.

FRA also proposes to *apply this requirement in situations where the locomotive has had sufficient time to warm-up and where the crew has not adjusted that temperature to a personal setting.* We believe that this is a reasonable approach and point out that devices originally designed decades ago – thermostats – are a typical control device attached to the hundreds of millions of heaters and air conditioners that are installed in automobiles, cranes, operating equipment and trucks around the world. The manufacturers of those vehicles have virtually no problem regulating the occupied portion of those vehicles when they are moving. So the technology certainly exists to maintain a reasonable temperature in the occupied cab of a locomotive while under the expected operating conditions.

Not only does vigilance require the operating employees to be captured in the operating compartment many of the devices that FRA requires on the engines under 49 CFR require the operating employees to remain in the operating compartment such as alerters and radios.

FRA is also proposing new regulations for the securement of the operating compartment, which we will discuss in more detail below. However, for purposes of this discussion, FRA must conclude that a secured operating compartment can only be accomplished if the doors and windows are closed, locked and sealed. Such a sealed environment will require the implementation of thermostats to control the climate in the operating compartment without compromising security. As we stated above that technology is very reliable and readily available.

The regulation must apply under expected operating conditions

Accidents do not occur when trains are standing still, so if the intention of FRA is to maximize safety by minimizing the chances of an accident then the requirement to maintain the temperature must be measured when the train is operating under the expected conditions. Very few people are injured while on standing trains or engines. Most of the testing that was conducted for the working group was conducted in static conditions and the railroads have complained in the working group meetings that they have no way of knowing if the heater or air conditioner can maintain the required temperature setting because they cannot test it in the expected operating conditions.

As we stated above, thermostats have been around for decades and are used worldwide to maintain temperature in all types of vehicles that operate in every conceivable weather condition. We believe that the technology has been virtually perfected. If the railroads maintain window and door gaskets and seals and repair cracks and air leaks, there is no reasonable argument that a properly maintained heater or air conditioner can't maintain the selected temperature. If it fails en-route, the operating crew will report it and repairs or replacement can be affected.
Indeed during the working group meetings, one Class I railroad representative stated that their specifications for climate control of locomotive cabs on new locomotives is 75 degrees at 70 miles per hour under all conditions. That representative also stated that their new locomotives received from both major manufacturers met those requirements. The railroads are aware that the manufacturers of the locomotives can easily address the issue maintaining temperature during normal or expected operating conditions. All that is necessary at this point is the will to require it.

Consist management

Labor suggests to FRA that the operating crew should be authorized to implement "consist management" to address the problems of unequipped locomotives and locomotives with inoperable or insufficient air conditioners. Consist management affords the employees to switch the order of the locomotives in the consist so that anytime an equipped locomotive is in the engine consist it can be assigned to the lead position. Older model or non-equipped locomotives can be assigned to trail positions and distributive power when these locomotive cabs are not occupied en route. A major advantage to implementing consist management is that the railroads would not have to equip their entire locomotive fleets in order to comply with FRA's regulation.

FRA presented several topics in the NPRM and posed specific questions to the stakeholders. We do not have data or records that will enable us to respond to a every question and FRA should

not conclude that if we do not respond to a specific question that we are not interested in the outcome of the rule in that respect.

To what locomotives should the maximum cab temperature limits apply?
Labor strongly believes the rule should require that any newly purchased or reconstructed locomotive after the effective date of the rule should be equipped with an air conditioner and subject to the regulatory requirements of maximum cab temperatures. Also any locomotive that currently is equipped with an air conditioner should be required to satisfy the regulation and of a maximum temperature of 80 degrees Fahrenheit.

What percentages of newly constructed or remanufactured locomotives are equipped with air conditioning units?
The exact percentage is something that is unknown to labor. However, consistent with our comments above newly manufactured or re-constructed locomotives should be equipped with air conditioners.

What potential requirements could apply to locomotives that spend the majority of their time in locations that rarely rise above 90° F, but also operate in locations where the temperature does rise above 90° F?
The first issue that FRA must consider is that factors other than ambient temperature affect the temperature inside the operating compartment. On board appliances and the engine itself contribute to the overall temperature in the operating compartment of a locomotive. Considering FRA comments in the preamble that human performance decreases when the temperature rises to 80 degrees Fahrenheit and that humidity also has an impact on performance, the ambient threshold temperature should be lowered to 80 degrees Fahrenheit or some combination of heat and humidity such a heat index should be considered.

One potential requirement would be to prohibit any railroad from requiring an employee to operate or deadhead in an unequipped locomotive when the heat index reaches or is forecasted to be above the established threshold, before the employee is finally released from their tour of duty. This would permit the railroad to maintain a fleet of unequipped locomotives but would prohibit them from being used when high ambient temperatures could create unsafe working conditions. This approach is self-correcting as a railroad would likely maintain a larger fleet of equipped engines in locations where the heat index or temperature rises above the established threshold and maintain a minimum fleet of air conditioner equipped engines in locations where it does not. Ultimately, a railroad could take advantage of an unequipped locomotive without imposing health and safety concerns on their employees with effective consist management and assign unequipped locomotives to a trailing position or use it for distributive power.

Incentivizing productivity has presented significant problems for FRA in the past. Local level managers attempting to gain financial incentives often issue directives to employees in violation of the regulations with impunity because, if they are caught, the civil penalties are issued to railroads. The monetary amounts of these civil penalties are miniscule and do not even rise to the level of a minor inconvenience let alone a deterrent to the multi-billion dollar railroad companies. Enforcing such a requirement would necessitate FRA issuing civil penalties to any

individual who instructs an employee to operate or deadhead in a locomotive that is unequipped or has an inoperable air conditioner.

How could these locations be properly excluded from the maximum temperature requirements?
As we noted above the exclusion should not be based on geography but rather on real measureable conditions that affect human performance. Indeed an individual that does not typically experience high temperatures may be less equipped in body mass and conditioning to deal with high temperatures. Moreover, adopting a location-based requirement for an upper level temperature control would lead to widespread abuse, given the long-standing practice of the Class I railroads to operate locomotives across their respective boundaries, from coast to coast and border to border — a practice that has made interoperability of positive train control systems mandatory. Lower level temperature maintenance is not waived on the basis of geography, and nor should upper level temperature maintenance be so conditioned.

Are there technologies other than air conditioning units that could be utilized in these types of locations?
FRA identified methods for managing temperature in the preamble all of which are feasible and will assist the railroads in managing temperature on their locomotives. As we discussed above, FRA identified high humidity as factor that impacts human performance. One device that FRA did not mention was de-humidifiers. Air conditioning units also remove humidity from the air, which helps the unit regulate the room temperature.

What are the capabilities of existing locomotive cab air conditioning units?
Existing air conditioners that are properly maintained should have little problem maintaining a reasonable temperature in the operating compartment of a locomotive.

What is the appropriate method for measuring maximum locomotive cab temperature?
As we discussed above, FRA should consider using a heat index instead of temperature to determine measuring.

The existing minimum cab temperature requirement is based on measurement of the temperature six inches above each seat in the cab. Would that also be an appropriate location in the cab to measure temperature to determine compliance with a maximum temperature requirement?

We believe that this is the best possible location to measure compliance with the maximum temperature or index requirement that FRA eventually adopts.

How should locomotive air conditioning units be maintained and repaired when found defective or inoperative?
Defective or inoperative air conditioning units should be repaired as soon as possible. However, we still contend that a railroad and its managers should be prohibited from requiring an employee from operating or deadheading in a locomotive that is not equipped or has an inoperative air conditioning unit if the ambient temperature or heat index is exceeded or is forecasted to be exceeded before they are finally released from their tour of duty.

What would an appropriate interval for testing and maintaining locomotive equipped with air conditioning units?
We believe an appropriate interval would be to include testing as part of the daily inspection requirements contained in §229.21. A more detailed maintenance performed at 92 day inspection consistent with the time line indicated in §229.23. This is the identical testing and maintenance schedule required for appurtenances intended to maintain the minimum required cab temperature.

What movement or use restrictions should be applied to a locomotive equipped with an air conditioning unit when discovered with a cab temperature that exceeds the maximum limit?
Defective or inoperative air conditioning units should be repaired as soon as possible. However, we still contend that a railroad and its managers should be prohibited from requiring an employee from operating or deadheading in a locomotive that is not equipped or has an inoperative air conditioning unit if the ambient temperature or heat index is exceeded or is forecasted to be exceeded before they are finally released from their tour of duty.

What maintenance or repair requirements would be appropriate if already occupied locomotive has an air conditioning unit fail en route, when the ambient temperature exceeds a regulatory requirement?
Employees should not be required to operate locomotives beyond the first point where the engine can be repaired, repositioned, set out or replaced.

What maintenance or repair requirements would be appropriate if an air conditioning unit in a lead or occupied locomotive is found to be inoperative or operating insufficiently at pre-departure (after the train has been made up and the air-brake test has been performed)?
If the established threshold is reached or forecast to be exceeded before the crew's final release then employees should not be required to operate such locomotives and setting out or repositioning locomotives with inoperative air conditioning units should be required.

What are the potential costs of complying with a maximum locomotive cab temperature limit as described in the preceding discussions?

Costs are always a consideration and FRA is seeking input on the costs of the promulgated regulation. It is the position of labor that the costs of not having any standard be included and retroactive to at least September 1996, when FRA furnished its Locomotive Crashworthiness and Cab Working Conditions Report to Congress. The human cost to crews has to be a consideration along with risk analysis in allowing crews to perform their duties in cabs where extreme heat exists. Safety costs money. Therefore, there is no doubt that railroads will raise an objection to most safety improvements if the costs exceed the benefit to the railroad. As with most safety regulations the industry will only do what it is required. Considering the cost of protecting human limbs and lives in the development and implementation of safety regulations is an unfortunate fact of life. How much weight it is given is something FRA has in its control and we recommend FRA view the cost benefit ratio from the perspective of an injured employee or their family.

Alerters

In its Section-by-Section Analysis of the proposed rule's various parts, FRA indicated *[they] intend[] for a device or system that satisfies an accepted industry standard including, but not limited to, AAR Standard S-5513, "Locomotive Alerter Requirements," dated November 26, 2007, to constitute an alerter under this definition.* The "but not limited to" clause indicates FRA will consider safety enhancements in the final rule. In this regard, refinements to the AAR standard might have been proposed by the labor caucus. During the working group's deliberations, labor made several suggestions to improve the alerter rule and we urge FRA to consider them in the development of the final rule. The major area FRA must consider is the alerter's effectiveness during low speed operations.

Time interval activation and low speed operations

Labor offered proposals for random interval alerter warnings or visual only warnings at speeds below 10 miles per hour because the potential for accidents during low-speed operations is greater than high speed operations. Typically, higher permissible speeds are the result of greater distances between trains and ideal operating conditions. We are not dismissing accidents at higher speeds as insignificant and we acknowledge that the severity of accidents during higher speed is greater than that of low speeds. Labor's concern is that low speeds are required in locations or at times where there is an increased risk for accidents, such as when other trains are in proximity, the track is less than optimal, other employees or the public may be on or about the tracks or some other potential hazard is present and known to the railroad.

The Collision Analysis Working Group ("CAWG") published its report in 2004 and made two findings from its analysis of 65 main line track collisions that are significant in this regard. Thirty percent of the collisions in the CAWG Report showed alertness or fatigue as a possible contributing factor to the incident (Section 5.3 - Alertness - p. 50). In 47 percent of the CAWG collisions, the speed of the striking train was 20 mph or less (Appendices - C - PCF's - Speed). We believe that the finding of the CAWG, with regard to the significant percentage of collisions occurring at speeds below 20 mph is "relevant"; and, when coupled with the finding that almost one-third of the 65 collisions occurred under circumstances suggests crew "alertness" problems.

In preamble Part IV, General Overview of Proposed Requirements, the NPRM reviewed the history of three railroad train-train collisions in which a locomotive alerter may have prevented the tragedy. It is interesting that, of the three examples chosen to illustrate the need for alerters on freight trains, two of them were collisions where the striking train was moving slowly. At Sugar Valley, Georgia (NS - 09 August 1990), the NTSB concluded that the alerter system *would have initiated an alarm cycle* but, NTSB speculated, the Engineer *could have cancelled the alerter system while he was asleep by a simple reflex action that he performed without conscious thought.* Although there was no event recorder on either locomotive of the striking train at Delia, Kansas (UP - 02 July 1997), utilizing the timing of the progress of the striking train from the initial switch where the train entered the controlled siding to the point where the signal was passed it was assumed that the striking train was traveling at approximately three mph. The crew of the eastbound train confirmed the westbound train's slow speed. The eastbound train, moving at 65 mph, barely got the head-end by the control point before the striking train came through the turn-out and collided with cars just behind the head-end of the

struck train. This cases illustrates the need for low-speed fatigue mitigation measures and why labor insisted during working group meetings that the locomotive alerter system behave differently at low speeds and not merely in strict conformance with the AAR alerter timing algorithm. We recognize that repeated activation of the alerter at low speeds may be unnecessarily distracting in many circumstances as well. We certainly do not want to create distractions. A visual only alerter could have prevented the accident at Sugar Valley Georgia.

At speeds below 20 mph, the time interval may be inadequate to protect employees during periods of increased risk from fatigue-related mistakes. At speeds below 20 mph, alerters in compliance with the proposed rule will require a response from an operating crew at regular interval with significant amounts of time between activations. For example, at 10 mph the alerter interval is 240 seconds, or four (4) minutes. A fatigued crew could travel two-thirds of a mile before getting an alerter system warning to bring him/her back from the fatigue induced inattention in the form of micro sleep. Although the distance to time ratio is the same at higher speeds as lower speeds, the time itself will allow for a much greater degree of inattention bordering on actual full sleep. Inattentiveness may go undetected and the associated danger could go uncorrected by an alerter system which only alerts the operating crew once every four minutes. An alerter that provides only a visual alert at speeds below 20 MPH will focus on those circumstances where a fatigued crew must be vigilant, or the alerter will stop the train and avoid a potential collision.

When the working group on began its work on alerters, the AAR and the carriers were quick to complain that they were already equipping their freight locomotive fleets with alerters and asked, "Why do we need a regulation?" They complained that the RSAC "consensus" process was supposed to cover safety issues which were not being addressed. Labor pointed out that there were many things the carriers could do to ameliorate fatigue which were not being regulated and reminded FRA that the carriers would surely complain vigorously if FRA attempted to regulate them, such as providing the crews with accurate train line-ups and predictable work schedules while eliminating draconian attendance policies that are only designed to force a safety critical employee to work a maximum number of hours regardless of health concerns including fatigue.

The industry continues to impose ridiculous attendance polices that compel safety critical employees to work in fatigued conditions. An effective alerter is an essential fatigue countermeasure. Unfortunately railroads continue to place manpower productivity ahead of safety by requiring operating crews to work when they are fatigued and in need of sleep. The industry's continuing inability or unwillingness to establish reasonably predictable work schedules for operating crews leaves FRA with no choice but to impose technological requirements and the associated costs on the industry to address safety.

<u>Visual activation of alerters</u>

Labor is grateful that FRA has adopted a requirement in the proposed final rule for a visual warning five (5) seconds prior to the commencement of the audible warning. The five-second, silent, visual-only alerter warning is a reasonable requirement. We are also agree with FRA's requirement for the visual alerter to be placed in a position that is visible to the locomotive

engineer from the normal operating position in the cab. Early reset opportunities allow the Engineer to avoid the incessant, aggravating, ear-piercing audible indicator. It is a given that crew vigilance to required job-related tasks is an essential component of safe train operations and early reset indicates the locomotive engineer vigilance and alertness. Moreover, the elimination of yet another noise source in a cab environment already plagued with noise overload is appropriate and it helps to protect the operating crew's hearing health.

Accordingly, we believe alerters are a necessary safety requirement and urge FRA to reconsider its position on the manner and interval of low speed alerter activation. We urge FRA to consider using a random interval not to exceed a maximum interval or a more frequent visual only alerter be adopted for low speed operations or perhaps some combination of both in the final rule. Inasmuch as the timing mechanism for the alerters is electronic, it can be easily programmed for a different frequency at slow speeds.

Cab Securement

Twice during the past decade the Teamsters Rail Conference, with BLET participation, conducted detailed surveys of security problems observed by and affecting members working for the five U.S.-based Class I railroads. The results of those surveys were published in the 2005 Report entitled *High Alert: Workers Warn of Security Gaps on Nation's Railroads,* and in the 2010 *High Alert* 2 Report, both of which have been provided to the FRA. The first *High Alert* report indicates that over 97% of respondents answered the question "Can you secure the cab against unauthorized access while occupied?" Of those, only 44% replied in the affirmative. The *High Alert* 2 report, published five years later, showed little improvement, as 49.4% of the 93.09% of respondents who answered the same question reported that their cab could be secured

In the preamble to the NPRM, FRA referred to the September 22, 2010letter BLET wrote to Federal Railroad Administrator Szabo requesting the agency promulgate rules for the security of the locomotive operating compartment. In that letter, BLET referred to the June 20, 2010, incident in New Orleans when a conductor was shot to death and the locomotive engineer was also injured during an armed invasion and robbery in their locomotive cab. The lack of a secured operating cab certainly encouraged and enabled that individual to commit that heinous crime. Coincidentally, on June 18, 2010 – just two days before the unprovoked attack – the AAR published a statement dismissing the *High Alert* reports as *an unscientific survey of the perceptions of a small percentage of the freight railroad workforce about security."* The dismissive attitude of the employees' "perceptions" has enabled the railroads to ignore this legitimate security issue for years. The danger posed by these types of attacks is not new, nor is it unknown and the June 20, 2010 certainly wasn't the first incident of this nature. For example, in a 1998 incident involving a commuter train with hundreds of passengers aboard, the locomotive engineer was held at gunpoint when an intruder entered the unsecured operating compartment of the train he was operating and hijacked the train to Philadelphia.

49 CFR §229.45 contains a general regulatory requirement that *all systems and components on a locomotive shall be free of conditions that endanger the safety of the crew…* Although this provision goes on to state numerous examples of endangering conditions, the rule is not limited to the conditions listed. We believe this is the appropriate place for FRA to specifically require a

properly functioning cab locking mechanism to prevent unauthorized entry into the operating compartment of locomotives.

FRA is appropriately concerned about the operating crew's ability to quickly exit a locomotive operating compartment with a locked door in the event of an accident or hazardous material leak. FRA is also concerned about emergency responder access to the locomotive cab and the operating crew in the event of an accident where the crew becomes incapacitated or has been rendered unable to open the door from the inside. We believe the locking mechanism on the door should contain features that provide for the ability to open the door from the inside without a key or the need to operate anything other than the handle. We also urge FRA to promulgate a rule that requires the railroad to provide means to unlock the operating compartment from the outside in the event of an emergency where the crew inside is incapacitated and the cab windows do not provide sufficient access. We believe this can be accomplished by providing emergency responders with a key or access code to the locomotives and/or provide the train dispatcher with a remote access keyless entry device available in the automotive industry in vehicles such as the General Motors "On Star" system.

Another cause for the unacceptable level of risk to an operating crew from an external attack is the continuing lack of an upper cab temperature limit. There is no doubt that in cold weather operating crews will close windows and doors in an effort to retain the heat in the operating compartment of the locomotive. However, in hot weather without air conditioning, just the opposite is true. Operating crews will open doors and windows to release captured heat from the operating environment. The lack of an air conditioning in hot weather causes the crew to choose between their safety and their security

Despite more than a decade of discussion, the industry continues to ignore the lack of air conditioned locomotive cabs. For several years most new locomotives have been manufactured with air conditioning but only to provide an appropriate environment for various solid state electronic components; crew health safety and comfort never entered into the equation. Presently there is no federal standard for equipping locomotives with air conditioning or for maintaining such systems where they have been installed. We are pleased that FRA is considering addressing this issue with this rule making and remind FRA that the lack of an upper limit cab temperature contributes to unsecured locomotive cab. We urge FRA to empower operating crews with the right to manage their locomotive consist so that an air conditioned locomotive is on the point whenever any locomotive, in the consist, is so equipped. We also fully endorse FRA's logic in the positive safety contribution and overall cost benefit in requiring climate controlled locomotive cabs. The alertness of the operating crew, the security of the locomotive cab, and the fact that we are discussing the captive work environment of an operating crew that are required to perform safety critical service in 12 hour shifts all support FRA's conclusion that the locomotive cab must be climate controlled from both ends of the temperature range.

Finally, we believe that current glazing standards provide an insufficient level of protection. Appendix A to Part 223 prescribes that the following standards must be met:

(1) withstanding a ballistic impact in which a standard 22 caliber long rifle lead bullet of 40 grains in weight impacts at a minimum of 960 feet per second velocity; and
(2) withstanding a large object impact in which a cinder block of 24 lbs. minimum weight with dimensions of 8”x8”x16” nominally impacts at the corner of the block at a minimum velocity of
(i) 44 feet per second, if used for end-facing glazing locations, and
(ii) 12 feet per second, if used for side-facing glazing locations.

These standards have been in effect for decades and are outdated. The evolution of commercially available firearm technology far exceeds the level of protection afforded by the ballistic impact standard. Furthermore, converting the large object impact velocities into the more easily understood miles per hour metric shows the inadequacy of the current level of protection: end-facing glazing need only withstand a large object impact of 32.29 miles per hour, and side-facing glazing need only withstand a large object impact of 8.81 miles per hour. Given current train speeds, these standards clearly are insufficient and should be revisited.

There is no doubt that there are firearms that could defeat any glazing that can practicably be installed on locomotives. However, we don’t believe that is a legitimate reason to do nothing. If a glazing is available that can protect operating employees from most of the firearms available to common criminals, then FRA should require the installation of such glazing on the locomotives.

We would like to thank FRA for the opportunity to comment on the proposed rule.

Respectfully submitted,

Dennis R. Pierce

National President BLET

Malcolm B. Futhey

International President UTU