ASSOCIATION OF
AMERICAN RAILROADS

Sarah G. Yurasko
Assistant General Counsel

March 1, 2019

Ronald Batory
Administrator
Federal Railroad Administration
1200 New Jersey Ave, S.E.
Washington, D.C. 20590

Re: Petition for a Brake System Safety Standards Rulemaking

Dear Administrator Batory:

Pursuant to 49 C.F.R. part 211. the Association of American Railroads ("AAR") requests, on behalf of itself and its member railroads, that FRA modernize the brake system safety standards by adopting the text provided in our proposal.[1] We propose that FRA add a regulatory provision to allow railroads to move a rail car up to, but not exceeding, 1,500 miles between brake tests and inspections if the rail car has a valid electronic air brake slip ("eABS") system record. Our proposal would also allow a railroad to move a rail car up to, but not exceeding, 2,500 miles between brake tests and inspections if: the rail car has a valid eABS system record, the Class I brake test was conducted by a qualified mechanical inspector ("QMI") as defined in 49 C.F.R. § 232.5, and the freight car inspection pursuant to 49 C.F.R. part 215 was performed by a designated inspector ("DI") as defined in § 215.11. Finally, our proposal also permits railroads to add or remove a car or cars with a valid eABS record(s) from a single location or multiple locations in a train solely made up of cars with eABS records.

In the 2001 Brake System Safety Standards final rule, FRA stated that the agency believed that limits had to be placed on the number of blocks of cars added to a train to ensure that railroads inspect cars in a timely manner and in accordance with the intent of the regulations.[2] In

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[1] AAR is a trade association whose membership includes freight railroads that operate 83 percent of the line-haul mileage, employ 95 percent of the workers, and account for 97 percent of the freight revenues of all railroads in the United States; and passenger railroads that operate intercity passenger trains and provide commuter rail service.
[2] 66 Fed. Reg. 4,104 at 4167-68 (Jan. 17, 2001).

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the preamble to the rule, the agency expressed concern that the ability to add multiple blocks of cars to a train at one location or to add a single block of cars to a train that is composed of cars from numerous different trains without inspecting the cars in those blocks, would essentially allow railroads to assemble new trains without performing any direct inspection of any of the cars in the train. Furthermore, FRA stated that if cars were permitted to be moved in and out of a train at will, determining when and where a Class IA brake test must be performed on the train would be impossible.

Today's railroads are a safety success story, clearly and effectively managing their trains and air brakes. According to November 2018 FRA data based on per million train miles, since 2000 the train accident rate is down 37%, the equipment-caused accident rate is down 32%, and the derailment rate is down 36%. As the industry continues to improve its safety performance even further, the railroads have developed a solution to the concerns raised in the 2001 rulemaking: the eABS system.

Electronic Air Brake Slip ("eABS") System

AAR's member railroads have developed a prototype eABS system to track inspections and brake tests of freight cars. The information that can be obtained from the eABS system record exceeds the regulatory requirements in 49 C.F.R. § 232.205(e), which requires that the locomotive engineer be provided with the date, time, number of freight cars inspected, and identity of the qualified person(s) performing the test and the location where the Class I brake test was performed for the train. The system can report this information for each individual car so that there is no uncertainty regarding who performed the last brake test and where and when it was performed, providing the traceability that motivated FRA in 2001.

Under our proposal, a railroad could elect to operate under the alternative proposed regulations, described in Appendix A (attached). All railroads that opt-in to use an eABS system will benefit from traceability and increased granularity of information. Under the proposed new regulations, a participating railroad would be incentivized use a Class I brake test, which is a more vigorous brake test than either a Class IA or Class II brake test, which are permitted under current regulations as intermediate brake tests. In addition, FRA will have access to better records.

Section-by-Section Analysis

As shown in the text in Appendix A, our proposal envisions a new approach to air brake management. Part 232 currently addresses air brake tests at the train level, as exemplified in § 232.207, "each *train* shall receive a Class IA air brake test. . .." This approach goes well with a regime where the railroad cannot trace the history of air brake inspection at the car level but must instead treat all the rail cars as a single unit to be managed by paper records. However, new technology can now enable the railroads to move their air brake management system into the 21st century and monitor air brake inspections at the car level. This innovation provides the railroad, and FRA, the ability to track the testing of each individual car, monitoring the individual pieces of equipment for compliance with air brake testing requirements.

Under the eABS system approach, in paragraph (a), the proposal extends the distance a railroad may move an individual car between brake tests and inspections if the rail car has a valid eABS system record from the 1,000 miles permitted in 49 C.F.R. § 232.207 to 1,500 miles. Further, in paragraph (b), the proposal extends the mileage to 2,500 miles between brake tests and inspections if the individual rail car has a valid eABS system record, the Class I brake test was performed by a QMI as defined in 49 C.F.R. § 232.5, and a pre-departure mechanical inspection was performed by a DI as defined in 49 C.F.R. § 215.11. Our proposal is similar to the initial inspection conducted by a QMI for the extended haul regulation at 49 C.F.R. § 232.213. Pursuant to § 232.213, if a QMI inspects the train and conducts a Part 215 inspection, the train can travel 1,500 miles until its next brake inspection. In the preamble to the 2001 rulemaking, FRA stated that it believes that "if a train is properly and thoroughly inspected, with as many defective conditions being eliminated as possible, then the train is capable of traveling much greater than 1,000 miles between brake inspections."[3] From a practical perspective, our proposal is expected to increase the number of QMI/DI inspections for eABS system cars as it will gain mileage for the eABS system cars. This will further improve velocity on the entire U.S. rail network, providing needed increased capacity, a benefit to serve both freight and passenger customers in the years to come.

In paragraph (c), the proposal clarifies that the railroad must ensure that a locomotive engineer is notified that a successful Class I test was performed on any rail car under his or her control. This paragraph mirrors the duties in 49 C.F.R. § 232.205(e), which requires the railroad to notify the locomotive engineer that the Class I brake test was satisfactorily performed and provide the information required to the locomotive engineer or to place the information in the cab of the controlling locomotive following the test. Our proposal does not prescribe the method in which the railroad must notify the locomotive engineer of the Class I test – this will provide railroads with operational flexibility conducive to developing and implementing their own eABS system procedures.

In paragraph (d), the proposal identifies all the information required on a valid eABS system record. A valid eABS system record is defined in the proposal as an electronic record containing the equipment ID; date, time and location of the last Class I brake test; the identity of the person(s) who performed the last Class I brake test; whether a QP or QMI performed the last Class

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3 Id. at 4,174.

I brake test; and the mileage until the equipment reaches the limit permitted by the proposal. The proposed requirements in paragraph (d) are similar to the requirements at § 232.205(e), which require that the record contain the date, time, number of freight cars inspected, identity of the qualified person(s) performing the test, and the location where the Class I brake test was performed. Since the eABS system focuses on the airbrake test at the car level, the proposal requires the mileage for the specific piece of equipment in lieu of the number of freight cars inspected.

In paragraph (e), the proposal permits railroads to add to a train or remove from a train any car or block of cars within an existing train consist with a valid eABS system record. This paragraph is justified from a safety perspective because the concerns in FRA's 2001 rulemaking, determining when and where a brake test was performed, have been addressed by the eABS system. The most efficient method of operation is to place rail cars destined for the same location together, which also eliminates unnecessary handling and employee exposure to risk. The current inability of railroads to properly block equipment without additional air brake tests causes multiple switches, backhauls, and additional train stops to move equipment that could have otherwise been handled by a single train. The proposed eABS system provides a solution to operational inefficiencies, unnecessary exposure of train crews, and traceability of individual rail cars.

Using text agreed to in a recent FRA Railroad Safety Advisory Committee Working Group task, paragraph (f) of the proposal indicates that the integrity of the electronic record in the eABS system must be protected.[4] The proposal requires the system to recognize an electronic signature, or other means, which uniquely identifies the initiating person as the author of that brake test record, and no two persons can have the same electronic identity. The electronic storage of the brake test record must be initiated by the person conducting the brake test prior to a train's departure from the initial terminal or immediately following departure from an intermediate location where a train may perform work. The electronic system must also ensure that each brake test record cannot be modified in any way, or replaced, once the record is transmitted and stored, and any amendment to a brake test record shall be electronically stored apart from the original record and uniquely identified as to the person making the amendment.

Finally, paragraph (g) of the proposal requires that the eABS system test records must be maintained at the car level until the next Class I brake test is performed. This proposed provision ensures that FRA can request any current eABS system record at the car level for cars operating under the proposed regulations. The records must be made available for inspection and copying by FRA upon reasonable request.

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[4] *See* FRA RSAC Task 15-01.

Safety Considerations

FRA already possesses data supporting the safety case for this approach. Several Class I railroads currently operate under waivers extending the maximum mileage a train can travel beyond the 1,500-mile limitation in 49 C.F.R. § 232.213. As an example, BNSF Railway currently operates under a waiver allowing some of its trains to operate up to 1,702 miles.[5] Under a provision of the waiver, BNSF periodically provides normalized data to FRA "comparing 100 waiver trains to non-waiver trains using similar equipment on the rate of identified detector anomalies." The data shows that the increased mileage does not impact the safe operation of the waiver trains. In fact, recent data shows that the waiver trains experienced slightly fewer anomalies than non-waiver trains in certain months. Additionally, Union Pacific Railroad ("UP") operates under a similar waiver from 49 C.F.R. § 232.213 extending the maximum mileage for certain trains up to 1,680 miles.[6] Similar to BNSF, UP periodically provides normalized data to FRA comparing anomalies of waiver trains to non-waiver trains. The most recent data provided to FRA from UP also shows no correlation between increased mileage and an increase in incident risk percentage. *See* Appendix B for additional information.

Further, Canada's Railway Freight and Passenger Train Brake Inspection and Safety Rules permit trains to be operated coast-to-coast without an intermediate brake inspection. Not only is the rail operating environment in Canada substantially similar to the U.S. rail operating environment, an extensive number of the same rail cars are operated in both countries. In Canada, freight trains travel from Toronto, Ontario to Vancouver, British Columbia, a distance of over 2,700 miles, without an intermediate brake inspection – a greater distance than the 2,500 miles requested in this petition. CN Railway recently conducted an analysis evaluating the relationship between airbrake reliability and trip mileage. During 2016-2018, CN determined that mileage of the rail cars queried bore no relationship to braking reliability issues. *See* Appendix C for additional information.

Supporting Material

We have also provided several visual aids to demonstrate how the eABS system will work. A video has been placed on AAR's website showing the broad impact this proposal will have on railroad operations and efficiency.[7] The animation demonstrates how the current restrictions on the set-out and pick-up of cars frustrates freight service. In the example, the railroad must stop multiple trains to pick up several blocks of cars left by a previous train. If the industry's proposal is implemented, the railroad could potentially send one train to handle all the rail cars rather than

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5 *See* Docket No. FRA 2014-0070.
6 *See* Docket No. FRA 2015-0036.
7 Available at: https://www.aar.org/block-swap/

schedule multiple trains to stop and pick up the single block of cars. This operational change would decrease terminal delays and bottlenecks, which would in turn increase network velocity and productivity.

We have also provided an example of an eABS system record. In Appendix D, Norfolk Southern Railway has provided presentation of how the eABS system record will replace the paper document. In slides 7-9, you can follow car GBRX 705032, which was inspected in New Orleans on February 4, 2019, at 8:52pm by two designated inspectors. For ease of regulatory compliance, the record also shows that, at the time the record was accessed, the car can travel 800 miles until it is due for its next air brake inspection. The presentation shows how all the relevant information required in the current regulation is covered by the eABS system record, in addition to the mileage remaining on the car until it must undergo its next air brake inspection.

Benefits and Cost Savings to the Industry

Because the operational burden of the requirements to perform an air brake test if a main line train is to pick-up cars en route, most through trains are operated in a manner that does not permit the pick-up of cars if another air brake test would need to be performed. This inefficiency of limiting a train to a single pick-up or set-off requires more manual handling by employees, increases terminal delays, creates bottlenecks, and decreases network velocity. Shippers make transportation choices, including the mode(s) of transportation, by evaluating the comparative price and service of competing transportation providers. The rail system needs to be both as safe and efficient as possible; regulations that artificially limit railroads from moving freight cars that have been previously inspected and have a valid air test can impede the rail industry's ability to maintain its competitiveness in the marketplace.

Under the industry's proposal, railroads will be able to better serve their customers while increasing the efficient use of transportation employees and locomotive fuel. Further, the industry's proposal will enable shippers to benefit from superior car utilization rates and more reliable service, and end-consumers will benefit from more timely delivery of products, especially those that are time-sensitive. On the passenger side, train passengers will benefit from better scheduling options due to a reduction in congestion along some routes due to freight traffic moving more fluidly with reduced dwell by not having multiple trains stopping to pick up single blocks of cars. Finally, environmental benefits will result from reductions in locomotive emissions from more efficient train operations.

Additionally, this rule change will result in a reduction in employee exposure to safety hazards including slips, trips and falls. The freedom for trains to pick up and set out multiple blocks of cars will obviate the need for additional trains to make stops to pick up cars left behind by the initial train and subsequently to set them out. Since such stops require setting handbrakes on multiple railcars to secure the trains per FRA regulations, eliminating the stops would reduce exposure to injuries that are related to applying and releasing handbrakes. The FRA public safety data website has data of circumstances associated with freight railroad employee-on-duty casualties including the "physical act," type of injury, and how many days the employee was absent or on restricted duty. According to such data, from 2015 through 2017, there were 277 freight railroad employee-on-duty injuries directly related to use of handbrakes – 144 applying handbrakes, 126 releasing handbrakes, and 7 classified as "handbrake, other" physical acts. Additionally, from 2015 through 2017, about 200 freight railroad employee-on-duty injuries occurred while "getting on," "getting off", "climbing on/over," or "descending" from "standing freight cars" or "standing freight trains." For additional information, see Appendix E.

Substantial savings would result from the increased mileage limits in our proposal by eliminating unnecessary intermediate brake tests. Overall, based upon current estimates, there could be a reduction of approximately 45,000 intermediate brake tests annually, with a savings of between $24-35 million annually. Additional savings would result from removing the restrictions on pick-ups and set-outs of cars with valid eABS system records as well. The cost savings in train crew, locomotive, and freight car time is estimated to range between $57-58 million annually. For further economic analysis of the savings of our proposal, please see Appendix E.

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For all the foregoing reasons, AAR requests a rulemaking to modify the existing text at 49 C.F.R. Part 232 consistent with the text in Appendix A.

Sincerely,

Sarah Yurasko

Sarah Yurasko

Appendix A

<u>Appendix A</u>

§ 232.2xx Inspection and Testing Requirements for Rail Cars with Valid Electronic Air Brake Slip System (eABS) Records.

(a) A railroad may be permitted to move a rail car with a valid eABS system record up to, but not exceeding, 1,500 miles between Class I brake tests as defined in § 232.205(c) conducted by a qualified person (QP) as defined in § 232.5.

(b) A railroad may be permitted to move a rail car with a valid eABS system record up to, but not exceeding, 2,500 miles between Class I brake tests as defined in § 232.205(c) if the test is conducted by a qualified mechanical inspector (QMI) as defined in § 232.5.

(1) A freight car inspection pursuant to part 215 of this chapter must be performed by a designated inspector (DI) as defined in § 215.11.

(2) All cars having conditions not in compliance with part 215 of this chapter at a Class I test shall be repaired, removed from service, or moved pursuant to the provisions of § 215.9 of this chapter.

(3) Equipment with a valid eABS system record may be added to a single location or to multiple locations within a train without restriction.

(c) The railroad must ensure that a locomotive engineer is notified that a successful Class I test was performed on any rail car under his or her control.

(d) A valid eABS system record must contain the following information:

(1) Equipment ID

(2) Date of last Class I brake test

(3) Time of last Class I brake test

(4) Location of last Class I brake test

(5) Identity of the person(s) who conducted the last Class I brake test

(6) Designation of what type of air brake inspection was performed:

(a) a QP inspection pursuant to paragraph (a), or

(b) a QMI inspection and a DI freight car inspection pursuant to paragraph (b), and

(7) Mileage remaining until the equipment reaches the limits in paragraphs (a) or (b).

(e) A railroad may add or remove a car with a valid eABS system record to a train solely made up of cars valid eABS system records.

(f) Electronic record integrity. The eABS system must be designed so that the integrity of each brake test record is maintained.

(1) The system must recognize a unique employee identifier that precisely identifies the initiating person as the author of that brake test record. No two persons can have the same employee identifier.

(2) The electronic storage of the brake test record must be initiated by the person conducting the brake test prior to a train's departure from the initial terminal or immediately following departure from an intermediate location where a train may perform work

(3) The electronic system shall ensure that each brake test record cannot be modified in any way, or replaced, once the record is transmitted and stored.

(4) Amendment to a brake test record shall be electronically stored apart from the record which it amends. Each amendment to a brake test record shall be uniquely identified as to the person making the amendment.

(5) If the Class I brake test is conducted by a person other than a member of the train crew, the locomotive engineer shall be notified that a successful test was performed.

(g) An electronic brake test record must be maintained at the car level until the next Class I brake test is performed. Records shall be made available for inspection and copying by FRA upon reasonable request.

Appendix B

BNSF RAILWAY

Extended Haul 1702 Waiver – Lifetime Program Summary

Beau Price

DIRECTOR LOCOMOTIVES & AIR BRAKES

10/12/2018

Train Summary

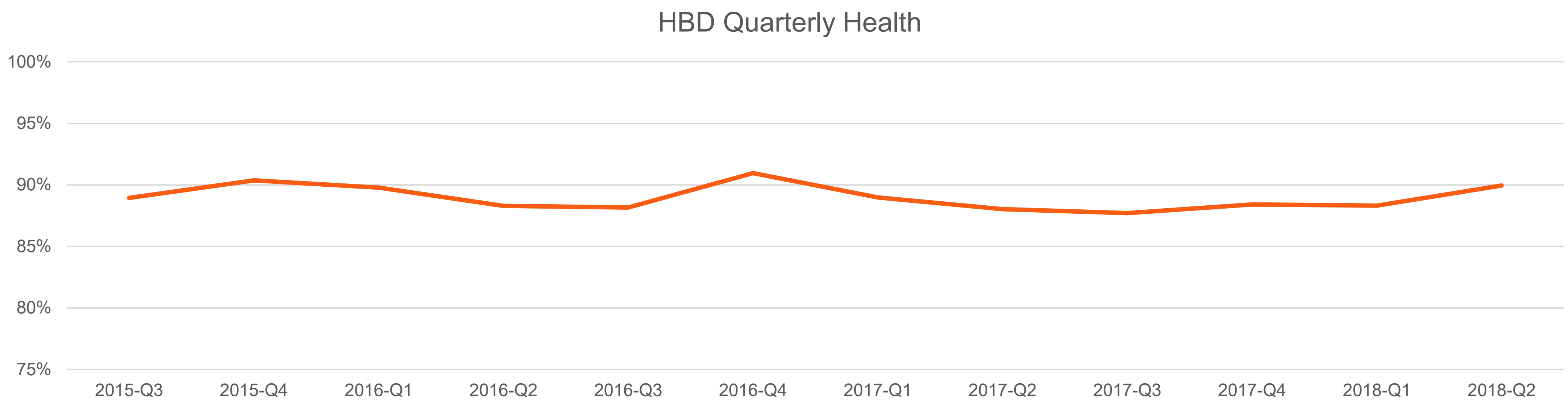
- Only train types C, E, G, X, S, Q
- First waiver train 07/2015
- 220,939 total trains
- 15,480 waiver trains (7.01% of total)

Detector Health

- Health is measured as:
  - 1-(misses/opportunities)
- **Opportunity:** a unique waiver train traversing a unique detector
- **Miss:** a unique waiver train traversing a unique detector fails to supply data to back office
- **Note:** A miss does not mean that the detector did not call out to the train for absolute exceptions.

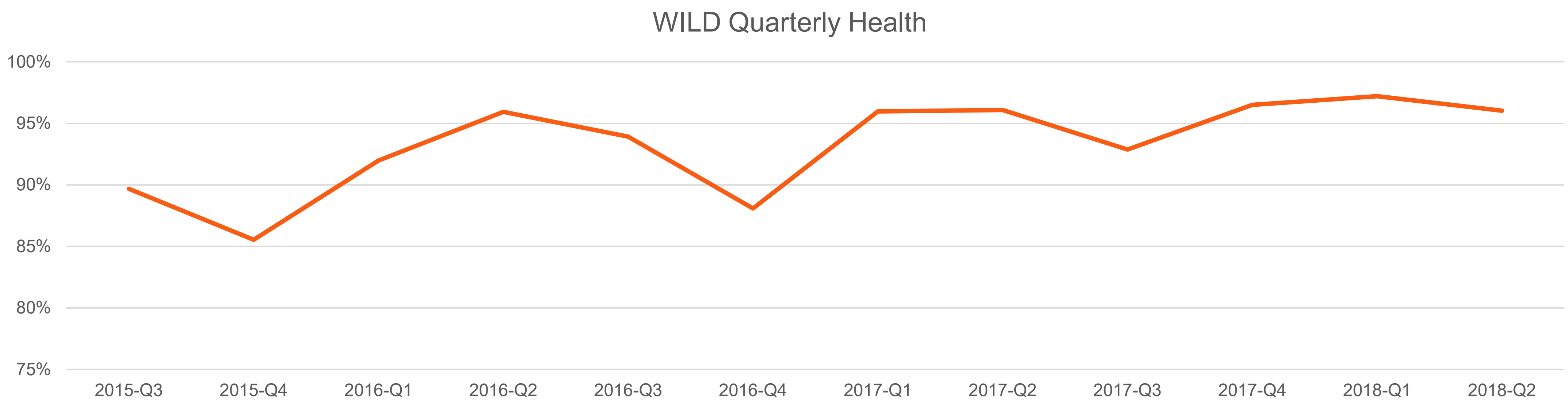
HBD Health

Detector	Opportunities	Misses	% Good
HBD	920,671	101,195	89.01%



WILD Health

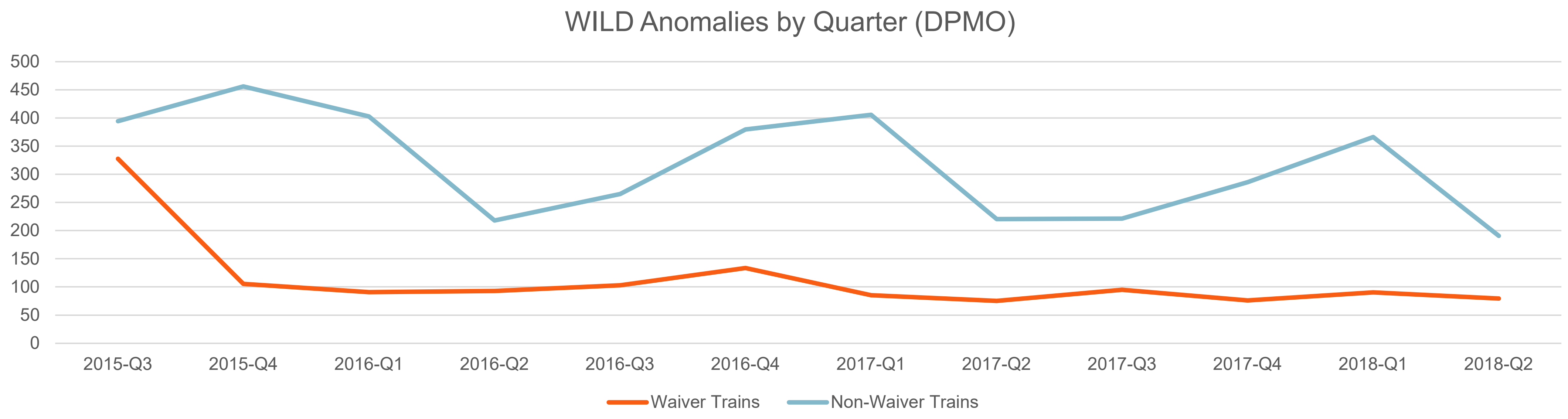
Detector	Opportunities	Misses	% Good
WILD	67,299	4,406	93.45%



Detector Anomaly Analysis

- WILD anomalies are wheels with 90 KIPS or greater.

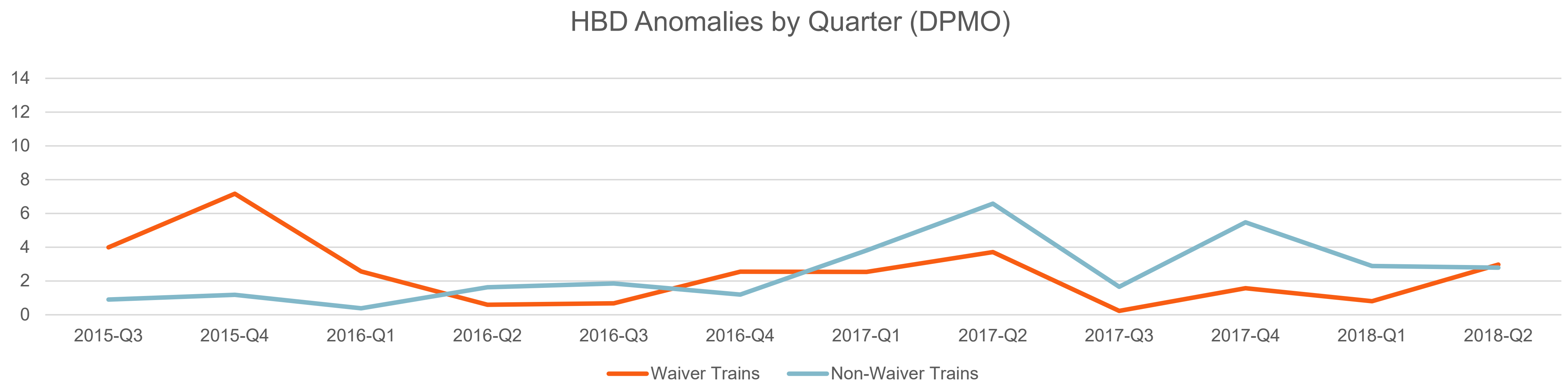
Train	Opportunities	WILD Anomaly	DPMO
Non-1702	260,658,976	80,304	308.08
1702 Waiver Trains	21,089,920	2,170	102.89



Detector Anomaly Analysis

- HBD anomalies are bearings reaching 170°F or greater

Train	Opportunities	WILD Anomaly	DPMO
Non-1702	1,221,284,327	2,784	2.28
1702 Waiver Trains	44,010,657	95	2.16



Waiver Trains involved in Reportable Mechanical-Caused REIs (LTD)

- 32 Total Reportable Mechanical-Caused REIs since 7/1/2015 involved C, E, G, X, S, Q trains

- 1 involving a waiver train:
  - PR-0817-100 (Minatare, NE)
  - BROKEN AXLE ON CAR UCEX 2213 CAUSED CAR TO DERAIL AT MILE POST 15.2.10/11/17 PER FRA DEFICIENCY UPDATED CITY FROM BAYNARD TO MINATARE TO DRIVE COUNTY. VERIFIED IN GIS. SP

BNSF RAILWAY

Appendix A

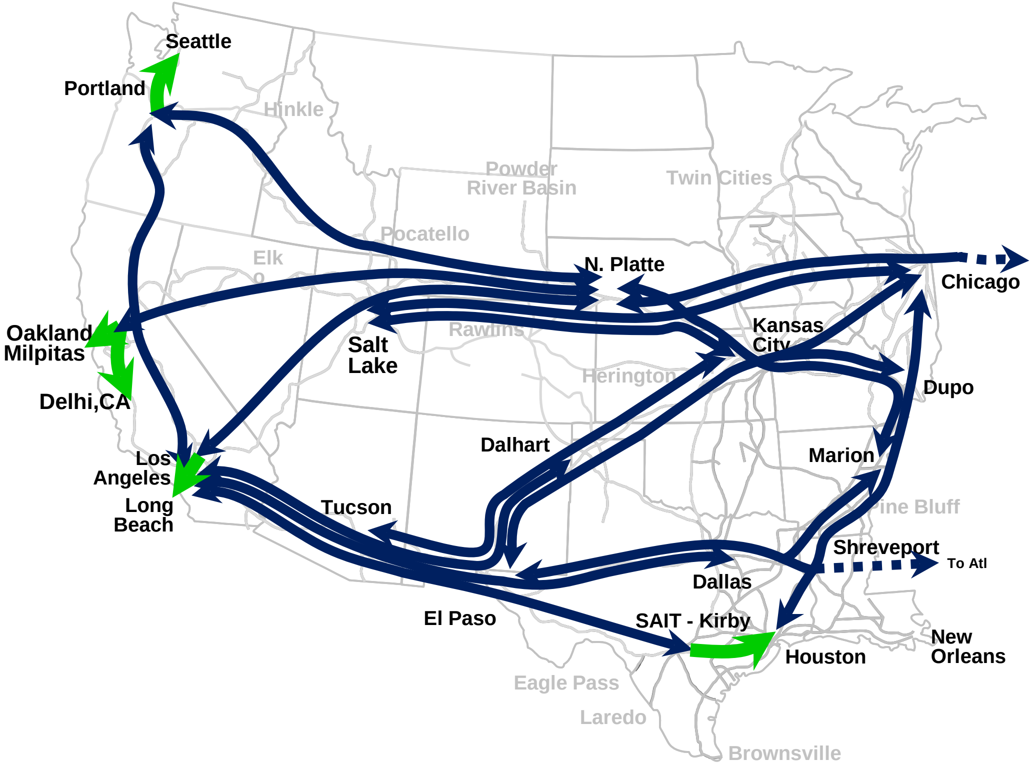
UPRR 1,680 Ext Haul Performance Report

Nov 2015 – June 2018

UPRR 1,680 Ext Haul Performance Report

Nov 2015 – June 2018

Primary Extended Hauls



1500 extended haul reach

1680 extended reach

Hot Box Detector Health Summary Nov 2015 – June 2018

Train Type	Total Trains Operated	Average Detectors per Train Route	Detector Reads (Local Talker and Omaha)	Detector -Reads (Local Sites Talker Only)	Percentage Reads (Local Sites Talker Only)	Detector No Reads (By Train History)	Average Percentage of Detectors in Service
1,000 Mile	969,897	15	14,915,826	n/a	n/a	n/a	n/a
1,500 Mile	75,231	77	6,144,638	44,323	0.72%	648	94.23%
1,680 Mile	7,827	68	549,421	3,800	0.69%	39	96.67%

Notes:

1. **Local Sites and Talker Only - Train Crew still alerted and action taken as required though reading may not have registered in Omaha.**
2. **Average Percentage of Detectors in Service – Indicates percentage of all detectors reading along route array. i.e. 5.77% of 1,500 Mile and 3.33% of 1,680 Mile Trains had a minimum of 1 detector not reading along the entire route. Notice average number detectors along routes. Extend Haul Trains minimum 4.5 times coverage vs. 1,000 Mile routes.**
3. **Detector operational status maintained at 99.99%. Detector Reads (Local and Omaha) vs. Detector No Reads (By Train History)**

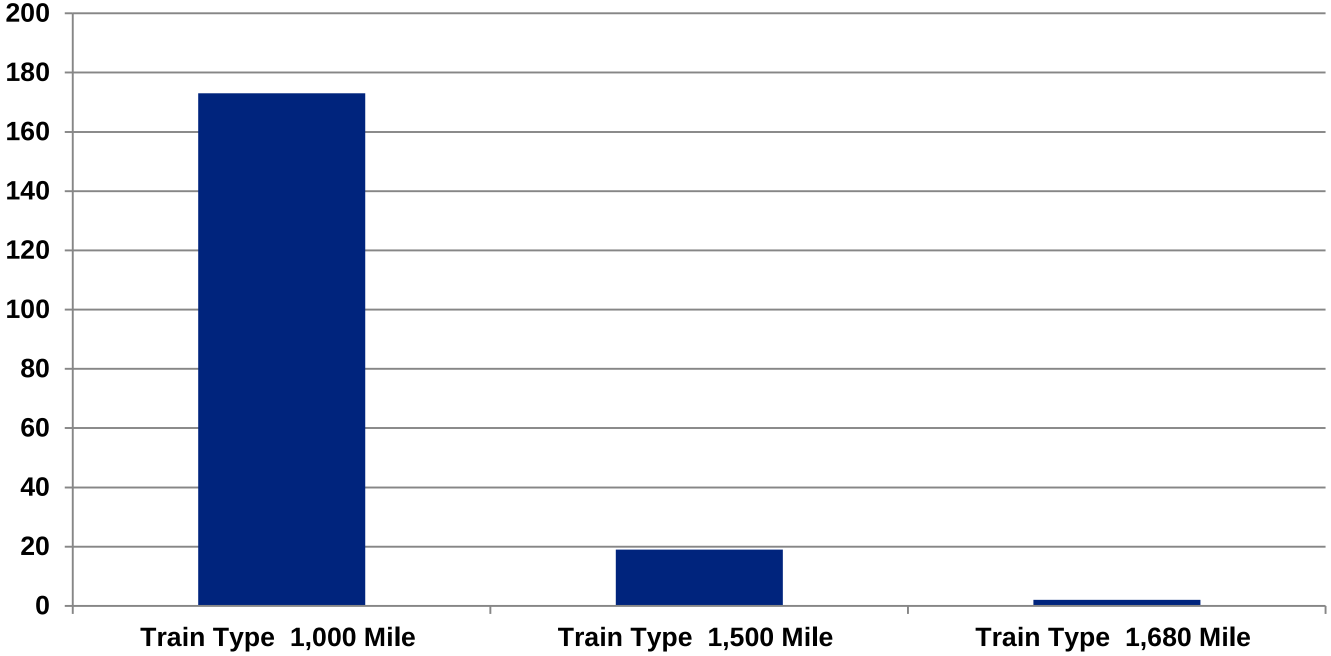
Risk Level - All Incidents
Nov 2015 – June 2018

Train Type	Total Trains Operated	Total Incidents	Incident Risk Percentage
1,000 Mile	969,897	173	0.018%
1,500 Mile	75,231	19	0.025%
1,680 Mile	7,827	2	0.026%

Note:

1. **Given 1,680 Mile incident detail there is no supporting correlation of cause to extended miles.**
2. **48% of 1,000 Mile train starts are local traffic. Incident risk percentage has not been normalized against Extend Haul trains.**

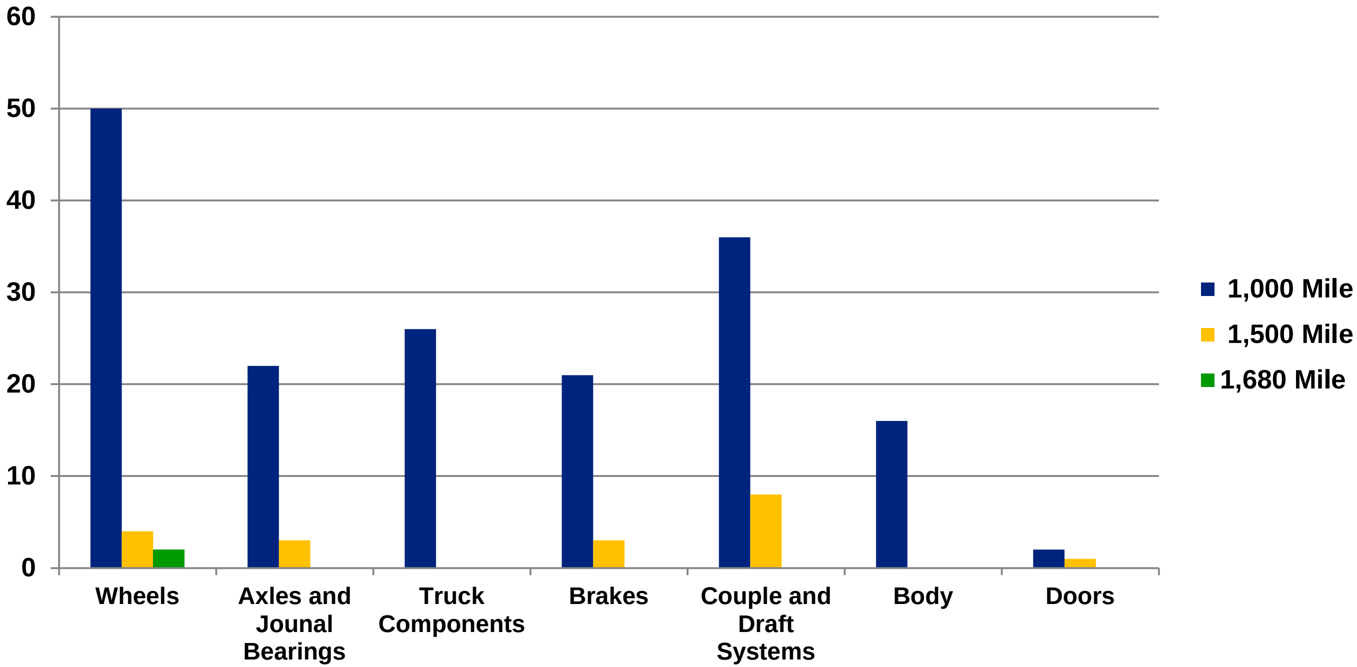
All Incidents
Nov 2015 – June 2018



All Incidents By Group
Nov 2015 – June 2018

Train Type	Wheels	Axles and Jounal Bearings	Truck Components	Brakes	Couple and Draft Systems	Body	Doors
1,000 Mile	50	22	26	21	36	16	2
1,500 Mile	4	3	0	3	8	0	1
1,680 Mile	2	0	0	0	0	0	0

All Incidents By Group
Nov 2015 – June 2018



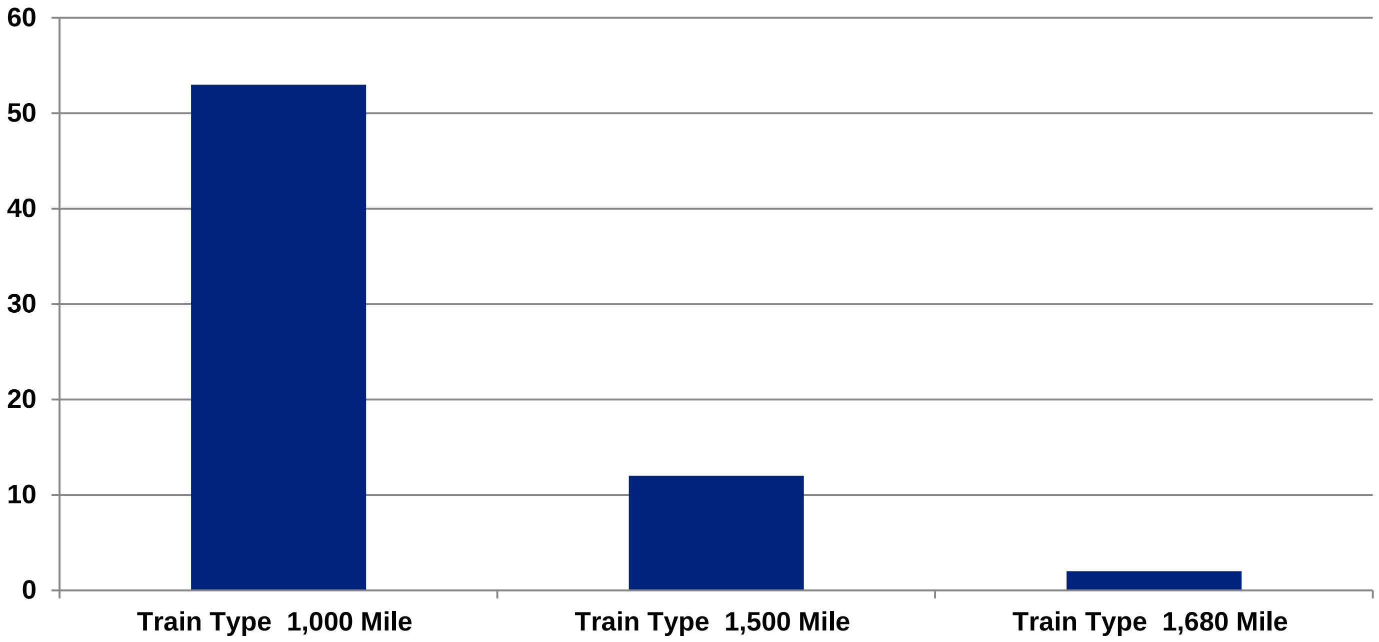
Risk Level - FRA Reportable Incidents Main Line and Sidings Nov 2015 – June 2018

Train Type	Total Trains Operated	Total Incidents	Incident Risk Percentage
1,000 Mile	969,897	53	0.005%
1,500 Mile	75,231	12	0.016%
1,680 Mile	7,827	2	0.026%

Note:

1. Given 1,680 Mile incident detail there is no supporting correlation of cause to extended miles.
2. 48% of 1,000 Mile trains starts are local traffic. Incident risk percentage has not been normalized against Extend Haul trains.

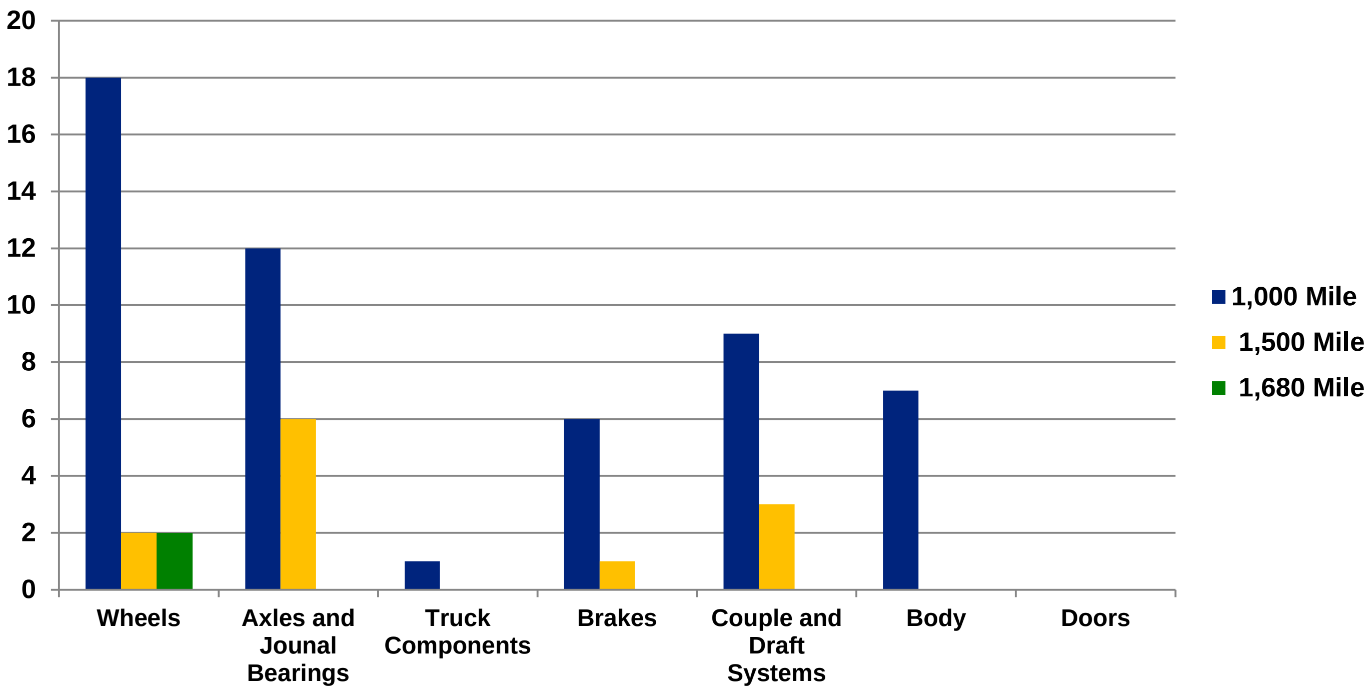
FRA Reportable Incidents Main Line and Sidings Nov 2015 – June 2018



FRA Reportable Incidents By Group
Main Line and Siding
Nov 2015 – June 2018

Train Type	Wheels	Axles and Jounal Bearings	Truck Components	Brakes	Couple and Draft Systems	Body	Doors
1,000 Mile	18	12	1	6	9	7	0
1,500 Mile	2	6	0	1	3	0	0
1,680 Mile	2	0	0	0	0	0	0

FRA Reportable Incidents By Group Main Line and Siding Nov 2015 – June 2018



1,680 Incident Detail
Nov 2015 – June 2018

Incident Number	Narrative	Circ 7	Incident Date	Primary Cause Description	Car #	TRN DATE	Cost	Type	Comments
0116CB011	Train **CNAPW9-13** derailed railcar PNJX 51079 upright with no injuries sustained.	NZ167	1/14/2016	Broken rim	PNJX 51079	1/13/2016	$87,366	1680	Prior to Deraiment - Beck and Loveland = Photos hours befor with a Crackhouse inspection in recent months, No wheel Impacts - No defects identified - 1,324 Miles from origin inspection
0116PR001	THE WEST BOUND **CPPNA9-01** WAS NOTIFIED BY A PASSING EASTBOUND TRAIN THAT AROUND 25 CARS BACK THEY HAD A SET OF TRUCKS THAT HAD DERAILED. INCIDENT WAS CAUSED BY A STICKING BRAKE AND SLAG BUILT UP ON THE WHEELS.	NZ023	1/2/2016	Damaged flange or tread (build up)	WEPX 2767	1/1/2016	$19,706	1680	49 miles from origin inspection operating under 1,000 mile segment - 1st Detector = Hand Brake Applied

Appendix C

Darrell Iler
Senior Mechanical Manager

Kirk Yard Office
1 North Buchanan Street
Floor 1, Building Station 152
Gary, IN 46402-1060
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www.cn.ca

January 15, 2019

Mr. Ron Hynes
Assistant Vice President, Technical Services
Association of American Railroads
Suite 1000
425 Third Street, SW
Washington, DC 20024

Dear Mr. Hynes:

In support of the effort to update some regulatory train management rules, an AAR task force had asked if CN could provide some evidence on airbrake reliability versus mileage. Specifically, the AAR is looking to increase to 1,000 mile limit for air brake inspections and reduce many of the extended haul waivers that are being managed by both the FRA and industry. Air brakes have significantly improved in reliability and performance over the same years that this regulation has been enforced. The method decided to determine brake function is to compare the incidence of "sticking brakes" versus mileage. This event is identified using a network of wayside detectors that are focused on wheel temperatures that provide warning to traffic control and subsequently train crews that the train needs to stop and a car investigated.

Given the availability and certainty of this type of data it was determined to be a valid measure of braking health. In Canada, the brake inspection regulations are not associated with distance, instead they stipulate inspection activities by means of company determined service plans. Each train that departs its origin must have a full car safety and brake function inspection, but once completed that train can continue to its destination, without any intermediate inspections (excepting added cars), without performing another one. In the plot below is a comparison of the miles a train is planned for and the numbers of stuck brake incidents per mile that were experienced.

The theory would be that if brakes are reliable irrespective of distance, then the ratio of stuck brake incidents per mile should not increase with increased exposure to additional miles. Three years of data were queried (2016-2018) and only the trips with incidents, that start and end in Canada were included in this plot. Additionally, the event counts were sorted to select trains with the highest counts irrespective of mileage.

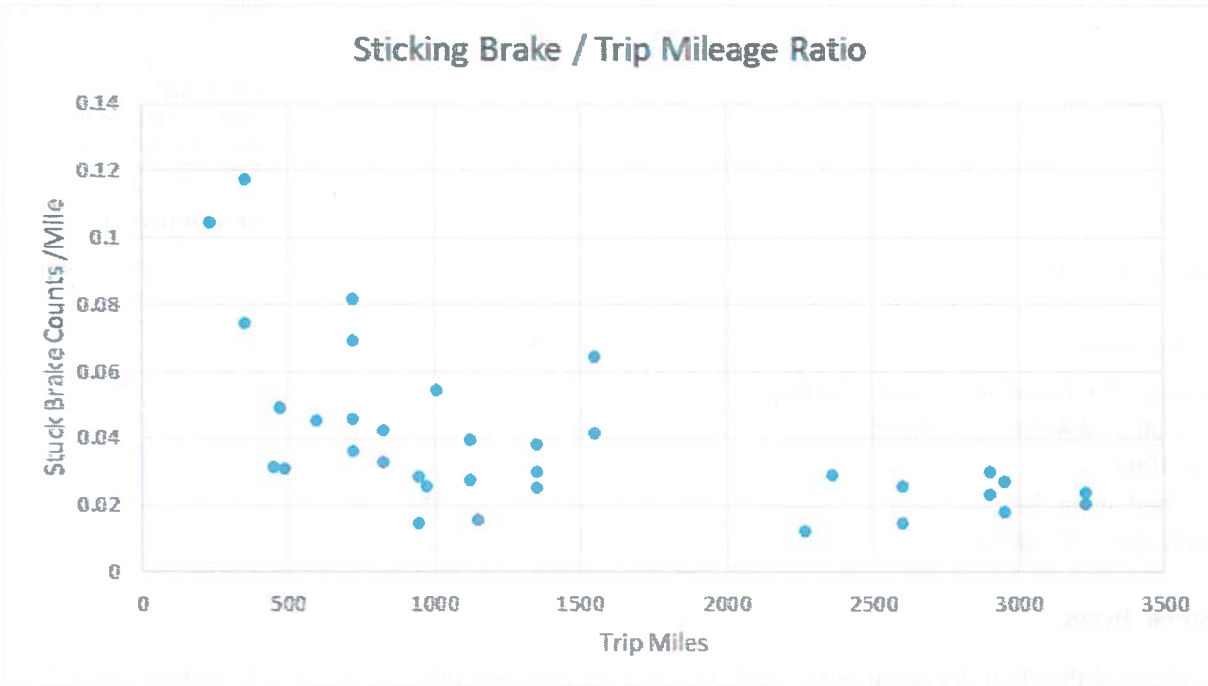


Figure 1Event Ratio versus trip miles. A higher ratio means there were more unwanted stuck brake events per mile that occurred.

From the plot above if the ratio value is low, it means there were less incidents per mile than those instances where a high ratio was recorded. Though the data suggests that shorter trips had more incidents per mile than longer, it is more conservative to acknowledge that mileage is independent of braking issues like stuck brakes.

The data was not analyzed to discriminate if a train contributed one or many stuck brake counts, thus all that is reported is the total of those counts (1,613) in this worst case population of train symbols. It would be conservative to state, that no more than 1,600 trains in all were affected by stuck brakes (one event per each train) and this would be out of a population* of 40,000 trains over the three year period. Therefore, 96% of trains in this sample comparison made it to their destinations without a stuck brake incident. There were 37 distinct train symbols utilized in the data that are assumed to start daily for three years.

*Note that the 40,000 trains only make up to total in the sample population of worst case trains selected for this study. The train stop data had over 600 unique train symbols from which this data was selected and analyzed.

Sincerely,

Darrell Iler

Appendix D

Regulatory Initiatives

Pick-ups & Set-offs

Increase train mileage

February 5, 2019

AAR Request to FRA

- Amend pick-up / set-off requirements
  - Current state – A new Class 1 Brake Test is required when:
    - Adding cars to multiple locations within an existing train
    - Adding cars from more than one previous train
    - Removing more than one solid block
  - Regulatory Modernization
    - Eliminate restrictions on adding or removing equipment
      - Safety is not compromised; overall safety is improved
        - » Elimination of repeated air brake inspections that have no benefit
        - » 215 inspection will still be performed
      - No adverse effects to train health
      - Less train stops, system velocity is increased
      - Increased customer service, reduced congestion

AAR Request to FRA

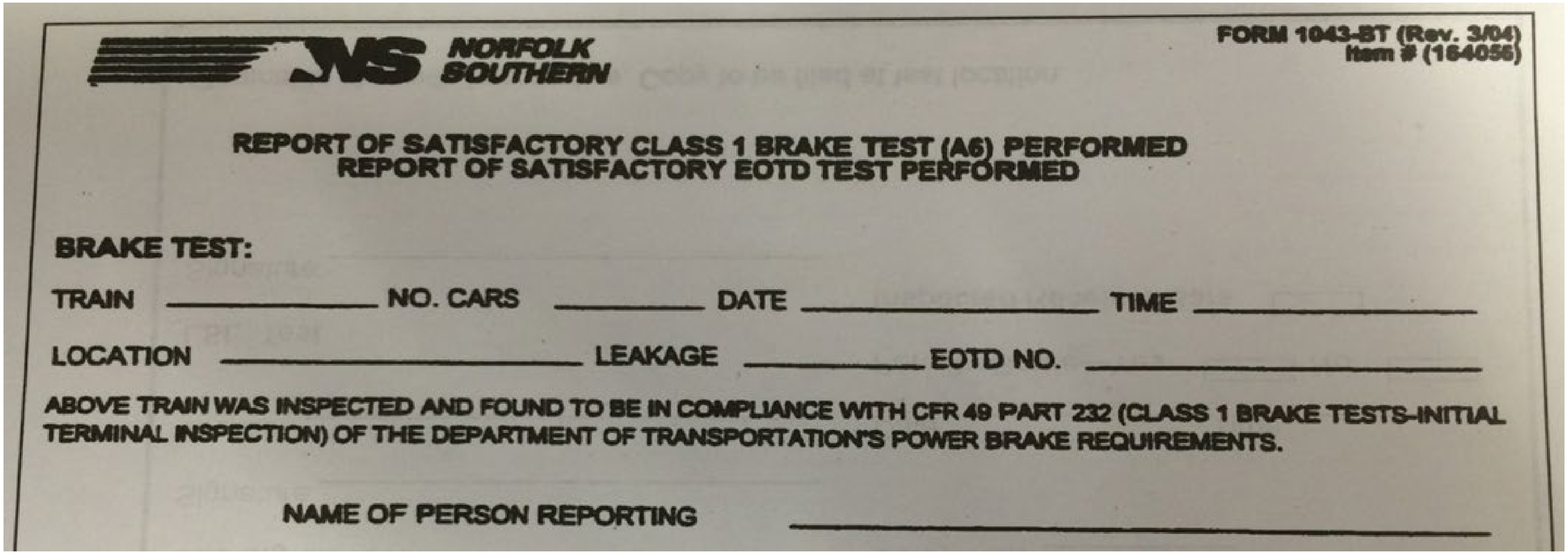
- Increase Class 1 Brake Test Intervals
  - Current State – limited to 1,000 or 1,500 miles
    - 1,000 – Qualified Person (QP) or Qualified Mechanical Inspector (QMI)
    - 1,500 – Extended Haul must be performed by QMI
      - Required submission of train identifications are difficult for FRA to track
      - Limited to single pick-up and set-off over entire route w/o safety benefit
    - BNSF and UP currently have waivers for extended mileage beyond 1500
      - No adverse effects to safety or train health
  - Regulatory Modernization
    - Increase intervals to 1500 and 2500 miles
      - 1500 miles for QP
      - 2500 miles for all QMI inspections
    - Create electronic documentation of Class 1 Brake Test

How do we get There?

- Notable FRA concerns
  - Performing inspections timely
  - Tracking of brake inspections
  - 2001 NPRM Preamble:
    - *“Furthermore, if cars are permitted to be moved in and out of trains at will, the ability to track when and where Class IA brake tests are to be performed on trains will be impossible.”*
    - “*FRA believes that limits have to be placed on the addition of blocks of cars being added to a train in order to ensure that cars are being inspected in a timely manner and in accordance with the intent of the regulations.”*
- Industry answer to FRA concerns
  - Electronic documentation of brake inspections

Electronic Traceability

- Current State - Paper notification
  - Valid from origin to destination
  - Train level information, not individual cars
  - Consist changes en route, air slip does not



NORFOLK SOUTHERN

FORM 1043-BT (Rev. 3/04)
Item # (164056)

REPORT OF SATISFACTORY CLASS 1 BRAKE TEST (A6) PERFORMED
REPORT OF SATISFACTORY EOTD TEST PERFORMED

BRAKE TEST:

TRAIN ______________ NO. CARS __________ DATE ____________________ TIME ___________________

LOCATION ________________________ LEAKAGE ____________ EOTD NO. ___________________________

ABOVE TRAIN WAS INSPECTED AND FOUND TO BE IN COMPLIANCE WITH CFR 49 PART 232 (CLASS 1 BRAKE TESTS-INITIAL TERMINAL INSPECTION) OF THE DEPARTMENT OF TRANSPORTATION'S POWER BRAKE REQUIREMENTS.

NAME OF PERSON REPORTING ____

Electronic Traceability

- Regulatory Modernization - Electronic notification
  - Available in real-time for each car
    - Tracks brake test type (Transportation or Mechanical)
  - Consist changes are added electronically
  - Retrievable from centralized data warehouse (Railinc)
  - Equipment without electronic documentation
    - Limited to current regulatory requirements
  - Each car equipped with its own brake slip

Electronic Inspection Record

Inspection Equipment

Station: A630 - MERIDIAN **Train: 456 - NEW ORLEANS-CHATTANOOGA**

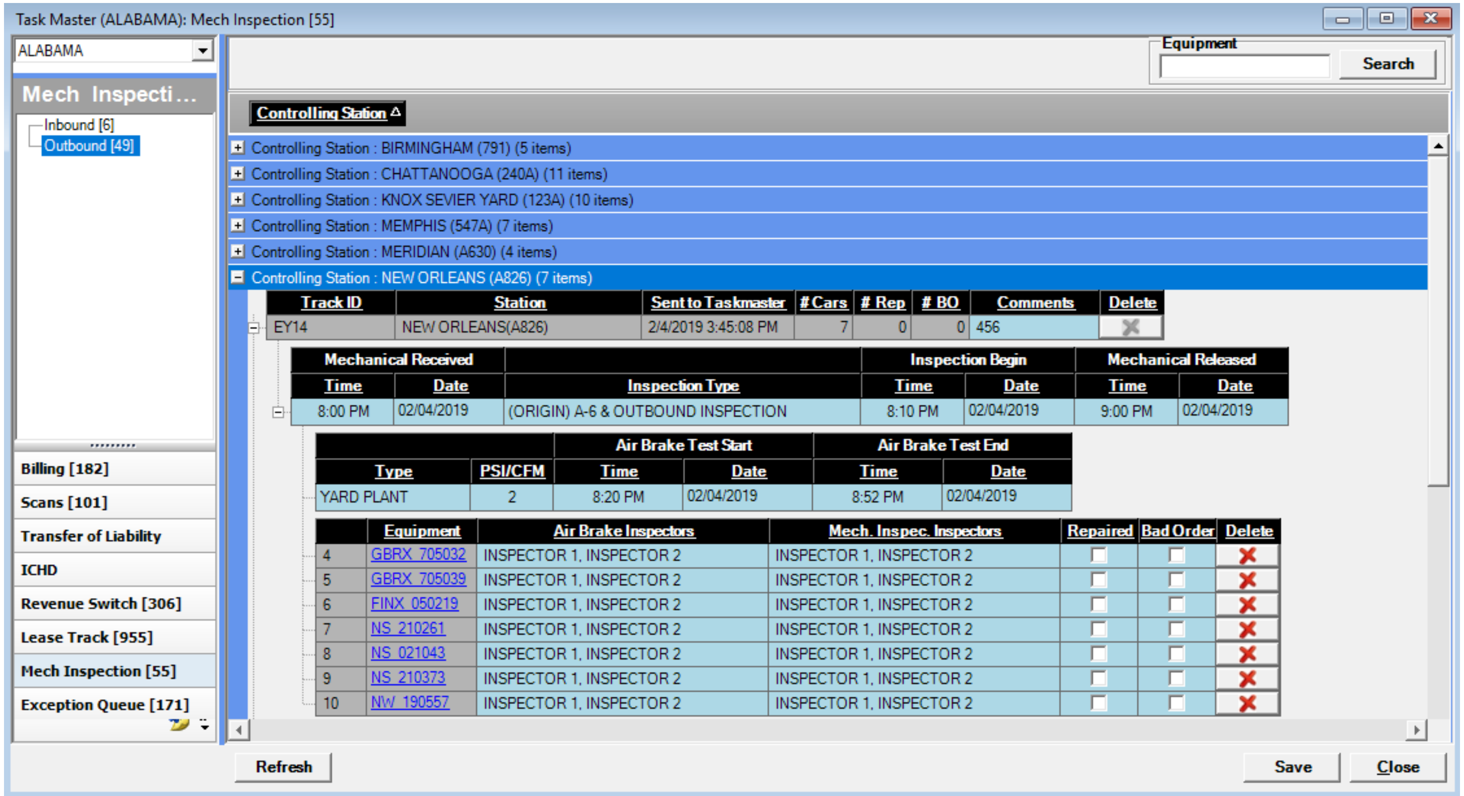
H-R	Equipment	Inspection Description	Event Timestamp	Inspection Station	Mileage Until Inspection is Due	Inspector List
4	GBRX 705032	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
5	GBRX 705039	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
6	FINX 050219	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
7	NS 210261	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
8	NS 210243	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
9	NS 210373	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
10	NW 190557	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
11	NW 190792	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
12	NS 197036	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
13	SOU 062377	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
14	NS 210258	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
15	NS 210478	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
16	NW 190867	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
17	PINX 001021	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
18	PINX 462670	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
19	DAKX 395740	CLASS1 MECHANICAL - ORIGIN	08:52 PM 01/10	NEW ORLEANS LA	800	Inspector 1, Inspector 2
20	SHQX 051441	CLASS1 MECHANICAL - PICKUP	09:34 AM 01/11	MERIDIAN MS	1000	Inspector 3, Inspector 4
21	HKRX 600030	CLASS1 MECHANICAL - PICKUP	09:34 AM 01/11	MERIDIAN MS	1000	Inspector 3, Inspector 4
22	SOXX 121934	CLASS1 MECHANICAL - PICKUP	09:34 AM 01/11	MERIDIAN MS	1000	Inspector 3, Inspector 4
23	SOXX 121936	CLASS1 MECHANICAL - PICKUP	09:34 AM 01/11	MERIDIAN MS	1000	Inspector 3, Inspector 4
24	TILX 640731	CLASS1 MECHANICAL - PICKUP	09:34 AM 01/11	MERIDIAN MS	1000	Inspector 3, Inspector 4
25	NOKL 600014	CLASS1 MECHANICAL - PICKUP	09:34 AM 01/11	MERIDIAN MS	1000	Inspector 3, Inspector 4
26	NS 120715	CLASS1 MECHANICAL - PICKUP	09:34 AM 01/11	MERIDIAN MS	1000	Inspector 3, Inspector 4
27	TILX 307400	CLASS1 MECHANICAL - PICKUP	09:34 AM 01/11	MERIDIAN MS	1000	Inspector 3, Inspector 4
28	TILX 307366	CLASS1 MECHANICAL - PICKUP	09:34 AM 01/11	MERIDIAN MS	1000	Inspector 3, Inspector 4
29	TILX 307309	CLASS1 MECHANICAL - PICKUP	09:34 AM 01/11	MERIDIAN MS	1000	Inspector 3, Inspector 4
30	UTLX 957633	CLASS1 MECHANICAL - PICKUP	09:34 AM 01/11	MERIDIAN MS	1000	Inspector 3, Inspector 4

☐ Display All Inspections

Detail | Export to Excel | Close

Documenting Inspections

- Consist Visibility
  - Tests and Inspections documented electronically



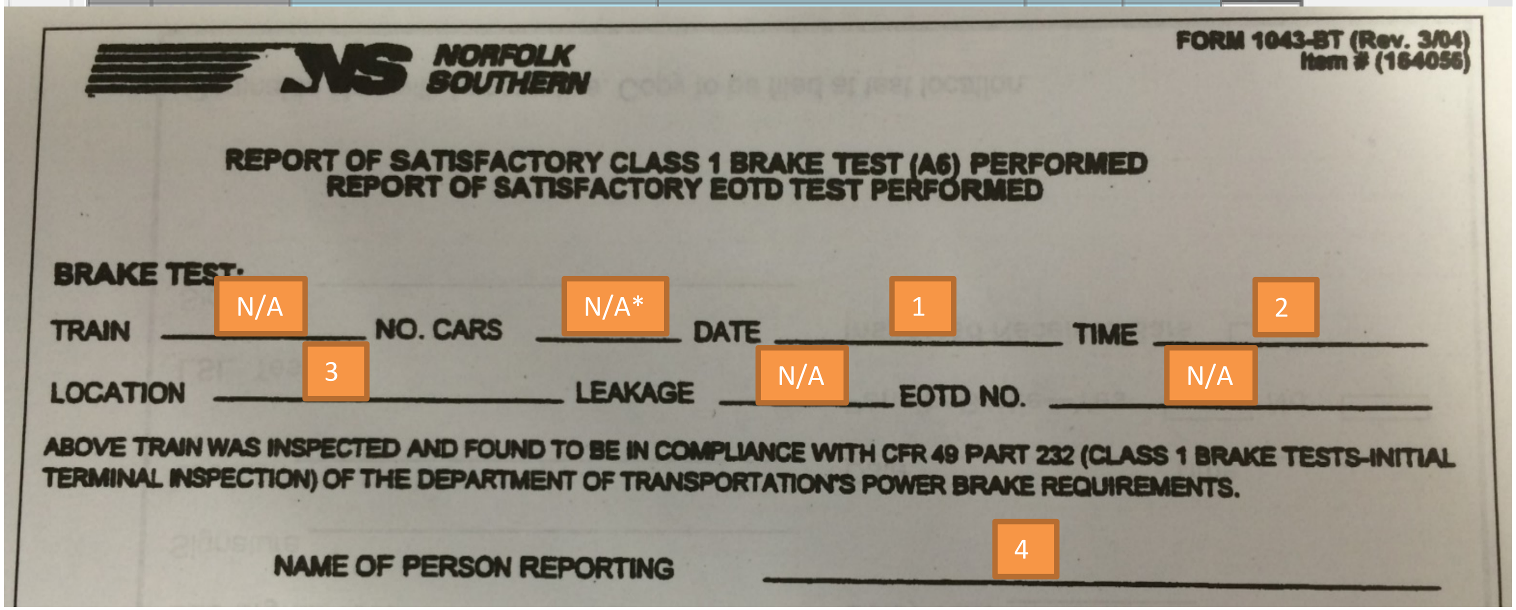
Notification to the Engineer 232.205 (e) - Replacing the Paper Document

Track ID	Station		Sent to Taskmaster	# Cars	# Rep	# BO	Comments	Delete
EY14	NEW ORLEANS(A826)	3	2/4/2019 3:45:08 PM	7	0	0	456	X

Mechanical Received			Inspection Begin		Mechanical Released	
Time	Date	Inspection Type	Time	Date	Time	Date
8:00 PM	02/04/2019	(ORIGIN) A-6 & OUTBOUND INSPECTION	8:10 PM	02/04/2019	9:00 PM	02/04/2019

		Air Brake Test Start		Air Brake Test End	
Type	PSI/CFM	Time	Date	Time 2	Date 1
YARD PLANT	2	8:20 PM	02/04/2019	8:52 PM	02/04/2019

	Equipment	Air Brake Inspectors 4	Mech. Inspec. Inspectors	Repaired	Bad Order	Delete
4	GBRX 705032	INSPECTOR 1, INSPECTOR 2	INSPECTOR 1, INSPECTOR 2	☐	☐	X


NORFOLK SOUTHERN

FORM 1043-BT (Rev. 3/04)
Item # (164056)

REPORT OF SATISFACTORY CLASS 1 BRAKE TEST (A6) PERFORMED
REPORT OF SATISFACTORY EOTD TEST PERFORMED

BRAKE TEST:

TRAIN N/A NO. CARS N/A* DATE 1 TIME 2

LOCATION 3 LEAKAGE N/A EOTD NO. N/A

ABOVE TRAIN WAS INSPECTED AND FOUND TO BE IN COMPLIANCE WITH CFR 49 PART 232 (CLASS 1 BRAKE TESTS-INITIAL TERMINAL INSPECTION) OF THE DEPARTMENT OF TRANSPORTATION'S POWER BRAKE REQUIREMENTS.

NAME OF PERSON REPORTING 4

*Number of cars inspected requirement becomes irrelevant when each car possesses its own eABS record.

Appendix E

Appendix E

Economic Impacts of eABS System Proposal

Increased Mileage Between Brake Tests

Trains do not commonly operate in a way that allows the full use of the currently allowed 1,000 miles or 1,500 miles between air tests for various reasons. Often, the next terminal that is within the 1,000- or 1,500-mile limit is located 200-300 miles short of the limit. In the case of "extended haul" trains, the need to pick up or set out cars, as required to move cars in a timely manner, often relegates the train from extended haul to lower-mileage limit service. Crews sometimes have to perform an air brake test in as little as 200 miles after departing because the distance to the next location where it can be performed might be just over 800 miles away. One western railroad operates trains over vast distances, but operates less than 10 percent of its trains as "extended haul," due to the limitations on en route pick- ups and set-outs[1].

Fewer Intermediate Brake Tests. AAR proposes adding flexibility based on use of an electronic Air Brake Slip (eABS) system for recordkeeping at the individual railcar level (versus the train level) so that trains can go up to 1,500 miles between brake tests if the brake test is performed by a Qualified Person (QP, traincrew), and up to 2,500 miles if the test is performed by a Qualified Mechanical Inspector (QMI). This would result in an overall net reduction in intermediate brake tests along routes over 1,000 miles long, making operations more efficient and reducing the risk of employee injury from walking alongside the train to perform the tests. Immediate savings would come from elimination of QP-performed intermediate tests that are currently triggered either by the 1,500-mile threshold for trains moving up to 2,500 miles, or the 1,000-mile threshold for trains moving up to 1,500 miles. Under the new brake testing paradigm, railroads will have incentive to make much greater use of eABS QMI tests at origin and at many intermediate points, and will likely reallocate QMI resources accordingly. The actual number of QMI-performed tests will increase in some cases because one eABS-QMI test (allowing for 2,500 miles) could replace two or three QP-performed tests (allowing for only up to 1,000 miles each), and decrease in other cases because some QMI-performed intermediate tests (e.g., at 1,500-miles on a 2,700-mile trip) may be replaced with eABS-QP tests[2].

Reduced Terminal Dwell Time and Train Stops. Reducing intermediate brake tests translates into less dwell time from departure delays due to congestion leaving terminals and, in some cases, fewer train stops since sometimes trains are stopping only for such tests.

Estimated Savings. Substantial savings would result from eliminating unnecessary intermediate brake tests. Through-train service will greatly benefit from the additional flexibility. For purposes of this analysis, a range between 1.5 and 2 hours is used to estimate the time it takes to perform an intermediate brake test on the impacted trains. Actual times will vary depending on the number of employees performing the test and other circumstances specific to particular trains. For instance, in some cases 4 mechanical employees perform intermediate brake tests, reducing the overall time to perform the test but not impacting the labor cost. Many intermediate brake tests involve either an

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[1] Extended haul trains are limited to no more than one pick-up and one set-out en route, except for defective equipment. See 49 CFR §232.213(a)(5)

[2] Because intermediate brake tests are performed at terminals, they are often performed well-ahead of reaching the mileage threshold simply due to terminal location. For instance, a 1,000-mile test may be performed at a terminal 800 miles away because the next terminal might be 1,100 miles away.

otherwise unnecessary train stop or additional terminal dwell time due to yard or terminal congestion. Because train crew changes can occur outside of yards, trains stopping for this purpose can depart without having to deal with congestion on yard tracks. Being able to bypass the yard or terminal altogether or having greater flexibility to stop to change train crews without having to enter yards and terminals would save additional time required to stop and yard the train and prepare for departure following the brake test.

Early estimates based on current planning and analysis indicate savings would be substantial. Savings associated with eliminating the unnecessary intermediate brake inspections that tie up employees, locomotives and cars are estimated using the following analytical assumptions and inputs.

- Locomotive idling time: $47.69[3]/locomotive hour x 2.94 locomotives per train = $140.20/hour
- Freight car consist time: $114 to $142.5[4]/hour
- Labor time (FRA): $55.23/train crewmember hour x 2 employees = $110.46/hour, or alternatively $54.09/maintenance of equipment employee x 2 employees = $108.18/hour
- Hourly Cost Savings: $140.20 + ($114 to $142.5) + $110.46 = ($364.66 to $393.16)/hour[5]
- Cost Savings per Brake Test (1.5 to 2 hours): $546.99 to $786.32

	Cost/Hr	Units/Train	Train Cost LOW	Train Cost HIGH
Locomotive	$ 47.69	2.94	$ 140.21	$ 140.21
Freight Car	$ 1.14	100 to 125	$ 114.00	$ 142.50
Labor: Crew	$ 55.23	2	$ 110.46	$ 110.46
Total Hourly Cost			**$ 364.67**	**$ 393.17**
Cost per Intermediate Brake Test (1.5 hrs)			**$ 547.00**	**$ 589.75**
Cost per Intermediate Brake Test (2 hrs)			**$ 729.34**	**$ 786.34**

Overall, there could be a reduction of approximately 45,000 intermediate air brake tests annually, with savings between $24 million and $35 million annually. Savings would begin to accrue immediately in some cases and take longer in others where operational adjustments have to be implemented. This analysis assumes a one-year phase-in period. Over the first 10 years of the proposed rule, the net present value of savings from the increased mileage allowance between brake tests would total between $197 million and $283 million, discounted at 7%, and between $160 million and $231 million, discounted at 3%. Additional benefits for which it is difficult to estimate value, such as terminal congestion, are discussed in a separate section later in this document.

[3] Locomotive idling cost includes capital and operation costs such as fuel and maintenance, but does not include emissions.

[4] Freight car cost includes capital and operating costs such as maintenance.

[5] Because we do not have a good basis to estimate the breakdown of train crew and mechanical employee brake test savings, the analysis uses a rate of $55.23 per labor hour. Using a rate of $54.09 would not materially change the savings estimates.

Year	Fewer Intermediate Tests - LOW	Fewer Intermediate Tests - HIGH
1	$ 12,230,985	$ 17,582,500
2	$ 24,461,970	$ 35,165,000
3	$ 24,461,970	$ 35,165,000
4	$ 24,461,970	$ 35,165,000
5	$ 24,461,970	$ 35,165,000
6	$ 24,461,970	$ 35,165,000
7	$ 24,461,970	$ 35,165,000
8	$ 24,461,970	$ 35,165,000
9	$ 24,461,970	$ 35,165,000
10	$ 24,461,970	$ 35,165,000
TOTAL	$ 232,388,712	$ 334,067,496
NPV (3%)	**$196,790,821**	**$ 282,894,191**
NPV (7%)	**$160,379,812**	**$ 230,551,999**

Unlimited Pick-Ups and Set-Outs

Under the existing FRA rule, a train cannot pick up or set out more than a single solid block of cars without conducting redundant brake testing on the entire train. This makes it very time-consuming for a single train to pick up multiple blocks of cars that are going to the same destination (or next processing point, which may be a yard or terminal) or set out multiple (non-consecutive) blocks of cars. Often, instead of performing the redundant brake testing to pick up multiple blocks and comply with the requirement, the first train to arrive will pick up a single block and leave the remaining blocks for subsequent trains to pick up, which triggers unnecessary stops for the additional trains. Likewise, a train that needs to drop off multiple non-consecutive blocks will set out only one block and continue hauling the remaining blocks past that location for set-out at subsequent locations, from where they will be reverse-hauled back to the terminal for set-out. The cars in these blocks will be handled more times than necessary and take longer to reach their destination. Their terminal dwell time will be higher than necessary and the car utilization rate will be negatively impacted. The AAR proposal would allow for the necessary pick-ups and set-outs to be performed without triggering redundant brake testing or the need for subsequent train stops and additional car handling.

Avoided Subsequent Train Stops/Intermediate Car Handling. Each time a train stops to pick up or set out cars, per FRA regulation, a crewmember must manually apply a sufficient number of handbrakes on railcars to secure the portion of the train that will be left standing on the main track. After the pick-up or set-out and prior to departure, a crewmember must release each of those handbrakes. Applying and releasing handbrakes requires walking on ballast alongside the train and turning the brake wheel (which may also require climbing onto railcars), often in inclement weather conditions and in the dark while holding a lantern. Eliminating additional train stops will reduce employee exposure to risk of injury from walking alongside the train, climbing onto cars, and turning brake wheels. (Employee safety impacts are discussed in more detail in a separate section later in this document.) It would also save train crew, locomotive, and freight car time. With unlimited pick-ups and set-outs permitted as proposed, more optimal blocking strategies could be implemented, decreasing overall train stops, car handling, and dwell time.

Estimated Savings. The table below illustrates how much efficiency can be gained and costs saved by picking up 2-to-5 blocks of cars (as would be permitted under the AAR proposal) with a single train instead of multiple trains.

	Status Quo		Proposed Rule		Net Savings	
Same Destination Blocks to Pick Up	Trains Required	Hours	Trains Required	Hours	Hours	%
5	5	10	1	3	7	70%
4	4	8	1	2.75	5.25	66%
3	3	6	1	2.5	3.5	58%
2	2	4	1	2.25	1.75	44%

The time estimates in the table assume that it takes an average of about 2 hours for a train to stop and the locomotive(s) to enter a yard, pick up a block of cars, and return to the main track to add the block to the train. Each row in the table represents a different scenario of blocks of cars ready for pick-up and delivery to the same destination or processing point. The Status Quo section illustrates how the blocks of cars can be picked up under the existing regulation. The Proposed Rule section illustrates how the same blocks could be picked up under the AAR proposal. The Net Savings section shows the reduction in time it would take to make the pick-ups under the proposed rule. Net savings are substantial and range between 44% and 70%, depending on the number of blocks picked up per train stop. Railroads reviewed blocking strategies to estimate the number of pick-up events that could occur more efficiently under the streamlined approach proposed. They identified $8.3 million in savings from basic, readily implementable blocking strategies. They also identified 120,991 single-block pick-up events eligible for different combinations of multiple block pick-up blocking strategies. In some cases, two blocks would be picked up by the same train, in other cases it could be more blocks. Many factors would be considered in determining how many blocks a particular train would pick up. The more easily attainable scenarios will be for trains to pick up two or three blocks, making overall savings between 44% and 58% easily attainable. Four- and five-block pick-ups will be far less common. Weighted averages of the number of pick-ups effected per train are used to estimate the range of savings. Conservatively assuming that virtually all multiple-pickup events involve two or three blocks, overall net savings would be 51%.[6] Using a more liberal assumption that up to 10% of the multiple pick-ups involve four or five blocks and 90% involve two or three blocks, overall net savings would be 52.7%. [7] The base 2-hour annual cost for the eligible events is $80,491,364. Based on the 51% to 52.7% rates and including the $8.3 million, estimated savings range between $ 49 million and $51 million annually. [8]

---

[6] The average savings from 2 pick-ups and 3 pick-ups = average of 44% and 58% = (.44 + .58) / 2 = 51%.

[7] 90% (2 or 3 pick-ups) + 10% (4 or 5 pick-ups) = .9 x (average of 44% and 58%) + .1 x (average of 66% and 70%) = .9 x (.51) + .1 x (6.8) = 52.7%.

[8] For purposes of this analysis, the cost for a 2-hour train stop is $665.27. Assumes locomotive cost = $140.21/hr., train crew cost = $110.46/hr., and freight car cost of $81.97/hr. for 71.9 cars. (120,991 x $665.27 x 52.7%) + $8.3M = $50,718,949. (120,991 x $665.27 x 51%) + $8.3M = $49,350,596 (Numbers are rounded.)

Although implementation of superior blocking strategies involving multiple pick-up and set-out events will be easily accomplished in many cases (e.g., elimination of unnecessary backhaul), additional gains may require development and implementation of more complex strategies (e.g., identifying better routes made possible by eliminating detours through locations for additional pick-ups and set-outs). Thus, it would likely take up to five years to phase-in the savings from the additional flexibility -- 50% savings realized in the first year, an additional 25% the second year, an additional 10% in each of the subsequent two years, and the last 5% in the fifth year. Over the first 10 years of the proposed rule, the net present value of savings from the pick-up flexibility would total between $305 million and $313 million, discounted at 7%, and between $376 million and $387 million, discounted at 3%.

Year	Fewer Stops: Pick-Ups - LOW	Fewer Stops: Pick-Ups - HIGH
1	$ 24,675,298	$ 25,359,474
2	$ 37,012,947	$ 38,039,212
3	$ 41,948,006	$ 43,111,107
4	$ 46,883,066	$ 48,183,001
5	$ 49,350,596	$ 50,718,949
6	$ 49,350,596	$ 50,718,949
7	$ 49,350,596	$ 50,718,949
8	$ 49,350,596	$ 50,718,949
9	$ 49,350,596	$ 50,718,949
10	$ 49,350,596	$ 50,718,949
TOTAL	$446,622,891	$ 459,006,487
NPV (3%)	**$376,417,788**	**$ 386,854,794**
NPV (7%)	**$304,855,542**	**$ 313,308,328**

Although existing regulations permit trains to pick up multiple blocks by first consolidating them and conducting the brake test on the consolidated block, there are logistical constraints in addition to the extra time required to handle the cars that often make this option impractical, if not impossible. For instance, yard tracks may not have sufficient space for fully consolidated blocks, especially if the blocks are large or the track is otherwise occupied with cars for other trains. In fact, cars that are part of a same block from a train sometimes are set out onto separate tracks due to insufficient track space.

Pick-up and set-out flexibilities are inextricably related. Set-out flexibility is key to realizing savings from unlimited pick-ups. Without the set-out flexibility for instance, if two non-consecutive blocks in Train A that are headed for the same destination are not set-out at the same location and are instead set out at two different locations, Train B that is picking them up would have to make two pick-up stops instead of one. The set-out restriction could wipe out the savings from the stop that was otherwise eliminated by allowing Train B unlimited pick-ups. Furthermore, trains picking up multiple blocks at one location that are not able to set out multiple large blocks at that location may be operationally restricted in the number of blocks they can pick up due to limiting factors such as siding length for passing and power units necessary for consist weight. Such trains might have to forego some of the allowed pickups.

To a large extent, the savings from allowing unlimited pick-ups overlap with the unlimited set-out flexibility proposed. The train stop and entry into the yard to pick up a block is often the same stop made to set out a block, in which case there are no set-out savings beyond the savings already included for the multiple pick-ups. Railroads will have the incentive to combine multiple pick-ups and multiple set-outs at locations to maximize savings from the flexibility requested. (It would be double-counting to include that portion of the savings again when estimating overall savings.) However, after careful examination of their operations, railroads found that there will still be some cases where multiple blocks will need to be set-out at locations without picking up multiple blocks. The extent to which there would be potential for overlap of multiple pick-ups and multiple set-outs will vary, making it difficult to estimate the incremental savings from the proposed set-out flexibility. Nevertheless, it would not be unreasonable to expect additional savings from set-outs of about 15% of the savings from multiple pick-up flexibility.

Over the first 10 years of the proposed rule, the net present value of savings from the set-out flexibility would total between $46 million and $47 million, discounted at 7%, and between $56 million and $58 million, discounted at 3%.

Year	Fewer Stops: Set-Outs LOW	Fewer Stops: Set-Outs HIGH
1	$ 3,701,295	$ 3,803,921
2	$ 5,551,942	$ 5,705,882
3	$ 6,292,201	$ 6,466,666
4	$ 7,032,460	$ 7,227,450
5	$ 7,402,589	$ 7,607,842
6	$ 7,402,589	$ 7,607,842
7	$ 7,402,589	$ 7,607,842
8	$ 7,402,589	$ 7,607,842
9	$ 7,402,589	$ 7,607,842
10	$ 7,402,589	$ 7,607,842
TOTAL	$ 66,993,434	$ 68,850,973
NPV (3%)	**$56,462,668**	**$ 58,028,219**
NPV (7%)	**$45,728,331**	**$ 46,996,249**

Over the first 10 years of the proposed rule, the net present value of savings would total between $511 million and $591 million, discounted at 7%, and between $630 million and $728 million, discounted at 3%. Railroad investment to date as well as some additional voluntary future investment to deploy eABS technology will make it possible to realize these savings. Since use of the proposed eABS regime would be permissive, additional investment would only be undertaken by those seeking to use it. Railroads will deploy eABS technologies where is makes sense to do so.

Year	Fewer Intermediate Tests - LOW	Fewer Intermediate Tests - HIGH	Fewer Stops: Pick-Ups - LOW	Fewer Stops: Pick-Ups - HIGH	Fewer Stops: Set-Outs LOW	Fewer Stops: Set-Outs HIGH	Total Savings Low End	Total Savings High End
1	$ 12,230,985	$ 17,582,500	$ 24,675,298	$ 25,359,474	$ 3,701,295	$ 3,803,921	$ 40,607,577	$ 46,745,895
2	$ 24,461,970	$ 35,165,000	$ 37,012,947	$ 38,039,212	$ 5,551,942	$ 5,705,882	$ 67,026,858	$ 78,910,093
3	$ 24,461,970	$ 35,165,000	$ 41,948,006	$ 43,111,107	$ 6,292,201	$ 6,466,666	$ 72,702,177	$ 84,742,772
4	$ 24,461,970	$ 35,165,000	$ 46,883,066	$ 48,183,001	$ 7,032,460	$ 7,227,450	$ 78,377,495	$ 90,575,451
5	$ 24,461,970	$ 35,165,000	$ 49,350,596	$ 50,718,949	$ 7,402,589	$ 7,607,842	$ 81,215,155	$ 93,491,791
6	$ 24,461,970	$ 35,165,000	$ 49,350,596	$ 50,718,949	$ 7,402,589	$ 7,607,842	$ 81,215,155	$ 93,491,791
7	$ 24,461,970	$ 35,165,000	$ 49,350,596	$ 50,718,949	$ 7,402,589	$ 7,607,842	$ 81,215,155	$ 93,491,791
8	$ 24,461,970	$ 35,165,000	$ 49,350,596	$ 50,718,949	$ 7,402,589	$ 7,607,842	$ 81,215,155	$ 93,491,791
9	$ 24,461,970	$ 35,165,000	$ 49,350,596	$ 50,718,949	$ 7,402,589	$ 7,607,842	$ 81,215,155	$ 93,491,791
10	$ 24,461,970	$ 35,165,000	$ 49,350,596	$ 50,718,949	$ 7,402,589	$ 7,607,842	$ 81,215,155	$ 93,491,791
TOTAL	$ 232,388,712	$ 334,067,496	$446,622,891	$ 459,006,487	$ 66,993,434	$ 68,850,973	$ 746,005,036	$861,924,956
NPV (3%)	**$196,790,821**	**$ 282,894,191**	**$376,417,788**	**$ 386,854,794**	**$56,462,668**	**$ 58,028,219**	**$629,671,276**	**$727,777,204**
NPV (7%)	**$160,379,812**	**$ 230,551,999**	**$304,855,542**	**$ 313,308,328**	**$45,728,331**	**$ 46,996,249**	**$510,963,685**	**$590,856,577**

Employee Safety Impacts

The reduction of unnecessary brake tests, including any additional train stops and car handling, will in turn reduce employee exposure to risk of injury from walking on track, as well as from applying and releasing handbrakes and climbing on and off railcars to do so.

The ability for trains to pick up and set out multiple blocks of cars will obviate the need for additional trains to make stops to pick up cars left behind by the initial train and subsequently to set them out. Since such stops require setting handbrakes on multiple railcars to secure the trains per FRA regulations, eliminating the stops would reduce exposure to injuries that are related to applying and releasing handbrakes. The FRA public safety data website[9] has data of circumstances associated with freight railroad employee-on-duty casualties including the "physical act," type of injury, and how many days the employee was absent or on restricted duty. According to such data, from 2015 through 2017, there were 277 freight railroad employee-on-duty injuries directly related to use of handbrakes – 144 applying handbrakes, 126 releasing handbrakes, and 7 classified as "Handbrake, other" physical acts. See Appendix E.1 for the full list of the 277 injuries. Of these injuries --

- 241 or 87% resulted in days absent or restricted duty.
    - 21,030 total days absent
    - 2,028 total days restricted duty
- 95% were to Train and Engine employees.
- Shoulder and back sprains and strains were the most common type, accounting for 45% and collectively resulting in 12,179 days absent and 1,056 days of restricted duty.

The FRA casualty data shows that employees are also injured climbing on and off railcars. From 2015 through 2017, about 200 additional freight railroad employee-on-duty injuries occurred while "getting on," "getting off", "climbing on/over," or "descending" from "standing freight cars" or "standing freight trains." Although the FRA casualty report circumstance codes for such injuries do not specify the general task being performed (e.g., securing a train), many contain Narrative Description entries with supplementary information provided. Eleven narratives in casualty reports specifically say that the

[9] *See* FRA Office of Safety Analysis Website, available at https://safetydata.fra.dot.gov.

freight railroad employees injured were getting on or off cars before or after applying or releasing handbrakes. All of these injuries resulted in multiple days absent from work. Appendix E.2 contains these FRA casualty reports. Since not all casualty reports contain narrative statements and not all narrative statements indicate what general task the employee was performing, it is difficult to estimate how many additional injuries may have occurred during the course of getting on or off railcars to set or release handbrakes.

As noted in the 2018 AAR petition to extend time off air restrictions from four to 24 hours in 49 CFR Part 232, employee injury reports from FRA's public website also show that hundreds of freight railroad worker injuries occur on or near track while walking "on, beside or between track" or "alongside on track equipment" as required to perform brake tests[10]. While the data does not reflect how many of these injuries occurred while conducting freight air brake tests, reducing the number of brake inspections would undeniably reduce the exposure to the possibility of such injuries. Information in the narrative statements from 2014 through 2017 does provide examples of anecdotal support for this obvious proposition: in January 2017, an employee was performing a brake test on an outbound train when he stepped out from the cars and the ballast shifted, rolling his ankle and causing him to fall, resulting in a shoulder tear; in August 2014 and 2015, conductors walking the train as part of a brake tests at night were assaulted and suffered injuries; and in September 2014, a conductor walking a brake test hit his head on a railcar. Clearly, a reduction in the amount of time that employees spend walking on, beside or between track will result in a reduction in these types of injuries. For additional information, see Appendix E.3 which contains reports for these injuries.

Additional Benefits to the American Public

If the constraints imposed by outdated regulations are replaced with a technology-enabled brake-testing recordkeeping regime, the benefits from improved train operations will be widespread. Shippers and car owners and lessees will benefit from superior car utilization rates and more reliable service. Train passengers could benefit from reduced congestion along some routes. There will be environmental benefits from reductions in locomotive emissions from more efficient train operations that result in more timely delivery of products, especially those that are time-sensitive.

In some cases, under the proposed rule, subsequent trains that are involved in picking up and setting out blocks of cars that could not be picked up or set out by an initial train may be able to take more desirable routes that are shorter, have higher capacity, or have greater crew availability. In inclement weather and during times of high congestion, this flexibility can help restore system velocity for freight and passenger traffic. Where allowing one train to pick up additional blocks of cars would enable following trains to pass by that location without having to stop, main track velocity would increase and congestion and delays to following trains would be reduced. Just as main track fluidity reduces congestion, yard and terminal fluidity plays an important role in the throughput of the network. Rail systems are most efficient when operations are fluid and yards and terminals are operated in the most productive manner possible. Outbound cars that are left standing on yard tracks obstruct the use of those tracks until they are picked up by a train. Once the track is clear of railcars, capacity is restored.

[10] AAR letter dated July 12, 2018 to Ronald Batory, FRA Administrator, Re: Petition for a Brake System Safety Standards Rulemaking.

Allowing one train to work more efficiently in a yard and pick up cars from more than one track will have ripple effects on overall yard capacity.

The AAR proposal gives railroads the ability to pick up cars and place them in the train at points where it makes the most sense. This involves picking up multiple blocks of cars and placing each one in the train adjacent to similar blocks of cars --in other words, classifying freight. If blocks that are picked up are going to different yards or customers, rail shippers will benefit from the railroad's ability to place their cars in the train with other blocks of cars going to the same yard or customer. Allowing trains to pick up cars in which the freight is properly blocked and similarly set out all blocks that are not going to destinations or processing points on the train's route will reduce redundant switching later. This will reduce extra car handling, including hauling cars "out-of-route," passing by the intended destination or next processing point, and reclassifying cars at a terminal so they can be delivered by another train.

Railcars move between origin and destination in a variety of ways. Shippers often lease a number of cars and operate a dedicated "pool" of equipment to move a product between origin and destination. In such cases, the number of cars loaded per month plus the "cycle time" of the cars used in this service will determine how many cars are leased to serve a particular market. The cycle time is the time that is needed for a given car to make a round trip to the point of origin. The number of cars that are leased for a particular service requirement will be as small as possible in order to minimize costs and in turn maximize profits, meaning that empty cars have the same need for efficient service as loaded cars, because cycle time influences cost. If the cost of leasing railcars is too high, or if the cycle time is high (a low utilization rate), shipping by rail may not be a logical option for the shipper. For example, consider a shipper who loads 100 boxcars for a destination 1,700 miles away with a cycle time of 30 days. This means that each railcar will move only about twelve carloads per year to deliver the 1,200 loads. Reducing the cycle time by moving the cars faster will reduce the number of cars needed. For every percentage point reduction in cycle time, there is an equal percentage point reduction in cars needed to transport the same number of annual loads. A substantial reduction could impact shipper modal choice. For instance, since the cycle time in the above example is 30 days, reducing the cycle time by 10% to 27 days will reduce the number of cars necessary to move the 1,200 loads by 10% or 10 boxcars. This translates into significant savings, since railcars are costly assets, and would make rail service more attractive to the shipper. Similarly, if congestion and delays increase the cycle time to 35 days, empty cars will not be available for loading when the shipper needs them, likely resulting in the shipper turning to highway transportation to get their product to market rather than leasing the additional 17 boxcars necessary to transport the 1,200 annual loads.

Railcar owners stand to gain from improved car utilization. Today, the majority of freight railcars are owned by car leasing companies and rail shippers, and railroads own the balance. Because railcars are an expensive asset to own and maintain, railroads use a variety of strategies to keep similar cars together and avoid switching and extra car handling. Unit trains of a certain commodity, operating in dedicated service between origin and destination points, greatly increase car productivity and lower costs. By running a large volume of freight in unit train service, railroads provide high-volume shippers direct service from origin to destination without switching the cars, or having them picked up and moved by multiple trains. Dedicated unit trains from origin to destination offer cycle times of perhaps three times faster than single or multiple car shipments. Under the AAR proposal, other train operations will result in faster service too. The growth in rail intermodal freight would not be possible if railcars carrying intermodal containers were handled in general freight train service. The track speed for general commodity unit trains is usually the same as the track speed for miscellaneous (general freight) trains, but overall velocity is much lower. For single or multiple car shipments of boxcars, gondolas, tank cars, and others, much more time is spent in transit since these cars are sitting in yards waiting for their turn to be switched and afterward waiting to leave on an outbound train. Once the cars arrive at an intermediate yard or terminal, the cars sit again waiting to be switched out of the train and placed in the next train. After another inspection and air brake test, the cars proceed to the next terminal. These delays add up and collectively cost multiple days of delay for the round trip.

The ability to pick up multiple blocks of cars that have a valid air brake test, and to place them in a train where they belong, will enable railroads to move their customers' freight in a more expedient manner. Not only will transit times be faster, but the more efficient method of handling railcars will result in superior cycle times, which will reduce costs. Freeing up yard capacity and keeping trains moving on main tracks, rather than stopping multiple trains in yards to pick up cars, will further reduce congestion and increase system velocity.

Lastly, reducing Extended Haul Train (EHT) designation will eliminate administrative burden on both railroads and FRA staff. The electronic-based car-level recordkeeping and tracking system will be more efficient than the train-level EHT system.

Sensitivity Analysis

Some intermediate brake tests are performed by more than 2 employees. For instance, 4 or 6 mechanical employees may perform a test. Such tests would be performed in less time, thus reducing the locomotive and railcar cost components, but without impacting the labor cost. If a large portion of the brake tests that are eliminated are performed by 4 or 6 employees, then the savings presented in this analysis will be overstated.

There is some uncertainty related to the timing of a portion of the savings estimates included in this analysis. Railcar and locomotive costs include both capital and operational expenses. Although reductions in some operating expenses (e.g., fuel and repairs) would basically be realized in tandem with the operational efficiencies gained from the proposed brake test flexibilities, other expenses (e.g., time-based maintenance including COT&S and car replacement) would be saved over the longer term and at the time when the equipment is actually removed from service. Thus, savings may be slightly overstated.

Appendix E1 – Employee-On-Duty Handbrake Related Injuries

YEAR4	IMO	Day	INCDTNO	Job Codes.DESC	DAYSABS	DAYSRES	Physical Act
2015	04	29	848329	Yard engineers	180	100	Handbrakes, releasing
2016	12	16	TC1216005	Yard conductors and yard foreme	132	88	Handbrakes, applying
2017	08	23	BUI0823176	Road freight conductors (local an	182	0	Handbrakes, releasing
2017	11	01	127327	Road freight engineers (local and	180	0	Handbrakes, applying
2015	06	22	000148157	Remote Control Locomotive Ope	180	0	Handbrakes, releasing
2017	09	21	000171791	Road freight conductors (local an	180	0	Handbrakes, releasing
2017	02	08	000166637	Remote Control Locomotive Ope	180	0	Handbrakes, releasing
2015	05	09	000146012	Road freight engineers (local and	180	0	Handbrakes, applying
2015	09	09	000151893	Carmen (freight)	180	0	Handbrakes, releasing
2017	09	15	IN17091502	Road freight conductors (local an	180	0	Handbrakes, applying
2017	05	02	17050202	Road freight engineers (through f	180	0	Handbrakes, releasing
2015	08	18	0815LK012	Yard brakemen and yard helpers	58	122	Handbrakes, releasing
2015	01	12	000139930	Road freight brakemen and flagm	180	0	Handbrakes, applying
2016	07	12	000161270	Road freight conductors (local an	180	0	Handbrakes, applying
2017	09	19	126721	Road freight conductors (local an	180	0	Handbrakes, applying
2016	11	06	000164146	Road freight conductors (local an	180	0	Handbrakes, applying
2015	05	31	15053105	Yard conductors and yard foreme	180	0	Handbrakes, releasing
2015	02	15	0215PC004	Road freight engineers (through f	135	45	Handbrakes, releasing
2017	07	08	000170101	Yard conductors and yard foreme	180	0	Handbrakes, applying
2017	03	24	124528	Road freight conductors (through	180	0	Handbrakes, applying
2015	10	07	1015LK012	Remote Control Locomotive Ope	180	0	Handbrakes, applying
2015	11	01	000153821	Laborers: shops, enginehouses a	180	0	Handbrakes, applying
2016	04	24	886372	Road freight conductors (local an	180	0	Handbrakes, applying
2015	09	10	0915SL005	Road freight conductors (through	180	0	Handbrakes, applying
2016	01	25	0116LV010	Road freight conductors (local an	124	56	Handbrakes, applying
2015	02	13	000141507	Road freight conductors (local an	180	0	Handbrakes, applying
2016	11	02	HL1116006	Carmen (freight)	180	0	Handbrakes, other
2016	01	21	JAN16002	Yard conductors and yard foreme	0	180	Handbrakes, releasing
2015	01	27	000140670	Yard conductors and yard foreme	180	0	Handbrakes, releasing
2016	08	04	0816NP003	Road freight conductors (through	180	0	Handbrakes, releasing
2016	09	19	122118	Road freight conductors (local an	180	0	Handbrakes, releasing
2016	01	28	119193	Road freight conductors (through	180	0	Handbrakes, applying
2017	06	18	926445	Road freight conductors (local an	180	0	Handbrakes, releasing
2016	12	11	1216KC005	Remote Control Locomotive Ope	0	180	Handbrakes, applying
2015	12	05	118509	Yardmasters and assistant yardm	180	0	Handbrakes, releasing
2015	03	28	115101	Road freight conductors (local an	180	0	Handbrakes, applying
2017	08	30	126520	Road freight conductors (local an	180	0	Handbrakes, applying
2015	05	05	115565	Road freight engineers (through f	180	0	Handbrakes, releasing
2016	12	12	000165109	Road freight engineers (local and	180	0	Handbrakes, releasing
2017	10	28	000172487	Road freight engineers (local and	180	0	Handbrakes, applying
2015	05	28	KS0515008	Road freight conductors (through	180	0	Handbrakes, other
2015	01	18	113908	Yard conductors and yard foreme	180	0	Handbrakes, applying
2016	06	27	0616FW017	Remote Control Locomotive Ope	180	0	Handbrakes, applying
2017	10	24	000172402	Grain elevator, and dock laborers	180	0	Handbrakes, applying
2016	10	17	000163654	Road freight brakemen and flagm	180	0	Handbrakes, applying

2017	03	19	000167567	Carmen (freight)	180	0	Handbrakes, applying
2017	11	20	000173021	Road freight conductors (through	180	0	Handbrakes, applying
2016	11	26	RD1116010	Road freight conductors (local an	180	0	Handbrakes, applying
2015	07	16	859312	Road freight conductors (through	180	0	Handbrakes, applying
2017	03	17	0317LK025	Road freight conductors (through	180	0	Handbrakes, releasing
2016	01	08	0116SA005	Road freight engineers (local and	180	0	Handbrakes, releasing
2016	10	10	122392	Road freight engineers (through f	180	0	Handbrakes, applying
2015	04	06	115202	Road freight conductors (through	180	0	Handbrakes, applying
2015	01	27	114103	Yard conductors and yard foreme	180	0	Handbrakes, applying
2015	01	10	NW0115005	Yard conductors and yard foreme	180	0	Handbrakes, applying
2017	02	07	0217KC005	Road freight conductors (through	160	20	Handbrakes, applying
2016	11	04	122694	Yard conductors and yard foreme	180	0	Handbrakes, applying
2016	10	18	122464	Road freight conductors (through	180	0	Handbrakes, applying
2015	07	30	000149968	Remote Control Locomotive Ope	180	0	Handbrakes, applying
2017	03	17	1000529940	Road freight conductors (through	180	0	Handbrakes, releasing
2017	05	21	923495	Yard engineers	180	0	Handbrakes, releasing
2015	03	21	15032102	Yard engineers	180	0	Handbrakes, applying
2015	04	22	115391	Road freight conductors (local an	180	0	Handbrakes, releasing
2015	02	14	0215FW012	Road freight conductors (through	180	0	Handbrakes, releasing
2016	09	15	000162950	Remote Control Locomotive Ope	180	0	Handbrakes, releasing
2017	06	16	125515	Road freight conductors (through	180	0	Handbrakes, releasing
2016	08	09	NW0816008	Road freight conductors (local an	180	0	Handbrakes, releasing
2017	03	23	0317LV031	Remote Control Locomotive Ope	180	0	Handbrakes, applying
2015	11	30	000154764	Road freight brakemen and flagm	180	0	Handbrakes, releasing
2017	07	12	17071202	Yard conductors and yard foreme	180	0	Handbrakes, applying
2015	07	15	0715HO022	Yard engineers	180	0	Handbrakes, applying
2016	09	06	16090601	Yard conductors and yard foreme	180	0	Handbrakes, applying
2017	03	20	916859	Road freight engineers (local and	180	0	Handbrakes, applying
2016	08	15	121707	Road freight conductors (through	180	0	Handbrakes, applying
2017	06	08	0617LV007	Yard conductors and yard foreme	180	0	Handbrakes, releasing
2015	09	09	0915FW008	Road freight engineers (through f	180	0	Handbrakes, applying
2017	01	26	912146	Yard conductors and yard foreme	178	0	Handbrakes, applying
2015	07	06	116401	Road freight conductors (through	178	0	Handbrakes, applying
2015	10	21	SW1015004	Road freight engineers (through f	176	0	Handbrakes, releasing
2016	05	16	0516UT009	Road freight engineers (through f	137	39	Handbrakes, releasing
2015	05	18	15051804	Yard engineers	174	0	Handbrakes, applying
2015	06	13	0615NP021	Road freight engineers (through f	145	29	Handbrakes, releasing
2015	08	25	15082501	Yard engineers	173	0	Handbrakes, releasing
2017	12	05	PI17019	Yard conductors and yard foreme	2	168	Handbrakes, applying
2017	01	21	CH0117009	Yard engineers	169	0	Handbrakes, releasing
2016	07	19	000161450	Road freight conductors (through	169	0	Handbrakes, releasing
2015	03	02	15030202	Yard conductors and yard foreme	165	0	Handbrakes, applying
2017	07	22	0717CB021	Road freight brakemen and flagm	151	13	Handbrakes, applying
2015	07	28	15072802	Yard conductors and yard foreme	159	0	Handbrakes, releasing
2016	10	13	1016DV016	Remote Control Locomotive Ope	142	15	Handbrakes, applying
2015	05	27	000146770	Yard conductors and yard foreme	152	0	Handbrakes, applying
2017	08	18	0817LA020	Road freight brakemen and flagm	144	5	Handbrakes, releasing

2016	03	29	0316FW026	Road freight conductors (through	147	0	Handbrakes, applying
2017	10	19	000172312	Road freight conductors (through	144	0	Handbrakes, applying
2016	07	15	0716RS026	Yard brakemen and yard helpers	112	28	Handbrakes, releasing
2016	05	05	0516LA006	Remote Control Locomotive Ope	139	0	Handbrakes, applying
2016	01	21	SW0116004	Road freight engineers (through f	135	0	Handbrakes, releasing
2015	12	14	1215SA015	Road freight engineers (through f	107	28	Handbrakes, applying
2015	04	12	0415FW009	Road freight conductors (through	133	0	Handbrakes, applying
2016	07	29	121516	Yard conductors and yard foreme	131	0	Handbrakes, other
2017	03	23	0317LK041	Road freight conductors (through	116	12	Handbrakes, applying
2017	09	10	126596	Road freight conductors (local an	126	0	Handbrakes, applying
2015	03	04	0315JE002	Inside hostler	125	0	Handbrakes, applying
2015	11	03	118082	Road freight conductors (through	120	0	Handbrakes, applying
2015	05	31	GC0515007	Road freight engineers (through f	114	0	Handbrakes, releasing
2015	04	22	1	Road freight conductors (local an	111	0	Handbrakes, releasing
2016	12	20	2016157	Road freight engineers (through f	110	0	Handbrakes, applying
2017	04	25	124857	Road freight conductors (through	108	0	Handbrakes, releasing
2016	07	18	1000426066	Road freight conductors (local an	105	0	Handbrakes, applying
2015	12	06	873333	Road freight conductors (local an	101	0	Handbrakes, applying
2016	07	31	907431	Road freight engineers (local and	100	0	Handbrakes, applying
2017	06	06	125360	Yard conductors and yard foreme	99	0	Handbrakes, applying
2017	10	31	1017SA030	Road freight engineers (through f	14	84	Handbrakes, releasing
2016	12	26	123348	Road freight conductors (through	97	0	Handbrakes, releasing
2016	08	04	PI16017	Yard conductors and yard foreme	95	0	Handbrakes, releasing
2017	02	10	123969	Road freight conductors (local an	94	0	Handbrakes, releasing
2016	08	05	TX0816001	Road freight conductors (through	94	0	Handbrakes, applying
2017	12	27	1217SL015	Yard brakemen and yard helpers	83	10	Handbrakes, applying
2017	08	30	0817TC037	Road freight engineers (through f	49	44	Handbrakes, releasing
2017	07	04	1000585212	Road freight conductors (local an	93	0	Handbrakes, applying
2015	10	11	1015LK016	Road freight conductors (through	41	52	Handbrakes, releasing
2016	10	31	1016LK032	Road freight conductors (through	92	0	Handbrakes, applying
2017	08	27	0817FW044	Road freight conductors (through	69	21	Handbrakes, applying
2016	08	17	TC0816006	Road freight conductors (through	85	0	Handbrakes, releasing
2017	05	18	HES305017F	Machinists	83	0	Handbrakes, applying
2017	07	19	SBR370117F	Yard conductors and yard foreme	81	0	Handbrakes, applying
2016	04	01	0416NP003	Road freight conductors (through	76	0	Handbrakes, applying
2015	12	16	1215SA018	Remote Control Locomotive Ope	53	19	Handbrakes, releasing
2015	02	20	0215KC017	Road freight brakemen and flagm	44	27	Handbrakes, applying
2017	02	25	000167047	Road freight engineers (through f	67	0	Handbrakes, releasing
2015	10	29	118044	Road freight conductors (local an	67	0	Handbrakes, releasing
2016	09	30	000163262	Yard brakemen and yard helpers	66	0	Handbrakes, releasing
2017	11	29	1117SA023	Road freight engineers (through f	4	61	Handbrakes, releasing
2015	07	24	CA0715007	Yard brakemen and yard helpers	65	0	Handbrakes, applying
2015	07	29	201536	Road freight conductors (local an	1	62	Handbrakes, applying
2017	09	18	W2017017	Road freight conductors (local an	60	0	Handbrakes, releasing
2015	01	16	1000162882	Road freight conductors (through	60	0	Handbrakes, releasing
2015	10	12	117791	Yard conductors and yard foreme	59	0	Handbrakes, releasing
2015	11	17	118270	Road freight brakemen and flagm	58	0	Handbrakes, releasing

2015	03	11	KS0315005	Road freight brakemen and flagm	55	0	Handbrakes, releasing
2016	04	18	04182016A	Yard conductors and yard foreme	55	0	Handbrakes, releasing
2017	12	03	PR1217001	Road freight conductors (local an	53	0	Handbrakes, releasing
2016	11	28	907375	Road freight conductors (local an	53	0	Handbrakes, applying
2015	03	02	0315ST004	Remote Control Locomotive Ope	6	45	Handbrakes, applying
2017	12	10	HL1217005	Road freight conductors (through	49	0	Handbrakes, releasing
2017	01	19	0117PC028	Road freight conductors (through	48	0	Handbrakes, applying
2017	12	09	HL1217004	Road freight engineers (through f	48	0	Handbrakes, releasing
2016	01	19	0116CB013	Remote Control Locomotive Ope	45	0	Handbrakes, releasing
2015	07	09	I13070915	Yard brakemen and yard helpers	45	0	Handbrakes, applying
2016	03	09	391601	Transportation, train and engine (	45	0	Handbrakes, releasing
2017	05	14	188500846	Yard engineers	44	0	Handbrakes, releasing
2016	10	15	1016SL007	Road freight brakemen and flagm	9	34	Handbrakes, applying
2015	09	06	117273	Road freight conductors (local an	43	0	Handbrakes, releasing
2015	12	07	2015120221	Yard brakemen and yard helpers	0	42	Handbrakes, other
2015	05	18	2015072	Road freight conductors (local an	8	34	Handbrakes, applying
2017	08	17	CH0817010	Switchtenders	41	0	Handbrakes, applying
2015	02	08	0215SA011	Yard brakemen and yard helpers	38	0	Handbrakes, applying
2015	03	08	114777	Road freight conductors (through	37	0	Handbrakes, releasing
2017	05	23	000169129	Road freight conductors (local an	37	0	Handbrakes, releasing
2015	05	09	NW0515003	Yard brakemen and yard helpers	22	14	Handbrakes, releasing
2016	03	03	0316KC005	Road freight brakemen and flagm	0	33	Handbrakes, applying
2017	02	24	PR0217006	Yard brakemen and yard helpers	0	33	Handbrakes, releasing
2017	05	01	05072017A	Yard conductors and yard foreme	0	32	Handbrakes, applying
2015	08	13	SSRC151221	Yard conductors and yard foreme	16	16	Handbrakes, applying
2017	03	01	MNN3012017	Road freight conductors (local an	2	30	Handbrakes, releasing
2015	01	05	113705	Yard conductors and yard foreme	31	0	Handbrakes, applying
2017	06	19	CH0617013	Road freight conductors (through	30	0	Handbrakes, releasing
2015	08	20	0815LK016	Road freight conductors (through	4	23	Handbrakes, releasing
2016	01	11	0116UT002	Remote Control Locomotive Ope	0	27	Handbrakes, applying
2017	10	06	126940	Road freight conductors (through	26	0	Handbrakes, applying
2015	10	13	1015SL007	Remote Control Locomotive Ope	0	26	Handbrakes, releasing
2016	04	17	120182	Road freight conductors (through	26	0	Handbrakes, releasing
2015	12	06	NW1215003	Remote Control Locomotive Ope	10	15	Handbrakes, applying
2016	09	04	NW0916002	Road freight engineers (through f	24	0	Handbrakes, applying
2015	09	07	TC0915001	Road freight engineers (local and	23	0	Handbrakes, applying
2016	11	13	122746	Road freight conductors (local an	23	0	Handbrakes, releasing
2016	09	06	160906005	Yard engineers	22	0	Handbrakes, applying
2016	05	09	0416	Road freight conductors (local an	22	0	Handbrakes, releasing
2016	12	28	161228005	Road freight conductors (local an	9	13	Handbrakes, applying
2017	08	02	0817OI006	Yard brakemen and yard helpers	21	0	Handbrakes, applying
2015	04	30	R04301501	Transportation, train and engine (	0	21	Handbrakes, applying
2015	11	29	TC1115009	Yard conductors and yard foreme	21	0	Handbrakes, releasing
2016	09	22	0916SL006	Remote Control Locomotive Ope	19	0	Handbrakes, applying
2016	03	12	16031203	Yard conductors and yard foreme	18	0	Handbrakes, applying
2017	03	04	915132	Yard conductors and yard foreme	17	0	Handbrakes, releasing
2016	03	31	16033104	Yard engineers	17	0	Handbrakes, applying

2017	08	13	000170937	Road freight conductors (through	16	0	Handbrakes, releasing
2016	06	22	WTA160622	Yard brakemen and yard helpers	15	0	Handbrakes, releasing
2016	06	12	16061202	Yard conductors and yard foreme	15	0	Handbrakes, releasing
2015	02	25	1176	Road freight conductors (through	0	15	Handbrakes, applying
2017	04	08	0417PR007	Road freight engineers (through f	15	0	Handbrakes, releasing
2017	06	11	188519357	Yard engineers	0	14	Handbrakes, releasing
2017	07	18	929795	Road freight engineers (local and	14	0	Handbrakes, applying
2015	01	13	1000161439	Road freight brakemen and flagm	13	0	Handbrakes, releasing
2016	10	10	201601	Yard conductors and yard foreme	6	7	Handbrakes, applying
2015	10	16	1000286340	Yard conductors and yard foreme	13	0	Handbrakes, releasing
2015	01	16	2015010	Yard conductors and yard foreme	13	0	Handbrakes, applying
2015	10	13	2015I1002	Road freight conductors (local and	13	0	Handbrakes, applying
2015	06	25	PI201505	Yard conductors and yard foreme	0	11	Handbrakes, releasing
2015	10	20	SG1515	Yard conductors and yard foreme	0	10	Handbrakes, releasing
2017	04	01	CA0417001	Road freight conductors (local and	10	0	Handbrakes, releasing
2015	11	13	KS1115006	Yard conductors and yard foreme	10	0	Handbrakes, applying
2015	09	21	I150921	Transportation, train and engine (	9	0	Handbrakes, releasing
2017	10	13	938882	Yard conductors and yard foreme	9	0	Handbrakes, releasing
2015	07	29	0715SA024	Road freight conductors (through	8	0	Handbrakes, releasing
2017	07	10	I170710	Transportation, train and engine (	8	0	Handbrakes, applying
2015	03	27	KFR151038	Road freight conductors (local and	1	7	Handbrakes, applying
2017	10	29	940289	Yard conductors and yard foreme	7	0	Handbrakes, applying
2017	05	24	RD0517012	Road freight conductors (local and	7	0	Handbrakes, applying
2017	01	18	0117TC004	Road freight conductors (through	7	0	Handbrakes, applying
2017	11	02	TC1117001	Road freight conductors (through	7	0	Handbrakes, other
2017	10	25	939962	Yard engineers	6	0	Handbrakes, releasing
2015	09	23	648142	Road freight engineers (local and	0	5	Handbrakes, applying
2015	02	21	0215SL008	Road freight brakemen and flagm	5	0	Handbrakes, applying
2017	01	28	1000504171	Yard conductors and yard foreme	5	0	Handbrakes, applying
2016	01	31	160102	Road freight conductors (local and	5	0	Handbrakes, releasing
2016	10	23	KS1016008	Laborers: shops, enginehouses a	0	5	Handbrakes, applying
2015	06	17	0615SA019	Road freight conductors (through	5	0	Handbrakes, releasing
2015	09	30	0930201501	Transportation, train and engine (	2	2	Handbrakes, releasing
2016	09	29	0916RS031	Road freight conductors (through	0	4	Handbrakes, applying
2017	03	06	1000524448	Road freight engineers (local and	4	0	Handbrakes, applying
2015	08	06	000150266	Carmen (freight)	4	0	Handbrakes, releasing
2017	07	28	I20072817	Yard conductors and yard foreme	4	0	Handbrakes, applying
2015	07	19	1000122015	Yard engineers	3	0	Handbrakes, releasing
2015	07	08	AGR728015	Yard conductors and yard foreme	3	0	Handbrakes, applying
2015	07	15	859027	Road freight conductors (local and	3	0	Handbrakes, releasing
2015	02	18	841190	Yard conductors and yard foreme	3	0	Handbrakes, applying
2016	03	19	0316SL007	Road freight conductors (through	3	0	Handbrakes, applying
2016	07	14	TX0716001	Yard conductors and yard foreme	3	0	Handbrakes, applying
2017	04	28	170401	Yard brakemen and yard helpers	2	0	Handbrakes, releasing
2017	05	01	05012017	Road freight conductors (local and	2	0	Handbrakes, applying
2016	06	25	892745	Road freight conductors (through	2	0	Handbrakes, applying
2017	11	08	110917	Yard conductors and yard foreme	2	0	Handbrakes, applying

2015	07	24	CH0715009	Road freight conductors (through	2	0	Handbrakes, releasing
2017	06	04	CVR060417I	Road freight conductors (through	2	0	Handbrakes, releasing
2017	10	26	FY1805276	Carmen (other)	0	2	Handbrakes, releasing
2017	03	29	124573	Carmen (freight)	1	0	Handbrakes, releasing
2015	03	22	1000062015	Road freight engineers (local and	1	0	Handbrakes, releasing
2016	05	17	1000042016	Yard engineers	1	0	Handbrakes, applying
2015	07	15	I20150715T	Yard conductors and yard foreme	1	0	Handbrakes, releasing
2016	11	27	1116NP018	Remote Control Locomotive Ope	1	0	Handbrakes, releasing
2016	02	06	119309	Road freight engineers (local and	0	0	Handbrakes, other
2017	10	03	937944	Yard conductors and yard foreme	0	0	Handbrakes, releasing
2015	07	18	GC0715001	Road freight engineers (through f	0	0	Handbrakes, applying
2015	06	24	GC0615003	Yard engineers	0	0	Handbrakes, releasing
2016	08	10	160802	Carmen (freight)	0	0	Handbrakes, releasing
2015	09	08	1000132015	Yard engineers	0	0	Handbrakes, releasing
2017	01	04	MT0117001	Road freight engineers (through f	0	0	Handbrakes, applying
2015	03	25	15032502	Yard conductors and yard foreme	0	0	Handbrakes, applying
2015	12	30	118777	Road freight conductors (local an	0	0	Handbrakes, releasing
2016	05	16	120573	Road freight conductors (local an	0	0	Handbrakes, releasing
2015	07	25	MT0715008	Road freight engineers (through f	0	0	Handbrakes, releasing
2016	08	30	IN16083003	Road freight engineers (local and	0	0	Handbrakes, applying
2016	08	27	0816LK035	Road freight engineers (through f	0	0	Handbrakes, applying
2016	06	18	000160664	Road freight brakemen and flagm	0	0	Handbrakes, releasing
2015	09	03	1000263656	Road freight conductors (local an	0	0	Handbrakes, applying
2016	08	08	A12016	Road freight conductors (through	0	0	Handbrakes, releasing
2015	11	04	201501	Transportation, train and engine (	0	0	Handbrakes, releasing
2015	01	14	837918	Road freight engineers (local and	0	0	Handbrakes, applying
2017	05	22	125353	Road freight conductors (through	0	0	Handbrakes, applying
2017	06	20	0617LK029	Road freight conductors (through	0	0	Handbrakes, releasing
2015	08	03	0815LK003	Yard brakemen and yard helpers	0	0	Handbrakes, applying
2017	08	23	126382	Road freight engineers (local and	0	0	Handbrakes, other
2017	02	17	PR0217008	Road freight conductors (through	0	0	Handbrakes, applying
2017	10	18	NW1017011	Yard conductors and yard foreme	0	0	Handbrakes, applying
2017	09	14	0917ES010	Gang or section foreman	0	0	Handbrakes, applying
2017	11	15	HL1117012	Yard brakemen and yard helpers	0	0	Handbrakes, releasing
2016	03	20	119843	Road freight conductors (local an	0	0	Handbrakes, applying
2017	01	09	1317	Yard conductors and yard foreme	0	0	Handbrakes, releasing
2015	01	23	E2015JAN1I	Road freight conductors (through	0	0	Handbrakes, releasing
2016	03	18	119793	Yard brakemen and yard helpers	0	0	Handbrakes, applying
2016	09	05	0916PC002	Remote Control Locomotive Ope	0	0	Handbrakes, applying
2015	08	04	15080401	Road freight engineers (local and	0	0	Handbrakes, applying
2016	03	15	882370	Road freight conductors (local an	0	0	Handbrakes, releasing
2015	04	14	0415DV004	Road freight conductors (through	0	0	Handbrakes, releasing
2015	08	14	I422015	Yard conductors and yard foreme	0	0	Handbrakes, releasing
2016	07	01	0716DV023	Carmen (freight)	0	0	Handbrakes, releasing

Appendix E.2 – Employee-On-Duty Casualty Reports

Employee-on-duty casualties that occurred while getting on or off railcars before or after applying or releasing handbrakes. (2015-2017)

1. In January 2015, after releasing the handbrake, an employee descending from a box car stepped on a large rock and injured his foot.
2. In November 2015, after taking off hand brakes, a conductor descending from a freight car lost his footing straining his shoulder.
3. In November 2015, after setting a handbrake, an employee setting stepping off a car slipped and fell onto the rail injuring his shoulder.
4. In December 2015, after setting the handbrake, an employee stepping off the side of a railcar rolled his ankle.
5. In January 2016, a conductor getting off a railcar after tying a handbrake rolled his ankle and sprained it.
6. In May 2016, after releasing brakes, a yard brakeman/helper improperly stepped off the side ladder of the railcar pulled his left shoulder.
7. In June 2016, an employee stepping down from a railcar after applying a handbrake rolled his ankle and sprained it.
8. In July 2016, after releasing the brake, an employee dismounting from a railcar tore a tendon/cartilage in his lower leg.
9. In March 2017, a conductor moving from a side ladder to an end ladder to secure the handbrake slipped off the ladder injuring his lower back.
10. In June 2017, after applying a handbrake, an employee stepping off of a railcar twisted his ankle and broke 2 ankle bones.
11. In July 2017, after releasing the handbrake, a conductor was getting off a boxcar and fell backwards hurting his ankle.

Appendix E.3 – Injuries While Conducting Inspections and Walking on Track

Walking Track

According to FRA casualty data, every year hundreds of freight railroad workers are injured while walking "on, beside, or between track" or "alongside on track equipment." The following table presents the number of such reportable incidents for 2011 through 2017 and makes clear that there is exposure.

Freight Railroad Worker Casualties on Track

Year	Total Incidents	Bending, stooping	Stepped on	Walking
2011	335	25	6	304
2012	240	20	4	216
2013	312	30	5	276
2014	338	24	11	303
2015	281	21	4	256
2016	258	20	4	234
2017	315	20	7	288

Although the information in the FRA casualty reports cannot be used to ascertain how many injuries occurred while conducting freight air brake tests, information in some of the narrative statements was sufficient to identify the following relevant examples of injuries that occurred during a "walking" air brake test.

- In January 2017, a carman was performing a brake test on an outbound train when the ballast shifted causing him to fall and injure his shoulder resulting in180 days of missed work. (IC, incident number 911740).
- In April 2017, a conductor walking along ballast while conducting an air test at night lost his balance and fell. (KCS, incident number 17042302).
- In separate occasions in 2014 and 2015, conductors were assaulted while walking trains as part of air brake tests conducted at night. Together the injuries resulted in 132 days of missed work. (CRSH incident 111618, August 2014 and KCS incident 15081402 in August 2015).
- In September 2014, a conductor walking a brake test hit his head on a railcar. (Texas Pacifico Transportation Limited, incident number 091420142).
- In November 2011, a conductor walking an air brake test injured his knee. (MRL, incident number 2011161).

Reducing the number of brake inspections would clearly reduce the exposure to injuries such as these.

Bending, Stooping or Stepping on Objects

In addition to exposure to injury while simply "walking" on track, there is exposure while "bending or stooping" or "stepping on objects" on track, such as when conducting air brake tests. For instance, in March 2011, a yard brakeman/helper conducting a walking brake test bent over to look at brake equipment on a car and hurt his back causing him to be on restricted duty for at least 28 days. (SCXF, incident number 20110301).

Freight Inspections

Some employee injuries occur while conducting freight inspections. FRA employee casualty data for 2011 through 2017 contains reports for 74 injuries to train and engine crew and carmen that occurred while "inspecting" freight cars locomotives and trains; opening or closing angle cocks; or uncoupling air hoses on yard and siding track. These injuries are exclusive of those reported to have occurred while "walking," "bending or stooping," or "stepping on objects." Circumstances vary and include employees being struck by objects, and overexertion, as well as slips, trips and falls, among others. According to the reports, these injuries resulted in 3,259 lost work days and 615 restricted duty days.

Content-type: text/html

FROM FORM FRA F 6180.55A

CASUALTY RECORD			
RAILROAD:	Kansas City Southern Rwy Co. [KCS]	INCIDENT NUMBER:	17042302
DATE:	04 /23 /2017	TIME:	11:00PM
STATE:	Missouri	COUNTY:	CASS
TYPE PERSON:	Worker on duty - employee	AGE:	61
EMPLOYEE JOB:	Road freight conductors (through freight)		
INJURY:	Sprain/strain, thumb/finger		
DAYS ABSENT:	0	DAYS RESTRICTED:	0

EMPLOYEES TESTED FOR ALCOHOL USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEES TESTED FOR DRUG USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEE TERMINATION / PERMANENT TRANSFER:	NO
EXPOSURE TO HAZARDOUS MATERIAL:	NO
FRA FORM 6180-54 FILED:	NO
FRA FORM 6180-57 FILED:	NO

CIRCUMSTANCES	
PHYSICAL ACT:	Walking
EVENT:	Lost balance
RESULT:	Ground
CAUSE:	Environmental
LOCATION	
SITE:	Siding
ON TRK EQP:	Freight train - standing
WHERE:	Alongside of on-track equipment on ground
NARRATIVE	THE EMPLOYEE WAS WALKING ALONG BALLAST IN THE DARK TO PERFORM AN AIR TEST, WHILE HOLDING HIS LANTERN . HE FELL ON UNEVEN FOOTING , INJURING HIS THUMB.

FROM FORM FRA F 6180.55A

CASUALTY RECORD			
RAILROAD:	Illinois Central RR Co. [IC]	INCIDENT NUMBER:	911740
DATE:	01 /22 /2017	TIME:	11:15AM
STATE:	Tennessee	COUNTY:	SHELBY
TYPE PERSON:	Worker on duty - employee	AGE:	46
EMPLOYEE JOB:	Carmen (freight)		
INJURY:	Rupture/tear, shoulder		
DAYS ABSENT:	180	DAYS RESTRICTED:	0

EMPLOYEES TESTED FOR ALCOHOL USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEES TESTED FOR DRUG USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEE TERMINATION / PERMANENT TRANSFER:	NO
EXPOSURE TO HAZARDOUS MATERIAL:	NO
FRA FORM 6180-54 FILED:	NO
FRA FORM 6180-57 FILED:	NO

CIRCUMSTANCES	
PHYSICAL ACT:	Walking
EVENT:	Slipped,fell,stumbled,etc. due to object,ballast, spike, etc.
RESULT:	Ballast, stones, etc.
CAUSE:	Human factor
LOCATION	
SITE:	Yard
ON TRK EQP:	Freight train - standing
WHERE:	Alongside of on-track equipment on ground
NARRATIVE	EMPLOYEE WAS PERFORMING A BRAKE TEST ON AN OUTBOUND TRAIN WHEN HE STEPPED OUT FROM THE CARS AND THE BALLAST SHIFTED ROLLING HIS ANKLE CAUSING HIM TO FALL.

Content-type: text/html

FROM FORM FRA F 6180.55A

CASUALTY RECORD			
RAILROAD:	Kansas City Southern Rwy Co. [KCS]	INCIDENT NUMBER:	15081402
DATE:	08 /14 /2015	TIME:	2:20AM
STATE:	Louisiana	COUNTY:	CALCASIEU
TYPE PERSON:	Worker on duty - employee	AGE:	29
EMPLOYEE JOB:	Road freight conductors (through freight)		
INJURY:	Bruise/contusion, multiple		
DAYS ABSENT:	104	DAYS RESTRICTED:	0

EMPLOYEES TESTED FOR ALCOHOL USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEES TESTED FOR DRUG USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEE TERMINATION/PERMANENT TRANSFER:	NO
EXPOSURE TO HAZARDOUS MATERIAL:	NO
FRA FORM 6180-54 FILED:	NO
FRA FORM 6180-57 FILED:	NO

CIRCUMSTANCES	
PHYSICAL ACT:	Walking
EVENT:	Assaulted by other
RESULT:	Ground
CAUSE:	Outside caused (e.g., assaulted/attacked)
LOCATION	
SITE:	Siding
ON TRK EQP:	Did not involve ontrack/other equipment
WHERE:	Alongside of on-track equipment on ground
NARRATIVE	EMPLOYEE WAS WALKING AROUND THE TRAIN AT THE SIDING AS PART OF A BRAKE TEST WHEN HE REPORTS THAT TWO MEN ATTACKED HIM.

FROM FORM FRA F 6180.55A

CASUALTY RECORD			
RAILROAD:	Texas Pacifico Transportation Limit	INCIDENT NUMBER:	091420142
DATE:	09 /14 /2014	TIME:	11:00PM
STATE:	Texas	COUNTY:	TOM GREEN
TYPE PERSON:	Worker on duty - employee	AGE:	25
EMPLOYEE JOB:	Road freight conductors (local and way freight)		
INJURY:	Bruise/contusion, forehead		
DAYS ABSENT:	0	DAYS RESTRICTED:	2

EMPLOYEES TESTED FOR ALCOHOL USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEES TESTED FOR DRUG USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEE TERMINATION / PERMANENT TRANSFER:	UNK/NA
EXPOSURE TO HAZARDOUS MATERIAL:	NO
FRA FORM 6180-54 FILED:	NO
FRA FORM 6180-57 FILED:	NO

CIRCUMSTANCES	
PHYSICAL ACT:	Walking
EVENT:	Ran into on-track equipment
RESULT:	Other (describe in narrative)
CAUSE:	Environmental
LOCATION	
SITE:	Yard
ON TRK EQP:	Freight train - standing
WHERE:	Alongside of on-track equipment on ground
NARRATIVE	CONDUCTOR WAS WALKING A CLASS ONE AIR TEST WHEN TALL WEEDS GOT IN HIS FACE, MOVED HIS HEAD AND HIT H IS HEAD (TOP OF FOREHEAD) ON A RAILCAR. HAS A SMALL BUMP ABOUT ONE INCH IN DIAMETER.

Content-type: text/html

FROM FORM FRA F 6180.55A

CASUALTY RECORD			
RAILROAD:	Kansas City Southern Rwy Co. [KCS]	**INCIDENT NUMBER:**	15081402
DATE:	08 /14 /2015	**TIME:**	2:20AM
STATE:	Louisiana	**COUNTY:**	CALCASIEU
TYPE PERSON:	Worker on duty - employee	**AGE:**	29
EMPLOYEE JOB:	Road freight conductors (through freight)		
INJURY:	Bruise/contusion, multiple		
DAYS ABSENT:	104	**DAYS RESTRICTED:**	0

EMPLOYEES TESTED FOR ALCOHOL USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEES TESTED FOR DRUG USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEE TERMINATION/PERMANENT TRANSFER:	NO
EXPOSURE TO HAZARDOUS MATERIAL:	NO
FRA FORM 6180-54 FILED:	NO
FRA FORM 6180-57 FILED:	NO

CIRCUMSTANCES	
PHYSICAL ACT:	Walking
EVENT:	Assaulted by other
RESULT:	Ground
CAUSE:	Outside caused (e.g., assaulted/attacked)
LOCATION	
SITE:	Siding
ON TRK EQP:	Did not involve ontrack/other equipment
WHERE:	Alongside of on-track equipment on ground
NARRATIVE	EMPLOYEE WAS WALKING AROUND THE TRAIN AT THE SIDING AS PART OF A BRAKE TEST WHEN HE REPORTS THAT TWO MEN ATTACKED HIM.

Content-type: text/html

FROM FORM FRA F 6180.55A

CASUALTY RECORD			
RAILROAD:	Montana Rail Link [MRL]	INCIDENT NUMBER:	2011161
DATE:	11 /29 /2011	TIME:	4:10PM
STATE:	Montana	COUNTY:	PARK
TYPE PERSON:	Worker on duty - employee	AGE:	52
EMPLOYEE JOB:	Road freight engineers (through freight)		
INJURY:	Sprain/strain, knee		
DAYS ABSENT:	0	DAYS RESTRICTED:	0

EMPLOYEES TESTED FOR ALCOHOL USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEES TESTED FOR DRUG USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEE TERMINATION/PERMANENT TRANSFER:	NO
EXPOSURE TO HAZARDOUS MATERIAL:	NO
FRA FORM 6180-54 FILED:	NO
FRA FORM 6180-57 FILED:	NO

CIRCUMSTANCES	
PHYSICAL ACT:	Walking
EVENT:	Slipped, fell, stumbled, other
RESULT:	Other (describe in narrative)
CAUSE:	Human factor
LOCATION	
SITE:	Yard
ON TRK EQP:	Freight train - standing
WHERE:	Beside track
NARRATIVE	WALKING AIRTEST ON M LAUMIS1 29A, STEPPED ON WATER BOTTLE WHILE INPSECTING RAIL CAR AND TWISTED RIGH T KNEE.

FROM FORM FRA F 6180.55A

CASUALTY RECORD			
RAILROAD:	South Central Florida Express, Inc.	INCIDENT NUMBER:	20110301
DATE:	03 /01 /2011	TIME:	9:30PM
STATE:	Florida	COUNTY:	PALM BEACH
TYPE PERSON:	Worker on duty - employee	AGE:	23
EMPLOYEE JOB:	Yard brakemen and yard helpers		
INJURY:	Sprain/strain, upper back		
DAYS ABSENT:	0	DAYS RESTRICTED:	28

EMPLOYEES TESTED FOR ALCOHOL USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEES TESTED FOR DRUG USE:	NONE REPORTED
NUMBER OF POSITIVE TESTS:	
EMPLOYEE TERMINATION / PERMANENT TRANSFER:	UNK/NA
EXPOSURE TO HAZARDOUS MATERIAL:	NO
FRA FORM 6180-54 FILED:	NO
FRA FORM 6180-57 FILED:	NO

CIRCUMSTANCES	
PHYSICAL ACT:	Bending, stooping
EVENT:	Repetitive motion - other (describe in narrative)
RESULT:	Ground
CAUSE:	Undetermined
LOCATION	
SITE:	Yard
ON TRK EQP:	Other equipment (explain in narrative)
WHERE:	Beside track
NARRATIVE	EMPLOYEE WAS PERFORMING DUTIES AS YARD HELPER. WHILE WALKING BRAKE TEST HE BENT OVER TO LOOK AT BRAK E EQUIPMENT ON CAR AND FELT A PAIN IN HIS UPPER BACK. EMPLOYEE IS STILL ON RESTRICTED DUTY UNTIL 3/2 8/2011 HIS NEXT SCHEDULE APPOINTMENT.