



November 15, 2006

UNITED STATES DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

Railroad Power Brakes and Drawbars/Railroad Locomotive Safety Standards

BNSF Railway Company and Norfolk Southern Railway (hereafter referred to as BNSF/NS) hereby petition the Federal Railroad Administration (FRA) for a waiver of compliance from the Railroad Locomotive Safety Standards 49 CFR 229.21 and 49 CFR 232.15, 232.103, 232.109, 232.111, 232.205, 232.207, 232.209, 232.217, and 232.305.

It is BNSF/NS opinion this initial request for relief will permit BNSF/NS to initiate ECP pilot train operations on an expedited basis as requested by FRA. The granting of this request for ECP pilot train operations will allow the FRA not only to clearly identify definable savings with ECP train operations as a whole but will also enable FRA to evaluate changes to the federal regulations to accommodate these operations on a permanent basis.

The implementation of ECP technology will require a substantial capital commitment of approximately one million dollars per train. Accordingly, BNSF/NS will require that the waiver be in effect for a minimum of 5 years.

The following requirements are also necessary for the implementation of ECP pilot trains:

232.207 Class IA Brake Tests. Class IA brake tests 1000 mile inspection. BNSF/NS requests to waive this requirement in its entirety. ECP is self-monitoring and utilizes microprocessor diagnostic technology that is more invasive than the current standard.

232.15 (a)(7) Movement of defective equipment. Relief is requested for movement of ECP equipped cars when braking has been cutout. BNSF/NS requests waiver relief at Initial Terminal inspections and enroute ECP defects provided the 85% rule guidelines are followed. The ability to move such car(s) to an active ECP corridor/facility for repair is critical to keep the ECP car fleet in operation. As long as 85% of the brakes on ECP trains operate as intended, we request the train be allowed to leave the terminal and continue to destination or, in such cases where an ECP defect occurs enroute and the brakes must be cutout, the car is allowed to continue to destination. With the improved braking application and control ECP provides this is well within the safe operating limits of ECP systems as supported by the Booze-Hamilton report.

232.103(d) General Requirement for Train Braking System. BNSF/NS requests a waiver from this rule so that only 85% operative brake is required at any time for ECP trains. We also request the flexibility to pick up ECP cars set out with defective brakes on ECP or conventional trains as long as 85% of operative brakes are maintained. Additionally, when ECP cars are setout for repairs not related to the braking system and are repaired we request the latitude to pick up those cars in conventional trains and move them to destination or where they can be placed back into an ECP train using 49 CFR 232.215 (a)(9) or 49 CFR 232.215 (e)(2)(3).

232.103(g) General Requirements for Train Braking System. Since ECP brakes are controlled by pressure and not volume, BNSF/NS requests that piston travel rules in 232.103(g) be waived in favor of the manufacturers designated effective piston range for ECP brakes.

232.109 Dynamic Brake Requirements. BNSF/NS requests that FRA waive dynamic brake requirements for ECP trains. ECP provides braking levels that exceed a conventional train with dynamic brake. Once again, we cite the Booze-Hamilton study.

232.111(b)(3) and (4) Train Handling Information. BNSF/NS requests that FRA waive the requirement which requires the train crew to be notified by a written or electronic record of cars in the train with inoperative brakes. Since the ECP technology provides this information in real time to the crew, this is not necessary.

232.205 Class I Brake Tests. BNSF/NS requests that FRA waive the requirements of 232.205(a)(2),(3) and (4). Since ECP technology provides information regarding individual cars braking status on-board the locomotive, 232.205 inspections requiring a visual inspection of brakes functioning on cars added to the train or for cars *off-air* for more than four hours is unnecessary.

232.205(c)(3) and (c)(5) Class I Brake Tests. BNSF/NS requests that FRA waive 75 psi requirement at rear of train to *not less than 60 psi* since cars are adequately charged for operation on ECP trains at 60 psi and above. In addition, BNSF/NS requests that FRA waive requirements for six-to-nine inch piston travel since ECP piston control is by pressure and not by volume.

232.205(e) (4). Since control of the brakes is not dependent on brake pipe trainline pressure and nominal brake pipe pressure on ECP trains is 90lbs, BNSF/NS requests that FRA waive the requirement for a 20 lb. reduction for a brake test. Instead FRA may require 85% of the cars to respond to an 20 lb. application signal from the locomotive or yard ECP control device. Brakes need only to remain applied until the release signal is received. No three minute requirement is necessary since it is an electrical control signal.

232.209(a)(1) Class II Brake Inspection BNSF/NS requests FRA waive the *off-air* for 4 hour requirement relying instead on ECP self-diagnostics. FRA should waive 209 (b)(1) and (b)(2) to allow 60 psi versus 75 since ECP can operate at 60 psi. FRA should waive 209(b)(3) and allow 85% of cars with operative brake account ECPs greater braking effort. FRA should waive 209(c) and (d) because release of the rear car on ECP can be verified via the trainline and a Class II brake test on ECP cars added to a train can be fulfilled at the locomotive operator's station.

232.211 Class III Brake Inspection. BNSF/NS requests that FRA waive the Class III test in its entirety for ECP trains. ECP self-monitoring and self-diagnostics obviate the need for a brake test.

232.217 (c)(3) Train Brake Tests Conducted Using Yard Air. BNSF/NS requests that FRA waive the 80 psi yard air requirement. ECP can operate at 60PSI.

232.305 Single Car Air Brake Tests BNSF/NS requests that FRA waive single car air brake tests and rely on ECP self-diagnostics on each car.

Waive all of Subpart E-End of Train Devices. The ECP End-of-Train device carries a computer with the same diagnostics as the cars. Defects can be detected from the on-board locomotive displays. A new rule for ECP end-of-train devices needs to be written.

232.505(e) Pre-Revenue Service Acceptance Testing Plan. BNSF/NS requests FRA waive the requirement to file such a plan.

229.21 Daily Inspection of Locomotives BNSF/NS requests relief from the requirement to perform daily inspection of ECP locomotives in service on ECP trains. Trip Inspections should be performed on such locomotives.

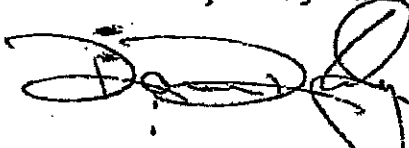
Electronic recordkeeping. BNSF/NS requests the option to maintain all records required under 49 CFR Parts 229 and 232 electronically. Records would be produced upon request by FRA at the locations where they are required to be kept by the Power Brake Rule.

Because of the investment and commitment involved, BNSF/NS wants to review a draft of FRA's written grant of this waiver prior to issuance to ensure that commitment is warranted.

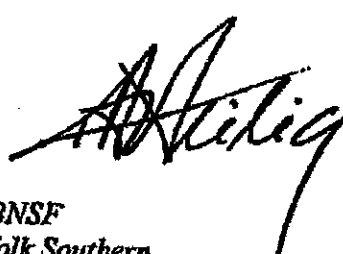
BNSF/NS also believe that the provisions incorporated herein should provide the framework for an expedited rulemaking by FRA which will encourage further investment in ECP brake technology.

Thank you for your consideration.

Respectfully submitted,



Dave Dealy, Vice President Transportation, BNSF
Tim Heilig, Vice President Mechanical, Norfolk Southern





ASSOCIATION OF AMERICAN RAILROADS

Patrick T. Ameen
Asst. Vice President, Technical Services
Safety and Operations

Also sent via e-mail

February 5, 2007

**Subject: Enhancements & Modifications to 49 CFR Parts 229 and 232 to Facilitate Adoption of
ECP Brakes in North America**

Mr. Grady C. Cothen, Jr.
Deputy Associate Administrator for Safety Standards & Program Development
Federal Railroad Administration
1120 Vermont Avenue, N.W.
Washington, D.C. 20590

Dear Mr. Cothen:

The AAR and its member railroads have compiled a list of enhancements and modifications to 49 CFR Parts 229 and 232 that FRA might consider in the drafting of the nascent NPRM for Electronically Controlled Pneumatic (ECP) Brakes in order to facilitate adoption of ECP brake systems in North America.

The attached document is an amalgamation of items developed over the past several months by various AAR Rules & Technical Committees and information gathered as part of the January 16, 2007 Public Hearing for the BNSF Railway Company and Norfolk Southern Corporation petition for waiver of compliance to begin implementation of ECP brakes. The document also includes multiple cites from the AAR S-4200 series of ECP Brake Standards as rationale for some of the regulatory modifications suggested.

I would be happy to answer any questions you or your staff may have on the document.

Sincerely,

Patrick T. Ameen

CC: Robert C. VanderClute
Sr. Vice President Safety & Operations

**ENHANCEMENTS & MODIFICATIONS to 49 CFR Parts 229 and 232 to
FACILITATE ADOPTION of ELECTRONICALLY CONTROLLED PNEUMATIC
BRAKE SYSTEMS in NORTH AMERICA**

**49 CFR Part 232--Brake System Safety Standards for Freight and Other Non-
Passenger Trains and Equipment; End-of-Train Devices**

Subpart A - General

232.5 Definitions.

Add some basic ECP definitions which can be lifted from the AAR S-4200 series of ECP Standards. (Refer to AAR Standard S-4200 Section 3.0, DEFINITIONS, and APPENDIX A: GLOSSARY OF TERMS)

232.15 Movement of Defective Equipment.

(a)(3) The "first discovers" aspect of the "defective car or locomotive prior to moving for it for repairs" is problematical. ECP brakes, by design, are safer and more efficient technology. In that context, an ECP equipped freight car with defective or cut-out brakes can be moved safely from initial terminal to a designated ECP repair facility where a qualified person can accomplish repairs. The strict 100% operative and "first discovered" requirements are not relevant for ECP brake operations provided a sufficient percentage of operative brakes (85% per (a) (9)) exist in the train. (Refer to discussion under section 232.103)

(a)(6) & (a)(7) Railroads need the latitude to move a car beyond the nearest available location where repairs can be performed (e.g., to destination or to a repair location in an active ECP operating corridor where qualified ECP repair personnel and repair materials are available.)

Secondly, a set-out stand-alone ECP equipped car with a brake related defect, should be allowed to be picked-up and placed in a non-ECP train to destination or to where it may be placed in another ECP train; provided the minimum percentage of operative brakes is maintained. This operational flexibility is critical since the initial implementation railroads do not plan to commingle non-ECP equipment in stand-alone ECP trains however they will at times need to move defective ECP equipment in non-ECP trains. Likewise, railroads need the operational flexibility to move repaired stand-alone ECP equipment in conventional trains as part of repositioning to a stand-alone ECP train since by design stand-alone equipment cannot operate in conventional pneumatically-braked trains.

(g) Add designation of ECP repair locations OR a new Section (h). Railroads know best where to designate and deploy ECP brake repair locations on their systems. If FRA is to facilitate widespread adoption of ECP technology then railroads should *not* have to petition for the approval of same under all of the section 232.17 requirements. The spacing and deployment of ECP repair centers should be an individual railroad operational and service design decision given the proven safety of ECP technology.

232.17 Special Approval Requirements

(same comments as 232.159(g)) above)

Subpart B – General Requirements

232.103 General requirements for all train brake systems.

(d) Add a new section to provide for 85% effective and operative brake requirement after Class I brake test for ECP equipment so long as 85% minimum is maintained enroute. AAR Standard S-4200 ELECTRONICALLY CONTROLLED PNEUMATIC (ECP) CABLE-BASED BRAKE SYSTEMS PERFORMANCE REQUIREMENTS Section 4.3.18.2 requires: “*Once every 120 seconds and upon setup changes, the HEU shall broadcast a configuration command message.*” Section 4.3.18.3, requires, in addition to brake pipe pressure and other items, cut-in/cut-out status of all individual car control devices.

AAR Standard S-4200 Section 4.3.13.3 requires that when a CCD cuts out it transmits an exception message to the head end unit.

AAR Standard S-4200 Section 4.4.5.1 requires: “*If the percentage of operative brakes falls below 95%, the engineer shall be audibly and visually warned and given the current percentage operable. If the percentage falls below 90%, the engineer shall likewise be warned and given the percentage.*”

AAR Standard S-4200 Section 4.4.5.2 requires: “*If the percentage of operative brakes falls below 85%, the engineer shall be given a warning and the HEU shall command an electronic full-service brake application.*” By the way, Section 4.4.5 requires that fractional percentage operative computation results always be truncated down to the next whole percentage point.

Even at an 85% operative level for the train’s entire ECP brakes system the train will retain a more effective brake system and a shorter stopping distance than a train with conventional purely pneumatic brakes. AAR Standard S-4200 Section 4.3.20 states: “*Car reservoirs shall be charged continuously. Reservoir charging shall be accomplished only by conducting BP air to the reservoir (i.e., BC air is never used). Air flow from the BP to the reservoir is never interrupted...*” The brake pipe remains fully charged at all times and thus provides a constant supply of air to the reservoirs.

(f) AAR Standard S-4200 Section 4.1.1 states: “*The brake system shall provide the following primary functions:*

- *Graduated brake applications and releases*
- *Continuous reservoir charging*
- *Adjustment of braking levels to car loading*
- *Continuous fault detection and equipment status monitoring*
- *Pneumatic backup*”

FRA should allow manufacturers’ designated effective piston travel ranges for ECP brakes since they are controlled by volume not pressure, provided the cars are equipped

with AAR approved automatic slack adjusters. The brake shoes will still be maintained to AAR condemning limits the same as cars equipped with conventional air brakes.

(m) Eliminate or waive. Observation of air flow meter is not necessary. ECP technology has continuous on-board health monitoring features and provides a real time locomotive electronic display---including the current EOT brake pipe pressure (transmitted by EOT beacon), updated once per second. (AAR Standard S-4200 Section 4.3.1.1)

232.111 Train Handling Information

(b)(3) Eliminate or waive train crew notification requirement for cut-out or inoperative ECP brakes in train. ECP brake systems provide this information real-time via on-board locomotive electronic displays. At initial terminal and enroute, a minimum operative brakes percentage of 85% will be maintained. See detailed discussion under 232.103(d) above.

Subpart C – Inspection and Testing Requirements

232.205 Class I brake test-initial terminal inspection.

(a)(2) Eliminate or waive the 4 train consist triggers for a Class I brake test. ECP technology provides the real-time operational brake condition of each individual car/node and of the entire train system as well. If a single car or a solid block of cars is added or removed (including set-out of a defective car), the ECP train system is in switch or set-out mode. The entire train is then reinitialized (including a full service brake application & diagnostic testing) before the ECP system can once again be operated in RUN mode. AAR Standard S-4200 Section 4.2.3 states: *“Initialization involves establishing or confirming identity and position of all network devices in the train line communication network. It also involves assigning a network address to each network device and downloading operational data, including vehicle weight/load and brake pipe pressure set-point and train net braking ratio for the train (see Standard S-4230, latest revision) Specifically, the initialization procedure shall include the following:*

1. Initial power-up to restart and cut-in CCDs and EOT. In order to initialize the ECP system, CCDs and EOT shall be restarted via a train line power application if they have been shut down...” So anytime the consist is changed, the CCDs “wake up” within two seconds after the train line voltage has reached the CCD or EOT and the entire consist is reinitialized. Thus there should be no limit to the number of enroute consist changes which would trigger a Class I brake test obligation.

(a)(3) Waive or eliminate 4 hour “bottled air” limitation. AAR Standard S-4200 Section 4.3.20 states: *“Car reservoirs shall be charged continuously. Reservoir charging shall be accomplished only by conducting BP air to the reservoir (i.e., BC air is never used). Air flow from the BP to the reservoir is never interrupted...”* The brake pipe remains fully charged at all times and thus provides a constant supply of air to the reservoirs. ECP technology provides continuous reservoir charging, adjustment of braking levels to car loading and continuous fault detection and equipment status monitoring. There should be no time limitation on bottled air.

(a)(4) 3,000 mile cycle train limitation: Given the technological superiority and inherent safety of ECP brake systems, with continuous on-board health monitoring features and real time locomotive electronic display of the operational status of each car's brake system, a cycle or unit train should be allowed to operate a full round trip regardless of mileage. One supplier (Wabtec Railway Electronics) testified at the January 16, 2007 waiver hearing that *"ECP braking systems monitor the most critical operating parameters on a car on a continuous basis. While this does not include monitoring of the entire rigging system, down to the brake shoes, it does include the most important parameters of air pressure in the brake cylinders, reservoirs, and brake pipe. In addition, with the improved braking capability of ECP, equivalent train braking performance can be achieved with a higher level of car rigging variations."* And *"Wabtec is not suggesting elimination of all mechanical inspections with ECP braked trains. However, continuous diagnostics and other ECP brake features support extending the distance between manual train inspections."*

(c)(1)(iii) Eliminate or waive. Air flow meter is not necessary with ECP technology.

(c)(4) Eliminate or waive the 20# service reduction. Instead, require that a minimum of 85% of the cars respond to 20# application signal from the controlling locomotive or yard ECP control device. Also, since the ECP signal is an electric signal, the brakes should only remain applied until the release command is received; the 3 minute retest requirement is inapplicable and should be waived or eliminated.

(c)(5) The nominal; 6-9 inch piston travel range should be waived. ECP systems maintain target brake cylinder pressure electronically. As New York Air Brake Company and Wabtec Railway Electronics representatives responded to FRA questions at the January 16, 2007 hearing, *"ECP lowers the risk of extended piston travel resulting in lower brake forces."* The Wabtec representative testified: *"Graduated release capability, which also reduces in-train forces, supports increased use of dynamic braking, and lowers the average braking workload of cars."* ECP technology, with its instantaneous response, graduated application & release reduces brake shoe wear and provides more even brake response and precision control. FRA should allow manufacturers' designated effective piston travel ranges for ECP brakes provided the cars are equipped with AAR approved automatic slack adjusters. The brake shoes will still be maintained to AAR condemning limits the same as cars equipped with conventional air brakes.

232.207 Class IA brake tests—1,000-mile inspection.

Eliminate or waive entire section. ECP technology has continuous on-board health monitoring features and provides a real time locomotive electronic display of operational status of each car's brake system. The ECP system provides almost instantaneous to braking commands, including graduated brake releases and reapplications. The system responds appropriately to undesired separation of hoses, cabling or brake pipe.

One of the benefits of ECP technology is reduced brake shoe wear. There is a significant margin of safety already built into the AAR composition brake condemning thickness of 3/8". The life of a brake shoe with conventional air brakes is 50,000-100,000 miles

depending upon operating conditions, trailing tonnage, brake system efficiency, and engineer behavior at the train controls. An ECP train will receive a pre-departure mechanical inspection and brake test at initial terminal. Even if a brake shoe departs origin at the AAR minimum thickness of 3/8" it could still make a transcontinental run to destination. ECP trains will be operated in known origin-destination (or round trips) pairs in the individual railroad's service design. The cars would still receive an inbound mechanical inspection, including the brake rigging, at destination.

As to other components of the foundation brake rigging, the ubiquitous wayside detection and vehicle monitoring systems (dragging equipment detectors, wheel impact load detectors, truck hunting detectors, hot /cold wheel detectors) ensure safe "running gear". Given the technological superiority and inherent safety of ECP brake systems, with continuous on-board health monitoring features and real time locomotive electronic display of the operational status of each car's brake system, a train should be allowed to operate to destination regardless of mileage. One supplier (Wabtec Railway Electronics) testified at the January 16, 2007 waiver hearing that *"ECP braking systems monitor the most critical operating parameters on a car on a continuous basis. While this does not include monitoring of the entire rigging system, down to the brake shoes, it does include the most important parameters of air pressure in the brake cylinders, reservoirs, and brake pipe. In addition, with the improved braking capability of ECP, equivalent train braking performance can be achieved with a higher level of car rigging variations."* And *"Wabtec is not suggesting elimination of all mechanical inspections with ECP braked trains. However, continuous diagnostics and other ECP brake features support extending the distance between manual train inspections."*

An arbitrary 1,000 mile inspection threshold is an artificial impediment to operational and overall rail network efficiency. ECP equipped trains should be allowed a true extended haul--- from point of origin to destination without a costly interruption for an unnecessary inspection.

232.209 Class II brake tests—intermediate inspection.

(a)(1) Waive or eliminate 4 hour "bottled air" limitation. ECP technology has continuous on-board health monitoring features and provides a real time locomotive electronic display of operational status of each car's brake system. (See discussion under 232.205(a)(3))

(b)(3) Eliminate or waive the 20# service reduction. Instead, require that a minimum of 85% of the cars respond to a 20# application signal from the controlling locomotive or yard ECP control device. Also, since the ECP signal is an electric signal, the brakes should only remain applied until the release command is received; the 3 minute retest requirement is inapplicable and should be waived or eliminated

(d) Cars added to the train should enroute be allowed to travel to destination. (See discussion under 232.205(a)(2))

232.211 Class III brake tests-train line continuity inspection.

Eliminate or waive entire section. ECP technology has continuous on-board health monitoring features and provides a real time locomotive electronic display of operational status of each car's brake system.

232.213 Extended haul trains

Eliminate or waive entire section. ECP technology has continuous on-board health monitoring features and provides a real time locomotive electronic display of operational status of each car's brake system. A 1,500 mile limitation is an unjustified impediment to operational and overall rail network efficiency. (See discussion under 232.207 above)

232.215 Transfer train brake tests.

(a) Eliminate or waive entire section. ECP technology has continuous on-board health monitoring features and provides a real time locomotive electronic display of operational status of each car's brake system.

(b) Eliminate or waive. ECP technology has continuous on-board health monitoring features and provides a real time locomotive electronic display of operational status of each car's brake system.

(c) In the event paragraph (c) is initiated (e.g. a transfer train move is > 20 miles or no longer meets the definitions of a transfer train per Section 232.5) then the same items of relief as noted under Section 232.205 above should be granted.

Note: Cars moving in transfer trains may be among the last of the fleet to receive ECP equipment. Nevertheless relief should be granted or a placeholder should be provided for future legacy freight car fleet migration.

Subpart D – Periodic Maintenance and Testing Requirements

232.305 Single car air brake tests.

(a) The AAR Brake Systems Committee will develop and adopt a new test regime for certain major repairs to ECP brake equipment. This will be a new separate AAR Standard or perhaps a supplement to AAR Standard S-486 for conventionally equipped freight cars.

(b)(1)(b)(2)(b)(3)(b)(5): Delete or waive. These criteria are not relevant for ECP equipment with real-time self-diagnostic capability. There is no data to suggest that a specified individual car or unit ECP brake system test interval is in order.

(b)(4) Replace with a relevant, abbreviated ECP quality test when specific ECP repairs or replacements are made such as an ECP manifold. (AAR Brake Systems Committee to develop)

232.307 Equipment and devices used to perform single car air brake tests.

Delete. Not applicable if AAR ECP Brake System technical standards address per 232.205(b)(4) above.

Subpart E – End-of-Train Devices

232.401 Scope

AAR Standard S-4200 addresses the ECP brakes “EOT beacon” requirements. The scope of Subpart E should recognize that fact. Rear end marking device requirements would still be covered by 49 CFR Part 221.

232.405 Design and performance standards for two-way end-of-train devices.

This section should be waived for ECP operations. AAR Standard S-4200 provides for the EOT beacon. The EOT is physically the last network node in the train and transmits a status message (EOT beacon) once per second. The EOT is activated by train line power. The status message includes the brake pipe pressure that is displayed in the cab by the HEU. The status message also includes percentage of full battery charge, train line voltage, and other information defined in AAR Standard S-4230, INTRATRAIN COMMUNICATION SPECIFICATION FOR CABLE-BASED FREIGHT TRAIN CONTROL SYSTEMS.

AAR Standard S-4200, Section 4.4.2.1 requires that if the HEU fails to receive the EOT beacon for 3 seconds, the engineer shall be given an audible and visible warning and the HEU shall automatically command an emergency brake command.

Subpart F – Introduction of New Brake System Technology

Eliminate or waive entire section. FRA concerns satisfactorily addressed and superseded in Subparts A through E of this regulation.

49 CFR Part 229—Locomotive Safety Standards

Subpart A - General

229.5 Definitions.

Add some basic ECP definitions. (Refer to AAR Standard S-4200 Section 3.0, DEFINITIONS, and APPENDIX A: GLOSSARY OF TERMS)

229.9 Movement of Non-Complying Locomotive

(b)(1)(2) Need latitude to move locomotive beyond next calendar inspection or nearest forward point where repairs can be performed (e.g., to destination or to a repair location in an active ECP operating corridor where qualified ECP repair personnel and repair materials are present). *Note: It is recognized that this is under consideration by the RSAC Locomotive Safety Standards Working Group.*

Subpart B – Inspections and Tests

229.21 Daily Inspection

The daily locomotive inspections should be replaced with a trip inspection for ECP equipped locomotives. There is no compelling reason why a modern locomotive equipped with micro-processor based on-board health monitoring systems and ECP brakes technology cannot operate safely for a round-trip in the case of unit and cycle

trains or to destination in the case of transcontinental runs. FRA needs to grant this relief in the interest of operational flexibility and enhanced asset utilization if railroads are to meet capital ROI for ECP technology.

Subpart C – Safety Requirements
General Requirements
Brake System

229.59 Leakage

- (a) Eliminate or waive section. ECP technology provides continuous on-board health monitoring features with respect to pressure. The main reservoir leakage limits should not be considered critical.
- (b) Eliminate or waive section. ECP technology has continuous on-board health monitoring features and provides a real time locomotive electronic display. The brake pipe leakage limits should not be considered critical.

AAR Safety & Operations
December 22, 2006
Revised February 2, 2007

[Federal Register Volume 71, Number 236 (Friday, December 8, 2006)]

[Notices]

[Pages 71237-71238]

From the Federal Register Online via the Government Printing Office [www.gpo.gov]

[FR Doc No: E6-20831]

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

Petition for Waiver of Compliance

In accordance with Part 211 of Title 49 Code of Federal Regulations (CFR), notice is hereby given that the Federal Railroad Administration (FRA) received a request for a waiver of compliance with certain requirements of its safety standards. The individual petition is described below, including the party seeking relief, the regulatory provisions involved, the nature of the relief being requested, and the petitioner's arguments in favor of relief.

BNSF Railway and Norfolk Southern Railway

[Docket Number FRA-2006-26435]

The BNSF Railway (BNSF) and Norfolk Southern Railway (NS), two Class I Railroads, request relief from certain provisions of Title 49 Code of Federal Regulations (CFR) Part 232 Brake System Safety Standards for Freight and Other Non-Passenger Trains and Equipment and 49 CFR Part 229 Railroad Locomotive Safety Standards to begin implementation of

[[Page 71238]]

Electronically Controlled Pneumatic (ECP) brakes. The petition implicitly requests, as well, exemption from certain provisions of Chapter 204, Title 49, United States Code. The petitioners believe that implementation of ECP brakes requires a substantial capital investment, and relief from certain provisions of 49 CFR Part 232 will permit them to initiate pilot train operations. In addition, BNSF and NS believe that this relief will permit them to implement this pilot program on an expedited basis, allow FRA and the industry to identify definable savings with ECP brake equipped train operations, and evaluate changes to the CFR to accommodate these operations on a permanent basis.

BNSF and NS specifically request relief from the following subsections of 49 CFR Part 232: 232.207 Class IA Brake Test, 232.15(a)(7) Movement of defective equipment, 232.103 (d) and 232.103(g) General requirement for train braking system, 232.109 Dynamic brake requirements, 232.111(b)(3) and (4) Train handling information, 232.205 Class I brake test, 232.205(c)(3), (c)(4) and (c)(5), 232.209(a)(1) Class II brake inspection, 232.211 Class III brake inspection, 232.217(c)(3) Train brake tests conducted using yard air, 232.305 Single car airbrake tests, 232.505(e) Pre-revenue service acceptance testing plan, and elimination of all Subpart E--End of train devices. In addition, the petitioners request relief from the requirements to perform daily inspections for locomotives (49 CFR 229.21) in service on ECP brake equipped trains, performing only a trip inspection. Petitioners also represent that this requested relief should provide a framework for an expedited rulemaking by FRA which

will encourage further investment in ECP brake technology throughout the railroad industry.

Interested parties are invited to participate in these proceedings by submitting written views, data, or comments. FRA anticipates scheduling a public hearing in connection with these proceedings in the near future, at a time and place yet to be determined, as the facts appear to warrant a hearing. Interested parties are advised that the petition appears to present issues that would require findings under 49 U.S.C. Sec. 20306 (Exemption for technological improvements). The petitioners should be present at the hearing and prepared to support any required findings with evidence that any requirements of Chapter 204, title 49, United States Code, sought to be waived "preclude the development or implementation of more efficient railroad transportation equipment or other transportation innovations under existing law."

All communications concerning these proceedings should identify the appropriate docket number (e.g., Waiver Petition Docket Number FRA-2006-26435) and must be submitted in triplicate to the Docket Clerk, DOT Central Docket Management Facility, Room Pl-401, Washington, DC 20590-0001. Communications received within 45 days of the date of this notice will be considered by FRA before final action is taken. Comments received after that date will be considered as far as practicable. All written communications concerning these proceedings are available for examination during regular business hours (9 a.m.-5 p.m.) at DOT Central Docket Management Facility, Room Pl-401 (Plaza Level), 400 Seventh Street, SW., Washington. All documents in the public docket are also available for inspection and copying on the Internet at the docket facility's Web site at <http://dms.dot.gov>.

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (Volume 65, Number 70; Pages 19377-78). The statement may also be found at <http://dms.dot.gov>.

Issued in Washington, DC, on December 4, 2006.

Grady C. Cothen, Jr.,

Deputy Associate Administrator for Safety Standards and Program Development.

[FR Doc. E6-20831 Filed 12-7-06; 8:45 am]

BILLING CODE 4910-06-P

Learn More or Apply Now
You open a Crate and Barrel Credit Card
Earn 10% back in reward dollars* when



Unlimited Furniture Delivery for One Flat Fee.



U.S. Department
of Transportation
**Federal Railroad
Administration**

1120 Vermont Ave., N.W.
Washington, D.C. 20590

MAR 21 2007

Mr. Dave Dealy
Vice President - Transportation
BNSF Railway Company
2600 Lou Menk Drive
Fort Worth, Texas 76131

Mr. Tim Heilig
Vice President - Mechanical
Norfolk Southern Corporation
1200 Peachtree Street NE, Box 184
Atlanta, Georgia 30309

Re: Docket Number FRA-2006-25435

Dear Mr. Dealy and Mr. Heilig:

This letter is in reference to the petition submitted jointly by the BNSF Railway Company and the Norfolk Southern Corporation, hereafter referred to as BNSF/NS or "Petitioners," seeking a waiver of compliance from certain provisions of Title 49 Code of Federal Regulations (CFR) Part 232, *Brake System Safety Standards for Freight and Other Non-Passenger Trains and Equipment*, and 49 CFR Part 229, *Railroad Locomotive Safety Standards*, in order to begin equipping and operating pilot trains using electronically controlled pneumatic (ECP) brakes instead of conventional pneumatic brake systems.

After careful review and consideration of the petition and in light of the testimony provided at the January 16, 2007, public hearing, along with the various written comments submitted to the docket in this proceeding, the Federal Railroad Administration (FRA) grants this request, in part, subject to the conditions listed below. FRA specifically denies BNSF/NS's request regarding the performance of locomotive calendar day inspections on locomotives used in ECP brake-equipped train operations. While FRA expects calendar day inspections on locomotives to continue as prescribed in 49 CFR Part 229, FRA invites Petitioners to present alternatives for handling defects that are found during these inspections when performed on en route ECP brake-equipped trains. If a railroad would like to deviate from the current requirements on how defects are handled when discovered en route during a calendar day inspection, a plan should be submitted to FRA outlining the process, including defects permitted while the locomotive continues to operate an ECP brake-equipped train to its destination or the next repair point, the qualifications for those determining that such an operation could continue safely, and the means of providing actual notice to crews regarding any such conditions and any safeguards that should be observed.

The railroad will be required to adopt and comply with any initial or modified plan approved by FRA.

FRA has decided that, in order to demonstrate the safety and efficacy of ECP brakes in a practical commercial setting, it is necessary to permit a train operating in ECP brake mode to operate to its destination or 3,500 miles, whichever is less, without receiving another Class I brake inspection or an inspection under Part 215. As a practical matter, railroads are most likely to use ECP brakes first on such trains as intermodal trains from West Coast ports to Chicago or unit coal trains from the Powder River Basin to distant power plants. A valid demonstration of the technology should address that reality, and this waiver does so with appropriate safeguards intended to ensure that these trains will be as safe as trains operated without benefit of the waiver, while collecting data on the demonstration to be used in FRA's pending rulemaking on ECP brakes.

The Brotherhood of Railway Carmen (BRC), the United Transportation Union (UTU), and the Brotherhood of Locomotive Engineers and Trainmen (BLET) each presented comments opposing the petition. BRC asserted that BNSF/NS had not proven that ECP brakes afford the same level of safety as visual inspections performed by carmen. Specifically, BRC noted that "ECP brakes can merely monitor the pressure in the system and are incapable of detecting unsafe conditions" to include defective handbrakes, brake rigging defects, or defective brake shoes. FRA believes that, based on the information known at this time, if a quality inspection is performed at a train's point of origination and all defects are found and corrected, the train will be able to safely traverse 3,500 or more miles. The conditional requirement for a visual inspection of a car's brake system when an ECP brake-equipped car is added to a train operating in ECP brake mode, will provide an added layer of safety. FRA appreciates that components wear in normal service. The brake shoe is the brake system component subject to the most immediate wear. Out of an abundance of caution, and recognizing that locomotive engineers may initially make more extensive use of the automatic brake with ECP brake technology, as a condition to this waiver, FRA is requiring that brake shoes have a minimum of $\frac{1}{4}$ -inch thickness, including the lining and backing plate, when a Class I brake test is performed by a qualified mechanical inspector (QMI) on ECP brake-equipped trains. This exceeds the current condemning limits for brake shoe wear under both the AAR Interchange Rules and Federal regulations. AAR's brake shoe condemning limit is three-eighths of an inch, including the lining and backing plate, and the Federal condemning limit is when the brake shoe is worn into the backing plate.

BLET and UTU opposed granting Petitioners' requested relief from the requirement of 49 CFR § 232.103(d) that 100 percent of the brakes on a train shall be effective and operative prior to use or departure from any location where a Class I brake test is required to be performed. However, test data shows that trains with 85 percent operative ECP brakes will still have a shorter stopping distance than a conventional pneumatically braked train with 100 percent operative brakes. Accordingly, FRA's condition imposed below requiring that 95 percent of the cars in an ECP brake-equipped train operating in ECP brake mode shall be effective and operative prior to use or

departure is a very conservative requirement.

FRA recognizes that braking horsepower does not vary between perfectly adjusted and fully operational conventional and ECP brakes; however, FRA notes that actual delivered braking effort (after all brakes apply) by the ECP brake system may be superior as a result of brake cylinder pressure being maintained at the target level. FRA acknowledges that ECP brakes would not provide superior braking effort in heavy grade operations if heat effect-caused brake fade should occur, and has taken this into consideration, *inter alia*, by requiring that not less than 95 percent of brakes be operative at the time of the Class I brake test. However, FRA concludes that with ECP brakes: (1) the likelihood that an individual car will fail to provide braking effort without the knowledge of the train crew is significantly reduced; (2) the probability that brake shoes and wheels will become overheated in grade territory is greatly reduced because of the ability of the engineer to use graduated release; and (3) the chance that manipulation of the automatic brake valve will result in depletion of the brake pipe air pressure, requiring reliance on a last-chance emergency brake application at an elevated speed, is essentially negated. Accordingly, any ECP brake-equipped train would be expected to far exceed the safety levels of any conventional train operating under similar adverse circumstances.

Recognizing that the petition could present issues that would require the invocation of FRA's discretionary statutory authority under 49 U.S.C. § 20306 to exempt technological improvements from certain provisions of 49 U.S.C. Chapter 203 (the "Safety Appliance law"), FRA held a public hearing on January 16, 2007. Specifically, 49 U.S.C. § 20306 provides that when certain statutory requirements preclude the development or implementation of more efficient railroad transportation equipment or other transportation innovations, the Secretary of Transportation may grant an exemption to those requirements based on evidence developed at a hearing.¹ Based on evidence developed at the January 16 hearing, FRA understands that ECP brake operations provide for continuous electronic monitoring of air brake system component conditions and brake pipe pressure, potentially limiting the need for certain physical inspections currently required pursuant to Federal regulations. For example, 49 U.S.C. § 20303, which requires railroads to transport rail vehicles with defective or insecure equipment "from the place at which the defect or insecurity was first discovered to the nearest available place at which the repairs can be made," presents an obstacle to cost-saving, safe, and efficient long hauls promised by ECP brakes. When the defective equipment is an ECP brake, stopping for a physical inspection is not necessary, as it does not increase the safe operation of the train. Accordingly, in granting this conditional waiver, FRA hereby invokes its authority under 49 U.S.C. § 20306 to exempt Petitioners from certain requirements of the Safety Appliance law.

FRA further acknowledges the concern expressed by BLET that deviations from Part 232 procedures should be minimized to avoid confusion among crews working on trains equipped with either ECP or conventional pneumatic brakes. FRA has endeavored to craft the following

¹ Under 49 CFR 1.49(v), the Administrator of the FRA is delegated authority to carry out the functions vested in the Secretary by 49 U.S.C. § 20306.

conditions with this point in mind. However, FRA notes that a transition to powerful new technologies can require adjustments by all concerned and that the presence of an active ECP brake control system in the locomotive is highly evident to the locomotive engineer. As experience is gained, FRA reserves the right to make adjustments to these conditions that pertain to human machine interface and procedures.

Accordingly, BNSF/NS's request for relief from the requirements of 49 CFR Part 232 is granted, subject to the following conditions:

1. This waiver shall apply only to BNSF and NS trains equipped and operating with ECP brake systems.
2. The ECP brake system shall, at a minimum, meet all of the current American Association of Railroads (AAR) standards contained in the AAR Manual of Standards and Recommended Practices related to ECP brake systems.
3. A train operating in ECP brake mode shall receive a Class I brake test as described in § 232.205(c) by a qualified mechanical inspector (QMI), and shall receive a pre-departure freight car inspection, pursuant to the requirements specified in 49 CFR Part 215 by an inspector designated under § 215.11 at the initial terminal (where the train is originally assembled) or where a unit or cycle train Class I brake test is required.
4. A train operating in ECP brake mode shall not operate at a distance that exceeds its destination or 3,500 miles, whichever is less, without receiving another Class I brake inspection and another Part 215 inspection as outlined in condition #3.
5. A unit or cycle train operating in ECP brake mode shall receive a Class I brake inspection and Part 215 inspection at least every 3,500 miles as outlined in condition #3.
6. The distance that any car in a train has traveled since receiving a Class I brake test by a QMI will determine the distance that the train has traveled.
7. A train operating in ECP brake mode shall receive a Class I brake test as described in § 232.205(c) by a qualified person at a location where the train is off air for a period of more than 24 hours.
8. Each car equipped with an ECP brake system that is added to a train operating in ECP brake mode shall receive a Class I brake test as described in § 232.205(c) by a qualified person, unless all of the following are met:
 - 8.1 The car has received a Class I brake test by a QMI within the last 3,500 miles;

- 8.2 Information identified in § 232.205(e) relating to the performance of the previous Class I brake test is provided to the train crew;
 - 8.3 The car has not been off air for more than 24 hours; and
 - 8.4 A visual inspection of the car's brake systems is conducted to ensure that the brake equipment is intact and properly secured. This may be accomplished as part of the inspection required under § 215.13 and may be conducted while the car is off air.
- 9. An ECP brake-equipped train that receives a Class I brake test by a QMI is not required to receive any Class IA brake tests.
 - 10. A train operating in ECP brake mode shall receive a Class III brake test as described in § 232.211(b), (c), and (d), at the location where the configuration of the train is changed or whenever the continuity of the brake pipe or electrical connections is broken or interrupted, with the train consist otherwise remaining unchanged.
 - 11. In lieu of the specific brake pipe service reductions required throughout 49 CFR Part 232, an electronic signal that provides an equivalent application and release of the brakes shall be utilized when conducting any required inspection or test on a freight car or train operating in ECP brake mode.
 - 12. In lieu of the specific piston travel ranges specified throughout 49 CFR Part 232, the piston travel on freight cars equipped with ECP brake systems shall be within the piston travel limits stenciled or marked on the car or badge plate consistent with the manufacturer's recommended limits. However, at no time shall piston travel on a standard 12-inch stroke piston exceed 9 inches when conducting a Class I brake inspection as outlined in condition #3.
 - 13. When conducting the Class I brake test as outlined in condition #3, the composition type brake shoe must have at least 1/4-inch thickness, including the lining and backing plate.
 - 14. A freight car or a freight train shall be exempted from the requirements contained in §§ 232.205(a) and (b); 232.207; 232.209, 232.211(a), and 232.505 when it is equipped with an ECP brake system and operating in ECP brake mode.
 - 15. Handling of defective equipment with ECP brake systems:
 - 15.1 Ninety-five percent of the cars in an ECP brake-equipped train operating in ECP brake mode shall be effective and operative prior to use or departure from the train's initial terminal or any location where a Class I brake test is required to be performed on the entire train by a QMI;
 - 15.2 A freight car or locomotive equipped with an ECP brake system that is

found with inoperative or ineffective brakes for the first time during the performance of a Class I brake test or while en route, may be used or hauled without civil penalty liability under this part to its destination, not to exceed 3,500 miles; provided all applicable provisions of this section are met and the defective car or locomotive is hauled in a train operating in ECP brake mode;

- 15.3 A freight car equipped with an ECP brake system that is known to have arrived with ineffective or inoperative brakes at the location of a train's initial terminal or at a location where a unit or cycle train Class I brake test is required shall not depart that location with ineffective or inoperative brakes in a train operating in ECP brake mode unless the location does not have the ability to conduct the necessary repairs. If the location does not have the ability to conduct the necessary repairs, the car must be properly tagged in accordance with § 232.15(b), and can only be hauled for the purpose of repair to the nearest forward location where the necessary repairs can be performed;
 - 15.4 A train operating in ECP brake mode shall not operate with less than 85 percent of the cars in the train with operative brakes, unless it is operating in Switch Mode for the purpose of moving to the nearest forward location where necessary repairs or changes to the consist can be made;
 - 15.5 A freight car equipped with an ECP brake system that is part of a train operating in ECP brake mode that is found with a defective non-brake safety appliance may be used or hauled without civil penalty to the nearest forward location where the necessary repairs can be performed consistent with the guidance contained in § 232.15(f); and
 - 15.6 A train operating with conventional pneumatic brakes shall not operate with freight cars equipped with standalone ECP brake systems, unless the train has 100 percent effective and operative brakes on all cars equipped with conventional pneumatic brakes and at least 95 percent effective and operative brakes when including the freight cars equipped with standalone ECP brake systems; or when cars are picked up en route, there shall be a minimum of 85 percent operative brakes for the entire train when including the standalone ECP brake-equipped cars.
16. A freight car equipped with an ECP brake system that is found with ineffective or inoperative brakes will be considered electronically tagged under § 232.15(b)(1) and (b)(5) if the car is used or hauled in a train operating in ECP brake mode and the ECP brake system is able to display the location and identification of the car with defective brakes. The railroad shall develop a method acceptable to FRA to capture and secure the appropriate information so that it is accessible to FRA and appropriate railroad mechanical personnel, as well as satisfy the requirements of § 232.15(b)(3).

17. Each railroad shall submit to the FRA Associate Administrator for Safety a list of locations on its system; and an updated list of locations where ECP brake system repairs will be performed each time a location is added or subtracted to its system.
18. In addition to the maintenance requirements contained in § 232.303(b) through (d), a freight car equipped with an ECP brake system shall be inspected before being released from a shop or repair track to ensure the proper and safe condition of the following:
 - (1) ECP brake system wiring and brackets,
 - (2) ECP brake system electrical connections,
 - (3) Electrical grounds and impedance, and
 - (4) Car mounted ECP brake system components.
19. Using procedures developed by the brake manufacturer, a single car air brake test shall be performed on a freight car equipped with an ECP brake system before being placed into revenue service for the first time using the ECP brake system.
20. Trains operating in ECP brake mode are exempt from the two-way end-of-train device requirements contained in Subpart E of 49 CFR Part 232.
21. Prior to operating a freight train in ECP brake mode, the ECP brake system's end-of-train (ECP-EOT) device must be connected to the brake pipe and train line cable at the end of the train operating with an ECP brake system. The ECP-EOT device must be connected to the network and must be transmitting status messages to the head end unit (HEU) before the train line power can be energized continuously. The ECP-EOT device shall continually report brake pipe pressure and train line voltage to the HEU.
22. Each railroad shall develop and implement a training program for personnel who operate or perform inspections, testing, or maintenance on a freight car and/or freight train equipped with an ECP brake system. The training shall meet all of the requirements specified in § 232.203(a), (b), (c), and (f), and 49 CFR Part 240.
23. Each railroad shall amend its operating rules to govern safe train handling procedures related to ECP brake systems and equipment under all operating conditions, which shall be tailored to the specific equipment and territory of the railroad.
24. Prior to operating a train under authority of this waiver, the railroad(s) shall provide notice to FRA in the same manner provided for extended haul trains pursuant to § 232.213(a)(1).

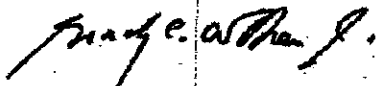
25. This waiver is effective for a 5-year period from the date of this letter or until a final rule is implemented for trains equipped with ECP brake systems. At the conclusion of the 5-year period, FRA reserves the right to extend the waiver if conditions warrant and BNSF/NS makes a written request for an extension to FRA's Office of Safety Assurance and Compliance within 6 months of the expiration date.

FRA will monitor compliance with this waiver and verify brake system and component performance characteristics using unannounced inspections of trains subject to the waiver, at inbound locations where trains will terminate or where a Class I test is required for cycle trains. These inspections will determine, among other things, the number of cars that have been removed or entered in the ECP brake onboard computer system; the number of cars with cut-out, inoperative or ineffective brakes; the condition of foundation brake rigging; brake shoe wear; and the accumulated brake defects visually identified at the end of the trip and note any discrepancies with defects captured by the onboard ECP brake computer system. A database will be maintained to support oversight of this waiver and inform determinations concerning future regulatory actions. As a further condition of this waiver, BNSF, NS, and all other persons performing duties under Part 232 and this waiver shall cooperate in facilitating these inspections, which will include the application and release of train brakes in the same manner required for the Class I brake inspection.

FRA reserves the right to modify or rescind this waiver at any time upon receipt of information pertaining to the safety of rail operations or in the event of noncompliance with any of the conditions of this waiver. This action may be directed to an individual railroad.

In any future correspondence regarding this waiver, please refer to FRA-2006-26435.

Sincerely,



Grady C. Cothen, Jr.
Deputy Associate Administrator
for Safety Standards and Program Development