Register. This action is not a ''major rule'' as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Part 180

Environmental protection, Administrative practice and procedure, Agricultural commodities, Pesticides and pests, Reporting and recordkeeping requirements.

Dated: November 10, 2015.

Susan Lewis,

Director, Registration Division, Office of Pesticide Programs.

Therefore, 40 CFR chapter I is amended as follows:

PART 180—[AMENDED]

■ 1. The authority citation for part 180 continues to read as follows:

Authority: 21 U.S.C. 321(q), 346a and 371.

■ 2. In § 180.629:

■ a. Add alphabetically the commodity ''Hop, dried cones'' to the table in paragraph (a).

■ b. Remove the commodities ''Cotton, gin byproducts,'' and ''Cotton, undelinted seed'' from the table in paragraph (d).

The addition reads as follows:

§ 180.629 Flutriafol; tolerances for residues.

(a) * * *

Commodity	Parts per million
* * *	* *
Hop, dried cones	20
* * *	* *

* * * * *

[FR Doc. 2015–29462 Filed 11–17–15; 8:45 am]

BILLING CODE 6560–50–P

DEPARTMENT OF TRANSPORTATION

Pipeline and Hazardous Materials Safety Administration

49 CFR Parts 171, 172, 173, 174, and 179

[Docket No. PHMSA–2012–0082 (HM–251)]

RIN 2137–AE91

Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains

AGENCY: Pipeline and Hazardous Materials Safety Administration (PHMSA), Department of Transportation (DOT).

ACTION: Response to appeals.

SUMMARY: On May 8, 2015, the Pipeline and Hazardous Materials Safety Administration, in coordination with the Federal Railroad Administration (FRA), published a final rule entitled ''Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains,'' which adopted requirements designed to reduce the consequences and, in some instances, reduce the probability of accidents involving trains transporting large quantities of Class 3 flammable liquids. The Hazardous Materials Regulations provide a person the opportunity to appeal a PHMSA action, including a final rule. PHMSA received six appeals regarding the final rule, one of which was withdrawn. This document responds to the five remaining appeals submitted by the Dangerous Goods Advisory Council (DGAC), American Chemistry Council (ACC), Association of American Railroads (AAR), American Fuel & Petrochemical Manufacturers (AFPM), and jointly the Umatilla, Yakama, Warm Springs, and Nez Perce tribes (Columbia River Treaty Tribes) and the Quinault Indian Nation (Northwest Treaty Tribes).

DATES: November 18, 2015.

ADDRESSES: You may find information on this rulemaking and the associated appeals (Docket No. PHMSA–2012–0082) at the Federal eRulemaking Portal: *http://www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: Ben Supko, (202) 366–8553, Standards and Rulemaking Division, Pipeline and Hazardous Materials Safety Administration or Karl Alexy, (202) 493–6245, Office of Safety Assurance and Compliance, Federal Railroad Administration, 1200 New Jersey Ave. SE., Washington, DC 20590.

SUPPLEMENTARY INFORMATION:

Table of Contents of Supplementary Information

I. Background

Under 49 CFR 106.110–106.130,[1] a person may appeal a PHMSA action, including a final rule. Appeals must reach PHMSA no later than 30 days after the date PHMSA published the regulation. On May 8, 2015, PHMSA, in coordination with FRA, published a final rule entitled ''Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains'' (HM–251, 80 FR 26644) (the final rule). The final rule adopted requirements designed to reduce the consequences and, in some instances, reduce the probability of, accidents involving trains transporting large quantities of flammable liquids. The final rule defines certain trains transporting large volumes of flammable liquids as ''high-hazard flammable trains'' (HHFT) [2] and regulates their operation in terms of enhanced tank car designs, speed restrictions, braking systems, and routing. In response to the final rule, PHMSA received six appeals, one of which was withdrawn. The five active appeals were submitted by the DGAC, ACC, AAR, AFPM, and jointly the Columbia River Treaty Tribes and the Northwest Treaty Tribes.

Section 106.130 requires PHMSA to notify those who appeal, in writing, of the action on the appeal, within 90 days after the date that PHMSA published the action being appealed. Based on the final rule's publication date of May 8, 2015, PHMSA was required to provide a response or notice of delay by August 6, 2015. On August 6, 2015, PHMSA posted a notice of delay on its Web site and subsequently published that notice in the **Federal Register** on August 10, 2015 (Notice 15–14; 80 FR 47987).[3]

This document summarizes and responds to the appeals of the DGAC,

[1] All references to sections of the regulations in this document refer to title 49 CFR.

[2] HHFT ''means a single train transporting 20 or more loaded tank cars of a Class 3 flammable liquid in a continuous block or a single train carrying 35 or more loaded tank cars of a Class 3 flammable liquid throughout the train consist.'' § 171.8.

[3] *http://www.phmsa.dot.gov/pv_obj_cache/pv_obj_id_79961459E55D0ADB8FF510CF4A93EC93E3A00000/filename/Notice_No_15_14_Delay_in_Appeals.pdf*

ACC, AAR, AFPM, and jointly the Columbia River Treaty Tribes and the Northwest Treaty Tribes. PHMSA has consolidated the appeals and structured this document to address the content of the appeals by topic area. The topic areas include (1) Scope of Rulemaking; (2) Tribal Impacts and Consultation; (3) Information Sharing/Notification; (4) Testing and Sampling Programs; (5) Retrofit Timeline and Tank Car Reporting Requirements; (6) Thermal Protection for Tank Cars; and (7) Advanced Brake Signal Propagation Systems. In each section, PHMSA summarizes the pertinent appeals on the topic area, by appellant, and then provides PHMSA and FRA's response to the appeals on that topic area. The document concludes with a summary of further actions in response to the appeals.

II. Response to Appeals

A. Scope of Rulemaking

Dangerous Goods Advisory Council

DGAC expresses concern that the definition of ''HHFT'' as adopted in the final rule would subject manifest trains [4] to the applicable additional requirements for HHFTs. DGAC contends that shippers cannot know if tank cars they offer to a carrier will be assembled into a manifest train that meets the definition of HHFT, triggering requirements for those tank cars to meet the enhanced standards the final rule establishes. Additionally, DGAC states that at the time of pick-up, railroads cannot make this determination either. DGAC expects that the inability of both shippers and carriers to determine if a future manifest train will be an HHFT will necessitate approximately 40,000 additional DOT Specification 111 (DOT–111) tank cars to be retrofitted to the DOT Specification 117R (DOT–117R) requirements or replaced with the new DOT Specification 117 (DOT–117) tank cars under the final rule. DGAC believes that the definition of HHFT in the final rule is harmfully broad and should be revised to limit its applicability to railroad operations only and not to determine a tank car specification.

DGAC also states that both the term and definition for a ''high-hazard flammable unit train'' (HHFUT) [5] were not proposed in the NPRM. DGAC believes the addition of a new definition for HHFUT is unnecessary and requests that the definition be eliminated.

DGAC also believes that speed restrictions in the final rule should apply only to crude oil and ethanol trains. It states speed restrictions on all flammable liquids may cause delays in rail service for other rail operations, which could cause significant safety impacts. DGAC opines that more time in transit, more or longer trains, and more overall congestion could cause more incidents.

DGAC also states that the scope of the final rule is not harmonized with applicable Canadian regulations. While it believes Canada has taken a ''commodity-based approach'' to the phase-out of legacy DOT–111 tank cars and corresponding retrofit timeline, it states that the U.S. approach is based on classification and packing group. DGAC believes that a commodity-based approach, addressing crude oil and ethanol, makes the most sense because it would address the material being transported in unit trains from a reasonable risk approach. DGAC also continues to encourage PHMSA, FRA, and Transport Canada (TC) to better identify the root causes of crashes and derailments involving these flammable liquids.

In summary, DGAC contends that the applicability of the final rule should be limited to the transportation of crude oil and ethanol trains, which, it says, was the stated intention of the rule. DGAC argues that, if the Department wishes to pursue enhanced tank car standards and operational requirements for other Class 3 (flammable liquid) materials, it should do so in a separate rulemaking.

American Chemistry Council

ACC requests that PHMSA revise the final rule to ensure that the requirement to retrofit existing tank cars applies only to cars carrying crude oil and ethanol. Other than tank cars transporting crude oil or ethanol, ACC states that the preamble and the Regulatory Impact Analysis (RIA) show that PHMSA's final rule did not intend to require retrofits of most tank cars transporting other flammable liquids.

ACC requests ''that the HHFT definition be reserved for regulations that apply to railroad train operations, not to tank car design.'' They assert that the HHFT definition should not trigger design standards that would apply to most tank cars intended to contain Class 3 flammable liquids. ACC does not contest the application of the HHFT concept to operational controls, such as establishing speed limits or braking requirements.

Furthermore, like DGAC, ACC contends that the final rule will necessitate that approximately 40,000 [6] additional DOT–111 tank cars either be retrofitted to meet the DOT–117R requirements or be replaced with the new DOT–117 tank cars. ACC suggests that this is in contrast to the stated focus on crude oil and ethanol. ACC echoes DGAC, stating that the shipper has no control over how railroads pick up cars and assemble manifest trains. While chemical shippers can, and often do, tender fewer than 20 tank cars loaded with flammable liquids at a time, there is no certainty that those chemicals will always be on a manifest train with fewer than 35 tank cars loaded with a flammable liquid. ACC asserts that the final rule does not align with the increased risk of derailment associated with unit trains and notes that flammable liquid chemicals are not shipped in unit trains. For that reason, ACC considers the HHFT definition to be overly broad and not aligned with the increased risk of derailment associated with unit trains. ACC urges that the scope be clarified so that the final rule will apply to crude oil unit trains, citing the relevant discussion in the Notice of Proposed Rulemaking. See 79 FR 45040. ACC indicates that because even a single tank car loaded with a Class 3 (flammable liquid) material tendered by one of its members may be placed in an HHFT, all tank cars intended to contain Class 3 (flammable liquid) materials will have to meet the design criteria set forth in the final rule. Furthermore, ACC explains that after publication of the final rule, railroads explicitly told ACC members that they will not manage manifest train operations to avoid triggering the regulatory requirements of the HHFT definition.

ACC contends that removing the retrofitting requirements for Class 3 flammable liquids that are not crude oil or ethanol would alleviate shop capacity problems and provide greater harmonization with TC's analogous retrofit schedule. ACC contends that PHMSA's adherence to using packing group, rather than to using risk, severely

[4] A ''manifest train'' means a freight train with a mixture of car types and cargoes.

[5] HHFUT ''means a single train transporting 70 or more loaded tank cars containing Class 3 flammable liquid.'' § 171.8.

[6] The members of ''the [Railway Supply Institute] RSI Committee on Tank Cars . . . collectively build more than ninety-five percent (95%) of all new railroad tank cars and own and provide for lease over seventy percent (70%) of railroad tank cars operating in North America.'' On page 56 of those comments, in Table C–3, RSI estimated that at the end of 2015 tank car fleets will contain the following:

- 87,507 tank cars (of all types) used for the movement of crude oil;
- 27,899 tank cars (of all types) in ethanol service; and
- 39,122 tank cars that carry flammable liquids other than crude oil or ethanol.

complicates the implementation of the rules in the two countries. ACC states that some of the Class 3 flammable liquid materials that will be affected by the final rule are classified in Packing Group (PG) I, so those tank cars will reach PHMSA's deadlines for retrofit or replacement before the tank cars that carry either ethanol or PG II crude oil. ACC states that the different prioritizations chosen by TC and by PHMSA will exacerbate conflicts over tank car shop space.

In sum, ACC believes that the scope of the final rule will inadvertently affect nearly 40,000 legacy DOT–111 tank cars that transport Class 3 flammable liquids that were not accounted for in the accompanying RIA. ACC states that because a shipper cannot know how a carrier will assemble a train, the possibility that a shipper's tank car will be placed into an HHFT will force all shippers of Class 3 materials to retrofit or purchase tank cars to meet the DOT–117R or DOT–117 specification. ACC believes that, coupled with a retrofit timeline that does not match the Canadian timeline, the final rule will fail to properly address the risks associated with hazardous materials offered and transported in unit trains.

Association of American Railroads

AAR contests the scope of the final rule because it permits shippers to continue to package Class 3 flammable liquid materials in tank cars that do not meet the new DOT–117 tank car standard. AAR states that PHMSA has created two pools of tank cars, those that meet the heightened standard for HHFTs and those that do not. As a result, AAR asserts, shippers may continue to offer Class 3 flammable liquid materials in DOT–111 tank cars as long as the DOT–111 is not placed in an HHFT. According to AAR, this places an unjustified burden on the railroads to continuously analyze the composition of each train transporting Class 3 flammable liquid materials in DOT–111 tank cars. AAR claims that PHMSA's argument, that through fleet management the railroads can avoid this issue, is baseless. AAR believes that PHMSA should harmonize with Canada by banning the use of DOT–111 tank cars for transporting any Class 3 flammable liquid materials. By failing to harmonize with Canada in this respect, AAR contends that the U.S. market will become flooded with legacy DOT–111 tank cars, which will further exacerbate the fleet management challenges U.S. railroads will face to construct trains to avoid meeting the definition of an HHFT.

To support its appeal, AAR submitted waybill data from its subsidiary Railinc showing numbers of flammable liquid shipments tendered in smaller groups of cars that do not by themselves meet the definition of an HHFT. Data from the first quarter of 2015 illustrate that 37,000 cars of flammable liquids (other than crude oil and ethanol) were tendered in blocks of 20 cars or fewer. During the same period, 37,576 tank cars of other flammable liquids (other than the 25,009 tank cars of crude oil or 39,956 tank cars of ethanol) were tendered in groups of fewer than 35 cars. According to AAR, had the final rule been in effect, a total of 102,541 cars of flammable liquids could have moved in existing DOT–111s.[7] AAR contends that PHMSA should specify a sunset date for discontinuing the use of DOT–111 tank cars for hazardous materials not in an HHFT.

PHMSA and FRA Response

In regards to DGAC's, ACC's, and AAR's appeals on the scope of the final rule, we disagree with those appellants' assertions and maintain that the method we determined to apply the new regulatory requirements and the regulatory analysis to support those decisions were conducted through careful consideration of the risks flammable liquids pose and the comments received during the rulemaking process. The position these appellants are taking in the appeals is based on anecdotal evidence and an interpretation of tank car fleet numbers that exaggerates the scope of the rulemaking. While we respect the argument that both shippers and carriers of Class 3 flammable liquids by rail will face new challenges in the wake of these regulations, we maintain that they are capable of working together to comply with the requirements established by the final rule.

DGAC, AAR, and ACC contend that both shippers and carriers cannot predict whether tank cars offered for transportation will be placed in a train set meeting the definition of an HHFT. By relying on this rationale, DGAC and ACC contend that the final rule will require nearly 40,000 tank cars to be replaced with the new DOT–117 tank car or be retrofitted to the DOT–117R requirements because a tank car possibly placed in an HHFT. These numbers are based on the 2015 Railway Supply Institute (RSI) fleet forecast predicting the number of DOT–111 tank cars transporting Class 3 flammable liquids (other than crude oil and ethanol). The solution they urge is limiting the scope of the rule to crude oil and ethanol.

We disagree. We believe that limiting the scope of the rulemaking to crude oil and ethanol would not align with the intent and applicability of the Hazardous Materials Regulations (HMR; 49 CFR parts 171–180). The HMR are risk based and focus on the hazards presented during transportation. Focusing only on a subset of flammable liquids is a short-sighted regulatory approach and has the potential to lead to inconsistencies and safety concerns in the future. PHMSA's goal is to provide regulatory certainty that addresses the risks posed by all HHFTs.

In the NPRM, PHMSA proposed a definition of an HHFT with a threshold of 20 cars in a train. This aligned with AAR's "Key Train" definition in its circular OT–55–N, indicating the railroads currently recognize that trains of this make-up represent a high risk.[8] Additionally, the NPRM tied the applicability of the new tank car specification to the HHFT definition. In response to the NPRM, PHMSA received numerous comments suggesting that both shippers and carriers would be placed in an untenable position because it is impossible to determine when tank cars would be in an HHFT. To address commenters' concerns, we revised the definition of HHFT to 20 cars in a block or 35 throughout the train. The risk-based equivalency of 20 cars in a block and 35 cars throughout the train is calculated in the RIA on page 323.[9] PHMSA based this change on calculations finding that 20 cars in a block is roughly equivalent to 35 cars placed throughout a train, as well as AAR's comments noting that such a change would alleviate concerns about manifest trains operating in High Threat Urban Areas (HTUAs).

Similarly, PHMSA denies DGAC's request to remove the definition of HHFUT. Again, PHMSA developed the definition based on an analysis of comments received on the NPRM and careful cost analysis. While the definition of HHFUT was not expressly proposed in the NPRM, the NPRM did propose requirements for enhanced brake signal propagation systems for all trains meeting the definition of HHFT. PHMSA believes that the HHFUT definition captures the subset of HHFTs that represent the highest risk and where the most benefits from ECP

[7] The detailed figures AAR provided can be found in its appeal under Docket No. PHMSA–2012–0082.

[8] *http://www.boe.aar.com/CPC-1258%20OT-55-N%208-5-13.pdf.* Note that the current circular is OT–55–O: *http://www.boe.aar.com/CPC-1312%20OT-55-O%201.27.2015.pdf.*

[9] PHMSA–2012–0082–3442

braking will be gained and that the definition is within the scope of the NPRM proposals.

Regarding the appellants' concerns that the tank car specification is linked to the number of cars in the train, PHMSA understands that railroads have significant fleet management programs in place. On page 221 of the RIA, PHMSA details the agency's understanding of railroads' capability to conduct fleet management. We are aware that both shippers and carriers have fleet managers to predict or control whether a given tank car will be used in manifest train service or unit train service. Despite these fleet management capabilities and programs, the appellants indicate they have little control over the number of cars loaded with Class 3 (flammable liquid) materials in a train. To argue that neither party can predict a train's composition—particularly when transporting hazardous materials—implies an alarming lack of awareness in appellants' own operations. Indeed, train crews are actually required to maintain a document that reflects the current position in the train of each rail car containing a hazardous material. *See* § 174.26.

AAR contends that all cars transporting flammable liquids should be retrofitted to the DOT–117R requirements. On the other hand, the shippers contend no cars, other than those transporting crude oil and ethanol, should be retrofitted. PHMSA believes the final rule strikes the correct balance by requiring retrofits of all tank cars in crude oil and ethanol service plus the 354 tank cars in PG III service by estimating roughly 10 percent of trains transporting PG III commodities might meet the HHFT definition, and thus, that 10 percent of the cars would require retrofitting.[10] Further, PHMSA expects that the railroads will manage the assembly of loaded tank cars and manage the classification of trains to exclude tank cars from HHFTs that do not meet the new DOT–117 and DOT–117R tank car specifications.

Therefore, as previously stated, the estimated number of tank cars in PG III flammable liquid service that would be used to make up HHFTs, and hence have to meet the new requirements, is 354 tank cars, not the nearly 40,000 DGAC and ACC allege. The costs presented in the RIA were based on an analysis of public waybill data and include the costs of retrofitting the 354 tank cars mentioned above. The analysis showed that no other flammable liquid commodities of any packing group—other than crude oil or ethanol—were shipped in quantities that would trigger the HHFT requirements.

Further, our analysis of the waybill data indicated that far fewer than 10 percent of PG III cars would be affected by the HHFT definition. Nevertheless, to be conservative, we assumed roughly 10 percent of trains transporting PG III commodities might meet the HHFT definition, therefore 10 percent of the cars would require retrofitting. After adjusting for retirement of some cars and accounting for Canada's fleet share, we calculated that 10 percent of the remaining cars equaled the 354 cars that we incorporated into the cost analysis.

ACC's assertion that nearly 40,000 tank cars would have to be retrofitted or replaced to meet the enhanced tank car standards due to their possible placement in an HHFT is grossly exacerbated by the railroads advising ACC that they will not manage fleets to avoid their shipments becoming subject to the new regulations. PHMSA does not agree that this is a valid basis for revising the scope of the final rule's requirements. We explicitly limited the reach of the final rule to trains transporting large quantities of flammable liquids, and defined HHFT to exclude typical manifest trains that do not transport the large quantities of flammable liquids. For railroads to state that they will not manage train sets undermines the risk-based goal of the final rule to exclude commodities not typically shipped in large quantities.

DGAC, ACC, and AAR also contend that the U.S. packing group approach is not harmonized with Canada's commodity-based approach to the phase out of DOT–111 tank cars and corresponding retrofit timeline. Again, we disagree. By designating DOT–111 tank cars for phase out by packing group, we are aligned with Canada. While the Canadian approach expressly states crude oil and ethanol, we chose to use PG I, which encapsulates crude oil, and PG II, which encapsulates ethanol. DOT and TC were in constant communication while developing the respective rulemaking actions.

AAR also appealed the rule for not specifying a sunset date for the continued use of DOT–111 tank cars for all Class 3 flammable liquids. AAR contends that this will cause the non-retrofitted Canadian fleet to flood the U.S. market, making it increasingly difficult to manage the operational complexities of two pools of tank cars. Even if AAR's contention is true, we chose to authorize the continued use of DOT–111 tank cars for the transportation of hazardous materials not in an HHFT because it would have been cost prohibitive to prohibit all Class 3 flammable liquids in DOT–111 tank cars. As stated in the RIA and final rule preamble, we believe that we appropriately addressed the risk of continued use of such cars by prohibiting the use of legacy DOT–111 tank cars for HHFT service. For these reasons, the DGAC, ACC, and AAR appeals on the scope of the final rule are denied.

B. Tribal Impacts and Consultation

Columbia River Treaty Tribes and Northwest Treaty Tribes

The Columbia River Treaty Tribes and the Northwest Treaty Tribes (''Treaty Tribes'') submitted an appeal to the Secretary on June 5, 2015. The Treaty Tribes' arguments suggest that by omitting formal tribal consultation, DOT did not follow Executive Order (E.O.) 13175 and DOT guidance. By way of remedy, the Treaty Tribes urge PHMSA to ''reopen a notice and comment period for the Tank Car Rule [and] carry out tribal consultations on all aspects of the Tank Car Rule.''

The Treaty Tribes' appeal lays out various arguments for tribal consultation under E.O. 13175 and DOT guidance. First, the appeal argues that PHMSA erred in concluding that the rulemaking ''does not significantly or uniquely affect tribes.'' Second, the Treaty Tribes' appeal argues that the final rule ''impose[s] substantial direct effects or compliance costs'' on Indian tribal governments. Third, the Treaty Tribes' appeal finds fault with PHMSA's discussion of its ''superseding preemption'' authority for hazardous materials regulations in the final rule's discussion of tribal consultation.

PHMSA and FRA Response

We appreciate the comments the Treaty Tribes and other Tribes provided to the NPRM, which are addressed in the final rule. However, PHMSA respectfully disagrees with the Treaty Tribes appellants and maintains that the appellants' concerns were addressed during the rulemaking process. Overall, the comments from Indian tribal governments to the NPRM expressed concerns about the potential environmental, economic, and safety impacts of crude oil train derailments on tribal lands. PHMSA responded to those concerns by adopting a final rule designed to reduce the severity of and/or prevent derailments in an effort to improve public safety and protection of the environment. PHMSA and FRA conducted an extensive and thorough review of all comments received, and considered the concerns of all

[10] PHMSA–2012–0082–3442 at p. 15.

stakeholders, including Indian tribal governments. In the final rule, PHMSA summarized and discussed the comments of our stakeholders, including in-depth discussions of the comments of Indian tribal governments, and provided justifications for our adopted proposals and for those proposals we did not adopt.

Executive Order 13175

E.O. 13175 establishes processes for when a Federal agency is ''formulating and implementing policies that have tribal implications.'' [11] This E.O., re-affirmed by President Obama in a November 5, 2009, ''Tribal Consultation'' memorandum, [12] states that ''[p]olicies that have tribal implications'' refers to ''regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.'' In addition, under DOT Order 5301.1 and other DOT tribal policies, components of DOT must consult with Indian tribal governments before taking any actions that ''significantly or uniquely'' affect them.[13] In the final rule, PHMSA discussed E.O. 13175, and reasonably concluded that the rulemaking did not: (1) Have tribal implications; (2) significantly or uniquely affect tribes; or (3) impose substantial direct effects or compliance costs on tribal governments.[14]

Significant or Unique Tribal Effects

The Treaty Tribes argue that consultation was required because of alleged unique and substantial effects of the final rule on the Treaty Tribes and their interests. Specifically, the Treaty Tribes' appeal discusses the unique history of their fishing rights and states, ''[h]ad PHMSA consulted with the Northwest treaty tribes, it would have learned of the tribal and federal interests in their collective usual and accustomed fishing areas and potential impacts resulting from the proposed Tank Car Rule.'' The Treaty Tribes discussed their concerns with the rail routing analysis discussion of environmentally sensitive areas. Though the Treaty Tribes' fishing rights may be unique, the trigger for the consultation requirement is a federal action that has a significant or unique effect upon tribes. Here, no such federal action exists. The enhanced safety provisions in the final rule, are designed to decrease the likelihood and severity of derailments and resulting spills, in an effort to improve public safety and protect the environment. The requirements adopted in the final rule do not apply directly to tribes. They apply to railroads and hazardous materials shippers. Any potential effect on tribes would take place several stages removed from the federal action of the final rule.

PHMSA believes that these regulations work to the benefit of all communities and areas affected by the rail transportation of flammable liquids. For this reason, PHMSA affirms that the impact of the final rule is not ''significant'' or ''unique'' to communities or resources under the jurisdiction of tribal governments.

Relationship Between Tribes and United States

The Treaty Tribes argue that the rule affects the relationship between tribes and the U.S., triggering the consultation provisions of E.O. 13175. The NPRM requested comments on whether the railroad's notification requirements should proceed through tribal emergency response commissions. This proposal was not adopted in the final rule. The tribes argue that this impacted the relationship between the tribes and the federal government. However, the information-sharing provisions would have directed the railroads to share information with the tribes. Although this may or may not affect the tribes' relationships with the railroads, it would not affect the relationship between tribes and the federal government.

As further discussed in the Notification Section of this document, the Treaty Tribes asked that PHMSA reinstitute the notice provisions of the Secretary's May 7, 2014 Emergency Order. DOT has kept in place the May 2014 Emergency Order that requires railroads to provide Bakken crude oil information directly to State Emergency Response Commissions (SERCs). PHMSA plans to revisit these provisions in an upcoming rulemaking and has pledged to maintain the Emergency Order until such a rulemaking codifying these provisions is published. Accordingly, for the reasons previously stated, this rulemaking has not affected the relationship between tribes and the federal government.

Preemption/Distribution of Power and Responsibilities

Finally, the Treaty Tribes argue that ''PHMSA asserts the preemption provisions of 49 U.S.C. 5126 and 20106 supersede'' the need for tribal consultation. This is an inaccurate characterization of PHMSA's position. In the final rule, we state that ''PHMSA has determined that this rulemaking does not significantly or uniquely affect tribes, and does not impose substantial direct effects or compliance costs on such governments.'' Although the rule referenced the preemption authorities of PHMSA and FRA, the basis for the decision to forgo tribal consultation was the lack of direct tribal impacts. In this case, PHMSA reasonably determined that a consultation with tribal officials was not necessary under the guidelines of E.O. 13175 and DOT policies.

Remedy

Moreover, the Treaty Tribes' appeal asked that PHMSA ''reopen a notice and comment period for the Tank Car Rule [and] carry out tribal consultations on all aspects of the Tank Car Rule.'' Independent of the arguments discussed above, PHMSA and FRA suggest that granting this aspect of the Treaty Tribes' appeal would result in further rulemaking proceedings that would frustrate implementation of the final rule's safety advancements and potentially delay safety improvements due to regulatory uncertainty.

Outreach

While PHMSA does not believe E.O. 13175 required a consultation for the HHFT rulemaking, PHMSA recognizes the importance of government-to-government relationships with tribes. To this end, PHMSA has expanded its tribal outreach efforts. For example, in March 2015, DOT representatives met with representatives from the Prairie Island Tribe to discuss tribal concerns with the movement of Bakken crude oil through their community. In August 2015, PHMSA representatives attended the Northwest Tribal Emergency Management Council's annual meeting in Spokane, Washington. This provided an opportunity to speak directly with tribal emergency management leaders and emphasize the importance of effective tribal and federal cooperation. In addition, PHMSA provides hazardous materials emergency preparedness grant funding to tribes to carry out planning and training activities to ensure that

[11] ''Consultation and Coordination with Indian Tribal Governments,'' 65 FR 67249 (Nov. 9, 2000).

[12] ''Memorandum on Tribal Consultation,'' 74 FR 57881.

[13] ''U.S. Dept. of Transportation, Office of the Secretary of Transportation, Department of Transportation Programs, Policies, and Procedures Affecting American Indians, Alaska Natives, and Tribes,'' Order No. DOT 5303.1 (Nov. 16, 1999).

[14] Although PHMSA did not explicitly invoke DOT Order 5303.1, PHMSA analyzed the applicability of tribal consultation using the Order's applicability to actions that ''significantly or uniquely'' affect Indian tribal governments.

State, local, and tribal emergency responders are properly prepared and trained to respond to hazardous materials transportation incidents. For these reasons, the Treaty Tribes appeal to reopen a notice and comment period for the final rule and carry out tribal consultations on all aspects of the rule is denied.

C. Information Sharing/Notification

Columbia River Treaty Tribes and Northwest Treaty Tribes

The Treaty Tribes also appealed the notification provisions of the final rule. They have stated, ''On its face, the Tank Car Rule could be read to abandon the Emergency Order and cut back on both emergency responder and tribal access to train route and emergency response information.'' According to the Treaty Tribes, the notification provisions adopted in the final Rule ''weaken the notification scheme in a number of ways'' since the information provided is ''far less informative'' and its dissemination is limited to ''those with a need-to-know in an anti-terrorism context.'' For these reasons, the Treaty Tribes asked that PHMSA reinstitute the notice provisions of the Secretary's May 7, 2014 Emergency Order.

PHMSA and FRA Response

We agree with the Treaty Tribes. As discussed in the Treaty Tribes' petition, on May 7, 2014, the Secretary issued an Emergency Order in Docket No. DOT–OST–2014–0067 (''May 2014 Emergency Order'' or ''Order''). That Order requires each railroad transporting in commerce within the U.S. 1,000,000 gallons or more of Bakken crude oil in a single train to provide certain information in writing to the SERCs for each State in which it operates such a train. The Order requires railroads to provide: (1) The expected volume and frequency of affected trains transporting Bakken crude oil through each county in a State; (2) the routes over which the identified trains are expected to operate; (3) a description of the petroleum crude oil and applicable emergency response information; and (4) contact information for at least one responsible party at the railroad. In addition, the Order requires that railroads provide copies of notifications made to each SERC to FRA upon request and to provide SERCs updated notifications when there is a ''material change'' in the volume of affected trains. Subsequent to issuing the Order, in August 2014, PHMSA published the HHFT NPRM, which, in part, proposed to codify and clarify the requirements of the Order, and requested public comment on the proposal.

Based on the comments received to the NPRM, along with PHMSA and FRA's analysis of the issues involved in the HHFT final rule, PHMSA did not adopt the notification requirements of the proposed rule. PHMSA determined expansion of the existing route analysis and consultation requirements of § 172.820 to include HHFTs was the best approach to ensure emergency responders and others involved with emergency response planning and preparedness would have access to sufficient information regarding crude oil shipments moving through their jurisdictions to adequately plan and prepare from an emergency response perspective. Thus, the final rule expanded the applicability of § 172.820 to HHFTs. As part of these additional safety and security planning requirements, the final rule requires rail carriers operating HHFTs to comply with § 172.820(g), which requires that railroads ''identify a point of contact on routing issues and provide that contact's information (including his or her name, title, phone number and email address):

(1) State and/or regional Fusion Centers that have been established to coordinate with state, local and tribal officials on security issues which are located within the area encompassed by the rail carrier's rail system; and (2) State, local, and tribal officials in jurisdictions that may be affected by a rail carrier's routing decisions and who directly contact the railroad to discuss routing decisions.

Thus, these notification provisions *require* railroads to proactively provide this contact information to ''State and/or regional Fusion Centers'' and ensure that ''state, local, and tribal officials . . . who directly contact the railroad to discuss routing decisions'' are provided the same information. Tribal officials can also coordinate with Fusion Centers to obtain this information. At the time of the final rule's publication, the notification provisions discussed above were set to supersede the May 2014 Emergency Order, once codified notification provisions are fully implemented (*i.e.,* March 31, 2016).

Subsequent to publication of the final rule, PHMSA received feedback from stakeholders (including tribal authorities) expressing intense concern about the Department's decision to forgo the proactive notification requirements of the Order and in the NPRM. Generally, these stakeholders expressed the view that given the unique risks posed by the frequent rail transportation of large volumes of flammable liquids, including Bakken crude oil, PHMSA should not eliminate the proactive information sharing provisions of the Order and rely solely on the consultation and communication requirements in existing § 172.820. These stakeholders expressed concern that the final rule may limit the availability of emergency response information by superseding the May 2014 Emergency Order.

In response to these concerns and after further evaluating the issue within the Department, in a May 28, 2015 notice (Notice), PHMSA announced that it would extend the Order indefinitely, while it considered options for codifying the disclosure requirement permanently.[15] Furthermore, on July 22, 2015, FRA issued a public letter instructing railroads transporting crude oil that they must continue to notify SERCs of the expected movement of Bakken crude oil trains through individual states.[16]

The Treaty Tribes' appeal reiterates these concerns about the codified notification provisions, stating that they ''cut back on both emergency responder and tribal access to train route and emergency response information.'' In light of the May 28, 2015 PHMSA Notice and other DOT communications, PHMSA believes that we have adequately addressed the Treaty Tribes' concerns about the information sharing provisions of the final rule and the Treaty Tribes' explicit support for the notification procedures in the May 2014 Emergency Order. Since DOT has already re-examined the decision to allow the final rule to supersede the May 2014 Emergency Order and determined that the Order will remain in full force and effect until the agency considers options for codifying it on a permanent basis, PHMSA believes we have been responsive to this aspect of the Treaty Tribes' appeal. In accordance with the Notice, PHMSA continues to consider options for codifying the central aspects of the Order permanently in a future rulemaking action. The treaty tribes will have the opportunity to comment on these future regulatory proposals in the course of that rulemaking proceeding. In addition, PHMSA is seeking opportunities similar to attending the Northwest Tribal Emergency Management Council's meeting held in Spokane, Washington, to engage further with the tribal communities affected by our regulations. Continued opportunities to reach out directly to tribal emergency

[15] *http://www.phmsa.dot.gov/hazmat/phmsa-notice-regarding-emergency-response-notifications-for-shipments-of-petroleum-crude-oil-by-rail.*

[16] *http://hazmatship.com/images/stories/pdf2/2015_07_22_Notification+FINAL.pdf?mc_cid=f88dda2d67&mc_eid=1fbd28d3ea.*

management leaders will improve the cooperation between PHMSA and the tribes.

D. Testing and Sampling Program

Dangerous Goods Advisory Council

DGAC does not believe the sampling and testing program adopted in § 173.41 is justified or warranted and requests that we eliminate this provision. DGAC asserts that the classification sampling and testing program would not change the tank car selection or emergency response guidebook responses. DGAC also expresses concern that sampling during transportation could create a safety risk as closed packages are re-opened.

If PHMSA does not repeal the program, DGAC requests additional clarification. Specifically, DGAC requests that we revise the final rule to include a definition for ''unrefined petroleum-based products,'' consistent with the discussion in the preamble. *See* 80 FR 26704. DGAC further requests additional guidance on the provision in § 173.41(a)(2), which states ''and when changes that may affect the properties of the material may occur . . . ,'' and additional guidance on the recordkeeping requirements.

Finally, DGAC requests that we provide a delayed compliance date of March 31, 2016 for implementation of the requirements in § 173.41 if the requirement is maintained. This date aligns with the delayed compliance date of March 31, 2016, provided for a rail carrier to complete the initial planning process required in § 172.820. DGAC believes that a delayed compliance date is necessary because ''affected parties have certain testing procedures in place, the development, distribution and training of affected hazardous materials employees in a more 'formal' program by July 7, 2015 is not reasonable.''

PHMSA and FRA Response

In regards to DGAC's appeal on the sampling and testing program, PHMSA maintains that that sampling and testing program is justified and necessary. In its safety recommendation, R–14–6, the National Transportation Safety Board (NTSB) recognized the importance of requiring ''shippers to sufficiently test and document the physical and chemical characteristics of hazardous materials to ensure the proper classification, packaging, and record-keeping of products offered in transportation.'' The entire premise of the HMR is built around the shipper's responsibility to properly classify a hazardous material. Under § 171.2(e), ''No person may offer or accept a hazardous material for transportation in commerce unless the hazardous material is properly classed, described, packaged, marked, labeled, and in condition for shipment as required or authorized by applicable requirements of this subchapter.'' Proper classification ensures the correct regulatory provisions are being followed both when the material is initially offered and during downstream shipments. The HMR requires correct classification and communication, even when the shipper has the option to use a more stringent packaging. Classification also includes ensuring that all correct hazard classes are identified. Many provisions in the HMR also require the shipper to have knowledge about the material that exceeds the information provided by the shipping papers or Emergency Response Guidebook (ERG). For example, it is forbidden to offer ''a material in the same packaging, freight container, or overpack with another material, the mixing of which is likely to cause a dangerous evolution of heat, or flammable or poisonous gases or vapors, or to produce corrosive materials'' under § 173.21(e). For petroleum crude oil, the shipper may additionally need to identify properties such as corrosivity, vapor pressure, specific gravity at loading and reference temperatures, and the presence and concentration of specific compounds (*e.g.,* sulfur), depending on the different packaging options selected and the conditions under which the material is being offered. Considering the challenges posed by materials with variable composition and potentially variable properties, such as crude oil, providing criteria for sampling and testing of unrefined petroleum-based products is a critical first step in safe transportation of these materials. Proper classification and the assignment of a packing group for a hazardous material determines what packaging is appropriate for that material.

Industry also recognizes the importance and unique challenges of properly classifying petroleum crude oil. The American Petroleum Institute spearheaded efforts to develop an industry standard for the classification of petroleum crude oil, resulting in the development of American National Standards Institute (ANSI)/American Petroleum Institute (API) Recommend Practices (RP) 3000, ''Classifying and Loading of Crude Oil into Rail Tank Cars.'' This API standard went through a public comment period during its development in order to be designated as an American National Standard.

We also disagree that providing more specificity or guidance to the program is necessary. The term ''unrefined petroleum-based products'' is clear as written. ''Petroleum'' is used throughout the HMR. The term ''unrefined'' is sufficiently clear in the context of the petroleum industry. Therefore, the term ''unrefined petroleum-based products'' would be any material that is petroleum based, and has not undergone refinement. For example, heat treating to reduce vapor pressure or to remove the dissolved gases in crude oil so that it may be transported for refinement would not meet the American Fuel & Petrochemical Manufacturers (AFPM) or other industry definitions of ''refining.'' [17]

We disagree that additional guidance is necessary, as the requirement in § 173.41(e) to document and maintain records of the sampling and testing program is clear. In both the NPRM and final rule, we stated respectively that we are not proposing or adopting a requirement for the retention of test results. Therefore, the documentation in paragraph (e) must describe the program itself.

We also disagree that the requirements of when to sample are unclear or present a safety risk. The sampling and testing program is only required prior to the offering of the material for transportation. This is further clarified in § 173.41(a) (2), which states, ''Sampling prior to the initial offering of the material for transportation and when changes that may affect the properties of the material occur (*i.e.,* mixing of the material from multiple sources, or further processing and then subsequent transportation).'' Therefore, sampling would be required before the initial offering for transportation, and in some situations when the material is re-offered for transportation. The examples in the description provide flexibility to accommodate changing industry practices, and should not be replaced with a prescriptive list. Overall, API RP 3000 provides a more specific example of how the sampling requirements of § 173.41 may be met. As we stated in the final rule,

> Shippers must continue to use the testing methods for classification of flammable liquids outlined in § 173.120 and flammable gases in § 173.115. However, API RP 3000 is otherwise consistent with the sampling program requirements in § 173.41(a)(1)-(6) and may be used to satisfy these adopted sampling provisions. Furthermore, voluntary use of API RP 3000 provides guidance for compliance with these provisions, but still

[17] *http://www.afpm.org/The-Refinery-Process/*

allows flexibility for meeting requirements through other methods.

See 80 FR 26706.

Finally, we disagree that a delayed compliance date of March 31, 2016 should be provided for implementation of the requirements in § 173.41 to provide shippers adequate time to implement changes for training and documentation. The date established for rail routing requirements allows for the collection of six months of data and completion of a risk assessment. The sampling and testing requirements are simply a mechanism to document existing regulatory requirements for proper classification of energy products. In addition, the Department issued Emergency Order DOT–OST–2014–0025 on February 25, 2014 (EO 25), which was subsequently revised and amended on March 6, 2014.[18] EO 25 required those who offer crude oil for transportation by rail to ensure that the product is properly tested and classified in accordance with federal safety regulations. Further, EO 25 required that all rail shipments of crude oil that are properly classed as a flammable liquid in PG III material be treated as a PG I or II material. The Amended EO 25 also authorized PG III materials to be described as PG III for the purposes of hazard communication. The Amended EO 25 differs from the original in that it prohibits persons who ordinarily offer petroleum crude oil for shipment as UN 1267, petroleum crude oil, Class 3, PG I, II, or III from reclassifying such crude oil with the intent to circumvent the requirements of this Amended Order. As discussed in the final rule, the sampling and testing program requirements superseded EO 25 and made it no longer necessary. By extending the compliance date, PHMSA would create a safety gap which was previously covered under EO 25 as amended. For these reasons, the appeal submitted by DGAC on the sampling and testing program is denied.

E. Retrofit Timeline and Tank Car Reporting Requirements

American Fuel and Petrochemical Manufacturers

AFPM supports PHMSA and FRA's plan to establish a reporting obligation on retrofit progress and shop capacity. However, it asserts that the final rule's reporting requirement is insufficient to accomplish its intended purpose. In its appeal, AFPM recommends a substantial expansion of reporting timelines and requested data to ensure all types of tank car retrofits are evaluated and not just non-jacketed DOT–111 legacy tank cars in Packing Group I service.

PHMSA and FRA Response

In regards to AFPM's appeal, PHMSA believes that the final rule's established industry reporting obligation on retrofit progress and shop capacity will achieve the stated goals. The first phase of the retrofit timeline includes a January 1, 2017, deadline for retrofitting non-jacketed DOT–111 tank cars in PG I service. Owners of non-jacketed DOT–111 tank cars in PG I service for use in an HHFT who are unable to meet the January 1, 2017, retrofit deadline specified in § 173.243 (a)(1), are required to submit a report by March 1, 2017, to the Department. Groups representing tank car owners may submit a consolidated report to the Department in lieu of individual reports from each tank car owner. The report must include the following information regarding retrofitting progress:

- The total number of tank cars retrofitted to meet the DOT–117R standard;
- The total number of tank cars built or retrofitted to meet the DOT–117P standard;
- The total number of DOT–111 tank cars (including those built to CPC–1232 industry standard) that have not been modified;
- The total number of tank cars built to meet the DOT–117 standard; and
- The total number of tank cars built or retrofitted to a DOT–117, 117R or 117P that are electronically controlled pneumatic (ECP) brake ready or ECP brake equipped.

In developing the retrofit schedule, PHMSA and FRA examined the available shop capacity, the comments received, historical performance of the rail industry dealing with retrofit requirements, and the potential impacts associated with the retrofit schedule. The final rule also stated the Department could request additional reports with reasonable notice if necessary to facilitate the timely retrofits of those tank cars posing the highest risk. PHMSA and FRA are confident that the adopted reporting requirements are sufficient in that they will achieve the Department's stated goals. In addition, the Department may request additional reports as needed to verify industry progress toward retrofitting requirements. For the reasons stated, the appeal submitted by AFPM on the retrofit and tank car reporting of the final rule is denied.

F. Thermal Protection for Tank Cars

Association of American Railroads

In its appeal, AAR requests that we require enhanced thermal protection when new or retrofitted tank cars are built with jackets. That thermal protection would be beyond what is required in the final rule and allow further tank car survivability in a pool fire scenario. AAR asserts that PHMSA should require an enhanced thermal blanket with thermal conductivity no greater than 2.65 BTU per inch, per hour, per square foot, and per degree Fahrenheit at a temperature of 2000 F, ± 100F.

PHMSA and FRA Response

In regards to AAR's appeal, PHMSA believes AAR has not presented a compelling basis for amending this aspect of the final rule. The final rule requires tank cars in HHFTs to have thermal protection that meets the requirements of § 179.18, while also having a pressure relief device that complies with § 173.31. Section 179.18 establishes a performance standard that requires a tank to be able to withstand a pool fire for at least 100 minutes and a torch fire for at least 30 minutes. The 100-minute standard is intended to provide time for emergency response and accident assessment. Section 173.31 requires a reclosing pressure relief device for any tank car transporting a Class 3 (flammable liquid). Further, the pressure relief device ''must be made of materials compatible with the lading, having sufficient flow capacity to prevent pressure build-up in the tank to no more than the flow rating pressure of the pressure relief device in fire conditions as defined in Appendix A of the AAR Specifications for Tank Cars.'' *See* § 179.15. AAR contends that PHMSA should adopt a different standard. Specifically, AAR argues that PHMSA should require that all tank cars transporting flammable liquids be equipped with a thermal blanket that allows for thermal conductivity not to exceed 2.65 BTU per inch, per hour, per square foot, and per degree Fahrenheit at a temperature of 2,000 °F, ± 100 °F. Using the standard AAR proposes would potentially provide 800 minutes of protection in a pool fire. Further, it contends that PHMSA should require that all tank cars transporting flammable liquids be equipped with a pressure relief device that will allow the release of only enough quantity to prevent a thermal tear.

[18] The March 6, 2014 ''Amended and Restated Emergency Restriction and Prohibition Order (Amended Order)'' sought to clarify the original February 25, 2014 Order and superseded and replaced it in its entirety. *See http://www.phmsa.dot.gov/pv_obj_cache/pv_obj_id_D03C7A1E859361738D791378144472BF368F0200/filename/Amended_Emergency_Order_030614.pdf.*

AAR's suggestion that its thermal blanket proposal would provide greater protection than that currently HMR requirements, raises a number of concerns. First, the units for thermal conductivity are incorrect. Although it may seem counter-intuitive, increasing the thickness of the thermal blanket using the method provided by AAR, would actually increase the thermal conductivity and decrease the performance of the thermal protection system. Additionally, there is no experiential or experimental basis for AAR's use of a 2,000 °F fire temperature. The current requirement of a 1,600 °F pool fire temperature is based on experimental data from a pool fire test involving liquefied petroleum gas (LPG). The experimental data, including the heat flux, were normalized over the entire surface of the car to represent total engulfment in a pool fire.

Furthermore, it is unclear whether existing thermal blankets would meet AAR's proposed standard or even whether AAR's proposed standard requiring thermal blankets would provide an added benefit compared to that prescribed by PHMSA. AAR provided no evidence that requiring a thermal blanket and specifying the properties of the material will enhance safety. AAR asserts that, based on AFFTAC modeling, a tank car equipped with a thermal blanket can withstand a pool fire for hours, or in some circumstances, a tank car could indefinitely withstand a pool fire without failure and loss of lading. PHMSA and FRA have two concerns with this assertion. As an initial matter, while thermal conductivity is an input to the AFFTAC model, the model does not account for degradation of the material in a pool fire, and therefore it assumes the thermal conductivity is constant for the duration of a pool fire. However, if the thermal protection begins to degrade soon after 100 minutes (assuming constant properties) the results AFFTAC would be overly optimistic. Additionally, AFFTAC is not capable of analyzing a lading comprised of more than two components, such as crude oil. It has been suggested that two component materials can be used as a surrogate for crude oil. Before the design of the AAR proposed thermal protection system meeting the DOT–117 standard can be approved, the accuracy of using a two-component system as a surrogate for crude oil must be demonstrated.

Assuming that AAR's proposal would add time—an assumption that, at this point, is unsupported by any objective data—AAR has not provided any evidence that there is a practical benefit to extending the time period before the lading is released from a location other than from the pressure relief device. The primary intent of the 100-minute requirement in the HMR is to provide first responders time to assess the accident and initiate remedial actions such as evacuating an area. There has not been any evidence presented that the current requirement is insufficient for achieving these goals.

Finally, AAR's proposal sets up a technical standard, but it does not necessarily establish a minimum time requirement for survivability of the tank car. The potential for variability under the AAR proposal would present added uncertainty. In developing a first response strategy, a minimum level of certainty is needed, and controlling the anticipated variables is vital. This information is vital for first responders, who need to have a reasonable understanding of the expected time frame after an event to establish an effective plan that can be executed within the baseline time that is available.

PHMSA addressed its rationale for choosing a minimum standard that requires a DOT–117/DOT–117R tank car to withstand a pool fire for at least 100 minutes and torch fire for at least 30 minutes in the preamble to the final rule. *See* 80 FR at 26670–26671. It noted that AAR's T87.6 Task Force agreed that a survivability time of 100 minutes in a pool fire should be used as a benchmark for adequate performance. Additionally, the 100-minute pool fire baseline is consistent with the current federal regulations for pressure cars transporting Class 2 materials, and serves as the existing performance standard for pressure tank cars equipped with a thermal protection system. PHMSA also noted that the 100-minute pool fire baseline had been ''established to provide emergency responders with adequate time to assess a derailment, establish perimeters, and evacuate the public as needed, while also giving time to vent the hazardous material from the tank and prevent an energetic failure of the tank car.'' *See* 80 FR 26671.

With respect to pressure relief devices, which are designed to work in conjunction with the thermal protection system, PHMSA noted that there was widespread concurrence among commenters for a redesigned pressure relief device for DOT–117 cars. *See* 80 FR at 26670–26671. The simulations performed by PHMSA indicated that a reclosing pressure relief valve was of primary importance, because when a tank car is exposed to a pool fire the PRD will maintain a low pressure in the tank and potentially extend the time before a tank car will thermally rupture. PHMSA also determined that high-flow capacity, reclosing pressure relief devices can be acquired reasonably in the market and they can be installed on new or retrofitted tank cars. These factors support the performance standard chosen by PHMSA for pressure relief devices. For the reasons stated, the appeal submitted by AAR on thermal protection in the final rule is denied.

G. Advanced Brake Signal Propagation Systems

Dangerous Goods Advisory Council

DGAC appeals to PHMSA requesting the elimination of the electronically controlled pneumatic (ECP) brake requirement from the final rule. The DGAC appeal rests on three main arguments. First, DGAC agrees with the comments AAR and API submitted in response to the NPRM. Second, DGAC argues that the timeline for implementing the ECP brake requirement is inconsistent with the retrofit schedule adopted in the final rule and will require ECP brakes to be installed before retrofitting. Third, DGAC alleges there will be difficulties moving HHFUTs from Canada to the U.S. because Canada has not adopted similar ECP brake requirements.

PHMSA and FRA Response

In regards to DGAC's appeal to eliminate the ECP brake requirement, PHMSA maintains that the retrofit schedule is consistent, and that the final rule will not lead to the unspecified difficulties that concern DGAC. Further, we respectfully disagree with DGAC's first argument agreeing with AAR and API regarding this issue. PHMSA considered the comments submitted by AAR and API in drafting the final rule, and as part of its appeal, DGAC provides no new information to support the AAR and API comments. Rather than restating its previous analysis here, PHMSA directs DGAC to the discussion of the ECP brake requirement in the final rule and the RIA. *See* 80 FR 26692–26703; and RIA, p. 33–36, 207–278.

The timeline for implementing ECP brakes on HHFUTs will allow the rail industry to orderly schedule retrofits to comply with both requirements. PHMSA expects that in most instances ECP brakes will be installed when a tank car is sent to the service shop for retrofitting. This will avoid taking the car out of service more than is absolutely necessary. There should be no need to install ECP brakes on a tank car prior to retrofitting the car. The RIA to the final rule estimates that about

60,000 tank cars will need to have ECP brakes installed. Approximately one-third of these cars will be new construction, and the remaining cars, retrofits. *See* RIA, pp. 218–219.

Currently, crude oil and ethanol are the only Class 3 (flammable liquids) transported in trains that fall within the HHFUT definition. These hazardous materials are assigned to a packing group based on their flash point and initial boiling point. Crude oil may be classified as PG I (high danger), PG II (medium danger), or PG III (low danger).

The final rule requires all DOT–111 and non-jacketed CPC–1232 tank cars used in PG I service to be retrofitted no later than April 1, 2020.[19] PHMSA anticipates that the industry will apply a vast majority of those retrofitted cars to unit train service because it makes financial sense to put the first retrofitted cars to use in the highest priority service. The ECP brake requirement for an HHFUT transporting at least one tank car loaded with PG I material does not go into effect until January 1, 2021. Therefore, PHMSA and FRA believe that the combination of new cars and retrofits completed prior to January 1, 2021, should be sufficient to supply the tank cars needed to operate in ECP brake mode. *See* RIA, p. 146.

The same is true with respect to those HHFUTs transporting loaded tank cars of ethanol or crude oil not in PG I service. These trains must operate in ECP brake mode as of May 1, 2023, when traveling in excess of 30 mph. The final rule requires retrofitting all DOT–111 tank cars used in PG II service no later than May 1, 2023. Non-jacketed CPC–1232 tank cars used in PG II follow closely behind with a retrofit deadline of July 1, 2023. For the reasons stated above, PHMSA reaffirms its position and disagrees that the timeline for implementing the ECP brake requirement is inconsistent with the retrofit schedule adopted in the final rule. *See* RIA, p. 146.

Lastly, PHMSA discussed U.S./Canada harmonization efforts in the final rule. *See* 80 FR 26662. PHMSA recognizes that the transportation of flammable liquids by rail is a cross-border issue. In developing the final rule, U.S. DOT and TC worked closely to ensure that the new tank car standards for HHFTs do not create barriers to movement, but harmonization is not required in every instance. PHMSA and FRA strongly believe that the ECP brake requirement for HHFUTs is an important measure to help protect public safety and the environment in the U.S. That said, PHMSA and FRA carefully considered cross-border issues with respect to ECP braking, particularly when a train is crossing from Canada into the U.S., and provided authorization in the final rule for continued transportation. If an HHFUT without ECP brakes arrives in the U.S. from Canada, that train may continue in transportation at a speed that does not exceed 30 mph. This solution eliminates cross-border barriers to transportation and should alleviate any of the unspecified difficulties that concern DGAC. For these reasons, DGAC's appeal to eliminate the ECP brake requirement of the final rule is denied.

Association of American Railroads

AAR also asks us to eliminate the new ECP brake standard for HHFUTs traveling in excess of 30 mph. AAR contends that PHMSA should remove the ECP brake requirement from the final rule, and provides 10 arguments that purportedly support its position.

PHMSA and FRA Response

In regards to AAR's appeal with respect to ECP braking, AAR's arguments do not present a compelling basis for repealing the ECP brake requirement in the final rule. PHMSA stands by the Final Rule's established two-tiered approach to braking systems that focuses on increasing safety for trains transporting large quantities of flammable liquids. All HHFTs traveling in excess of 30 mph must operate using a two-way end-of-train (EOT) device or a distributed power system. All HHFUTs traveling in excess of 30 mph must operate using ECP brakes. The ECP brake requirement begins on January 1, 2021, for any HHFUT transporting at least one loaded tank car of PG I material. For all other HHFUTs, the ECP brake requirement is mandatory beginning May 1, 2023.

The basis for the ECP brake requirement was thoroughly researched prior to publication of the final rule. ECP brakes allow for shorter stopping distances and reduced in-train forces. In the ECP brake mode of operation, all cars brake simultaneously by way of an electronic signal. ECP brake systems simultaneously apply and release freight car air brakes through a hardwired electronic pathway down the length of the train, and allow the engineer to ''back off'' or reduce the braking effort to match the track grade and curvature, without having to completely release the brakes and having to recharge the main reservoirs before another brake application can be made. These differences in the operation of the two braking systems give ECP brakes several business benefits. Operationally, ECP brakes have the potential to save fuel and reduce emissions, reduce wear and stress on wheels and brake shoes, and provide train engineers greater control on the braking characteristics of trains. From a safety perspective, ECP brakes greatly reduce the risk of runaway trains due to a diminished reservoir air supply, and reduce the probability of an incident by providing 40 to 60 percent shorter stopping distances. ECP brake wiring also provides the train a platform for the gradual addition of other train-performance monitoring devices using sensor-based technology to maintain a continuous feedback loop on the train's condition for the train crew. PHMSA is highly confident that this requirement will minimize the effects of derailments involving HHFUTs by limiting the number of cars involved in the derailment and decreasing the probability of tank car punctures. Indeed, an NTSB study published after PHMSA published the final rule supports the safety basis for ECP brakes, finding that ECP brakes provide better stopping performance than conventional air brakes and distributed power (DP) units in full service and emergency braking applications.[20]

1. North American Experience With ECP Brakes

AAR's initial assertion is that PHMSA ignores the actual experience of North American railroads in operating trains equipped with ECP brakes. It contends that the experience of these railroads demonstrates that ECP brakes are unreliable. Additionally, AAR states that ECP brakes do not function materially better than trains with conventional air brakes that make use of DP and dynamic braking. Finally, AAR claims that neither PHMSA nor FRA made any effort to collect information from railroads about their experiences with ECP brakes and that PHMSA failed to incorporate the data that was gathered into its analysis.

We disagree. In coordination with FRA, PHMSA did consider the experience of North American railroads

[19] Non-jacketed DOT–111 tank cars used in PG I service must be retrofitted by January 1, 2017 (or, under a schedule, not later than January 1, 2018). Jacketed DOT–111 tank cars used in PG I service must be retrofitted by March 1, 2018. Non-jacketed CPC–1232 tank cars used in PG I service must be retrofitted by April 1, 2020.

[20] NTSB recently published the results of its simulation study of train braking as part of its investigation into the December 30, 2013, incident in Casselton, ND, where a crude oil unit train collided with a derailed car resulting in the derailment of 21 tank cars. *See* Train Braking Simulation Study, Renze, K.J., July 20, 2015, at *http://dms.ntsb.gov/public/55500–55999/55926/577439.pdf.*

when we developed the requirement for ECP brakes on HHFUTs that operate in excess of 30 mph. Both the final rule and the RIA discuss at length the North American experience with ECP brakes. *See* RIA, pp. 216–236; 80 FR 26997–26998. The information relied upon by PHMSA and FRA included comments from the railroads and suppliers, reports and papers presented by railroad officials discussing ECP brake effectiveness, and testimony at previous public hearings held by FRA. Examples of comments that PHMSA and FRA relied upon include AAR's comments on dynamic braking and RSI's comments on the costs of installing ECP brakes on newly constructed and retrofitted tank cars. *See* RIA, pp. 216–217, 218, 239, and 262–263.

Examples of reports and presentations from railroad personnel include the following:

- ''Electronically-Controlled Pneumatic (ECP) Brake Experience at Canadian Pacific,'' Wachs, K., et al., which was presented at the 2011 International Heavy Haul Association (IHHA) Conference, in Calgary, AB, Canada. *See* RIA, pp. 216–217, 263, and 267.
- ''Norfolk Southern ECP Brake Pilot Project Update,'' Forrester, J., presented at the 2010 National Coal Transportation Association O & M Committee Meeting in Coeur d'Alene ID. *See* RIA, pp. 236–237.
- ''ECP Perspectives,'' Maryott, D. presented at the 2008 Air Brake Association Proceedings of the 100th Annual Convention and Technical Conference in Chicago, IL. *See* RIA, pp. 236.

Much of the value of these reports, which were initiated and completed outside this rulemaking, was that PHMSA and FRA received hard numbers and data resulting from the direct testing of North American railroad operations using ECP brakes. The data from these reports included information on fleet reductions, rail wear, wheel wear, stop time, restart time, and stopping distances. Additionally, PHMSA and FRA relied on statements at two FRA public hearings held on October 4, 2007, and October 19, 2007, that were held during FRA's rulemaking process establishing ECP brake system standards. The public hearing included comments from Mr. Michael Iden, an official of Union Pacific Railroad Company (UP), who described an example of how regulatory relief from brake inspections on trains with ECP brakes would help to save fuel while also reducing congestion (by allowing an ECP-equipped train to overtake slower trains that require more frequent brake inspections).[21] Based on the totality of the evidence available, PHMSA and FRA unanimously concluded that applying an ECP braking requirement to a limited subset of trains, HHFUTs, is warranted when transporting extremely large quantities of Class 3 (flammable liquids).[22]

AAR relies on a report titled ''Assessment of the Enhanced Braking Requirements in the Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains Final Rule of May 1, 2015'' (hereinafter referred to as the ''Oliver Wyman Report''), which lists a number of purported quotes from interviews with unnamed railroad officials in support of the contention that PHMSA and FRA did not incorporate the railroads' negative comments about ECP brakes into its analysis. These anecdotes (from UP, Canadian Pacific Railway (CP), and CSX Transportation, Inc.) essentially suggest that ECP brakes were tried and abandoned a number of years ago. These statements are not persuasive, as PHMSA and FRA acknowledged in the RIA at pages 223–225 that there may be problems at the outset with using ECP brakes, just as there are with any newer technology. There is evidence that ECP brake technology has advanced since these railroads stopped operating trains using ECP brakes, *see* RIA, pp. 225–226, but there is no discussion in the Oliver Wyman Report about whether these railroads have considered re-adopting ECP brakes in limited circumstances, such as with captive unit train fleets.

The purported quotes in the Oliver Wyman Report from officials of BNSF Railway Company (BNSF) and Norfolk Southern Railway Company (NS), while current, provide conclusions rather than analysis. In the rare instances where the Oliver Wyman Report does provide tangible numbers, there are no references that would allow PHMSA and FRA to research and verify the information and assess its applicability. *See e.g.,* pp. 8, concerning the rate of failures on BNSF. If these railroads have actual data reflecting the real-world effectiveness of ECP brakes in North America, they have not provided it in the course of this appeal or the rulemaking process.[23] Similarly, FRA has not received a written status report from BNSF on the progress of the testing for the 5,000 Mile ECP test train that has been due to the agency since April 2015.[24] Therefore, AAR's unsupported contentions concerning the North American experience with ECP brakes do not present a compelling reason to revisit PHMSA and FRA's ECP brake requirement for HHFUTs on trains traveling in excess of 30 mph.

2. Foreign Experience With ECP Brakes

AAR raises two issues about PHMSA's reliance on international experiences with ECP brakes. First, AAR contends that it was inappropriate for PHMSA to rely on the experiences of Australian and other foreign railroads with ECP brakes. AAR believes the ECP

[21] PHMSA recognizes that Mr. Iden also provided a statement as part of UP's comment to the docket for this rulemaking. *See* PHMSA–2012–0082–2558. In that statement, he restated his caution that ''ECP braking should begin with high-mileage high-utilization cars.'' PHMSA agrees, which is why it has limited ECP braking to the highest use type trains. However, Mr. Iden now maintains that distributed power delivers comparable benefits to ECP brakes. In making this determination, Mr. Iden states that UP came to this conclusion through in-depth examination of event recorders of test trains. UP has not published the data or the analysis upon which this report was based. It did not provide this information to Booz Allen, which was actively collecting ECP brake information at the time of UP's tests, and it did not produce the information to PHMSA or FRA during this rulemaking.

[22] PHMSA's view also is supported by a 2014 presentation prepared by AAR's transportation research and testing organization, the Transportation Technology Center Inc. (TTCI). This presentation has been added to the docket. The TTCI ECP Brakes presentation is informative on the issue of the North American ECP braking experience and provides a distinct counterpoint to AAR's own arguments in this forum against the ECP braking provisions in the final rule. The presentation is broadly consistent with PHMSA's analysis in the RIA, confirming the many of the benefits of ECP brakes while also noting some of the difficulties acknowledged by PHMSA.

[23] The Oliver Wyman Report contends that FRA committed to collect data from ECP brake testing during the past eight years. This statement mischaracterizes FRA's statements. FRA's ECP brake rulemaking contains no such statements. *See* 73 FR 61512. FRA did contract with Booz Allen to collect and analyze ECP brake data, but that contract closed in 2010, and was not renewed largely because the railroads failed to provide data for analysis. Of course, the railroads have been free to provide data to FRA or publish papers expanding and reflecting upon their understanding of the effectiveness of ECP braking since 2010, but—except for the 2011 CP paper referenced earlier—the record is devoid of such documents.

[24] On August 18, 2015, BNSF and NS did make an oral presentation to FRA concerning the 5,000-mile pilot train. However, no written or electronic reports have been provided to the agency for review (the railroads cited the need for legal review) . This oral presentation identified concerns related to unanticipated penalty brake applications and repair times. FRA has not received written documentation to support the oral presentation or assess the integrity of the results and determine the underlying cause of these alleged events (for example, it may be helpful to compare the results to normal ECP-equipped trains that operate 3,500 miles between brake tests or how the pilot train compared to lines where there is more experience handling ECP-equipped trains). But, at least some of the problems BNSF presented orally appear to be ''teething'' issues that should be resolved as railroad personnel servicing the 5,000-mile pilot train along its route become more familiar with ECP brake technology and as equipment to service the train becomes more available.

brake operations in these other countries are dissimilar to operations in the U.S. AAR states this is because the international systems discussed tend to be closed-loop mining railroads that do not interchange with other railroads and rarely break apart the trainsets. Second, AAR claims that PHMSA and FRA mischaracterize the conclusions of the Sismey and Day Report, published in 2014, that conducted a survey of Australian railroads using ECP brakes to gauge their experiences with ECP brakes. *See* ''The ECP Brake—Now it's Arrived, What's the Consensus?,'' Sismey, B. and Day, L., presented to the Conference on Railway Excellence, 2014, Adelaide, Australia. Neither of these issues supports eliminating the ECP brake requirement from the final rule.

PHMSA and FRA believe that AAR's argument overstates the differences between the international ECP brake model and unit trains in the U.S., particularly HHFUTs. As noted on page 220 of the RIA, PHMSA and FRA expect that the limited number of HHFUTs will stay together for an extended period of time to meet the demand for service. The tank cars in an HHFUT are not regularly being switched to different destinations. These types of trains are not acting like a typical manifest train that commonly enters a yard to be broken up and have its cars reclassified and redirected into other trains. Instead, they are making continuous loops to and from the loading and unloading facilities. This is how these trains are currently marketed. *See* RIA, pp. 220, 232–233. The final rule builds off of that model. Of course, there may be facilities that cannot take an entire unit train at once. This may necessitate breaking the train apart for the limited purpose of serving the facility. PHMSA and FRA account for this circumstance by recognizing that U.S. railroads will likely use overlay ECP brake systems. This would allow operations at a facility without using ECP brakes, ensuring a measure of flexibility. Once that service is completed, PHMSA reasonably expects that the cut of tank cars will retake its place in the HHFUT to make its return trip. These similarities make the Australian (and other international experiences) relevant.

The claim that PHMSA mischaracterizes the Sismey and Day Report is surprising in light of PHMSA and FRA's reading of the Oliver Wyman Report. The Oliver Wyman Report cites to selective information from the Sismey and Day Report, which mischaracterizes its findings. To be clear, PHMSA and FRA accurately cite to the Sismey and Day Report in the RIA. *See* pp. 34–36. On page 34 of the RIA, PHMSA and FRA note that the report details how ECP brakes have performed in practice since Australian railroads began using the technology. PHMSA and FRA fully recognize in the RIA that the report highlights the benefits of ECP brakes and the associated challenges experienced by Australian railroads. In summarizing the conclusion of the Sismey and Day report, PHMSA and FRA note that ''[t]he report concludes that the challenges experienced in practice are largely resolved and that there is a business case to expand the use of ECP brakes into intermodal service.'' PHMSA and FRA do not see the basis for AAR's claims given the ''Conclusion'' of the Sismey and Day Report, which is as follows:

> ECP is here to stay and is becoming more widely accepted and understood. There have been issues in the introduction and implementation of ECP brakes which can be categorized as manufacturing/teething issues and unexpected surprises.
>
> These have not been experienced by all operators of ECP brakes. Solutions have now largely been identified to allow them to be managed to the point where their impact on operations is reduced or eliminated.
>
> There is as yet untapped potential for ECP brakes to improve train operations on Australia's rail networks.

Watershed events for the future of ECP brakes and the rail industry:

• Introduction of ECP brakes on unit mineral trains which happened from 2005 onwards.

• Retrofit of ECP brakes on unit mineral trains which are underway in the Pilbara from 2012 onwards.

• The emergence of viable business cases for Introduction of ECP brakes onto intermodal unit trains and onto the wider wagon fleet used in general service.

See p. 30, ''The ECP Brake—Now it's Arrived, What's the Consensus?''.

There is one additional issue raised by AAR through the Oliver Wyman Report that merits discussion. This is the highlighting of purported difficulties experienced by international users who commingled trains using ECP brakes with trains using conventional air brakes. The Oliver Wyman Report claims, based on an anecdotal report of a single unnamed employee, that the former Quebec Cartier Mining Railroad or QCM (now AccelorMittal) has experienced difficulties with operations where three of the company's eight trains are equipped with ECP brakes while the other five trains have conventional brakes. The report claims that severe problems have occurred when trying to pick up bad order cars when some cars are equipped with ECP brakes while others are equipped with conventional air brakes. The Oliver Wyman Report then attributes to the unnamed employee a statement that the railroad is considering standardizing braking using just ECP brakes or just conventional air brakes.

To be clear, the Oliver Wyman Report provides no hard evidence that QCM has instituted a plan to eliminate its fleet of trains equipped with ECP brakes or its trains equipped with conventional air brakes.[25] However, the situation described above with bad ordered cars would not present the same problem for an HHFUT equipped with ECP brakes in the U.S. The QCM uses a stand-alone ECP brake system on its trains. The stand-alone ECP brake system eliminates the ability to revert to conventional air brake mode. PHMSA expects that U.S. railroads will use an overlay ECP brake system, which allows a car to be transported in ECP brake or conventional air brake mode. This was discussed extensively in the RIA. *See* pp. 219–220, 225, and 230.

PHMSA also notes that QCM made a business decision to introduce trains equipped with ECP brakes onto its line in 1998. This means that QCM has voluntarily operated with a mixed allotment of ECP brake trains and conventional air brake trains for about 17 years. If the purported difficulties of maintaining ECP trains along with conventional air brake trains were as severe as the Oliver Wyman Report suggests, then PHMSA and FRA expect that QCM would have abandoned either ECP brakes or conventional air brakes long before June 12, 2015, which is the date of the Oliver Wyman Report.

3. Business Benefits of ECP Brakes

AAR argues that ''PHMSA relied on the purported business benefits of ECP braking as predicted in a 2006 report by Booz Allen Hamilton,'' and did not make an effort to verify whether real-world experience with ECP brakes validated the Booz Allen predictions. It is AAR's view ''that the benefits predicted by Booz Allen nine years ago did not materialize in subsequent field tests in North America and operations in foreign countries.'' Therefore, it states that PHMSA and FRA erred by calculating business benefits based on the Booz Allen analysis. AAR relies on the Oliver Wyman Report to support its contentions, *see* pp. 24–48, but its contentions simply are not supported by the facts. PHMSA and FRA considered a number of sources in addition to the

[25] The Oliver Wyman Report does not state whether QCM would convert to all ECP brakes or all conventional air brakes.

Booz Allen Report to develop the final rule, including comments to the NPRM, reports and presentations analyzing ECP brake operations in North America and abroad, and testimony during two FRA public hearings on ECP brakes.

Fuel Savings: The Oliver Wyman Report states that there are likely some fuel savings, but they are not ''validated.'' The Oliver Wyman Report states that the 5.4 percent fuel savings on CP occurred, but that the actual savings over an entire system would be less, because the terrain over which it realized the 5.4 percent savings was advantageous. The Oliver Wyman Report then states that PHMSA's 2.5 percent estimate of fuel savings, less than half that realized by CP, and half of that predicted by the Booz Allen Report, was arbitrary, with no basis.

As explained in the RIA on pages 216–217, 262–263, and 267, PHMSA and FRA assumed a reduction of more than 50 percent from the real-world CP experience because PHMSA recognized that the terrain where the testing occurred maximized fuel benefits. This was very conservative, and a larger estimate of fuel savings could have been justified. At no point does the Oliver Wyman Report present hard evidence that railroads would experience less fuel savings than the 2.5 percent PHMSA and FRA estimate. Instead, the Oliver Wyman Report offers something from the Sismey and Day Report that stated ''the general feeling was that there may be some fuel savings with ECP braked trains but no one would hazard a guess on the magnitude.'' The Oliver Wyman Report also quotes an unnamed employee from the QCM to support its position. This employee purportedly commented to Oliver Wyman that there had been no fuel consumption benefits from ECP brakes compared to conventional systems. This anecdotal evidence from an unnamed source is directly contradicted by independent published reports that we cited in the final rule about QCM, noting that its ECP-equipped trains had led to a decrease in fuel use of 5.7 percent. *See* 80 FR 26697. This evidence supports the reasonableness of PHMSA and FRA's fuel savings estimate, with the likelihood that any errors were to the conservative side. Even if we accepted the Oliver Wyman Report's unsubstantiated statement that ECP brakes would result in ''some fuel savings,'' the 2.5 percent we used for fuel savings in the final rule is a reasonable estimate of ''some savings.'' Therefore, we decline to reduce that estimate to zero as AAR urges.

Wheel Savings:

The Oliver Wyman Report states at p. 96:

> [w]heel impact load detectors (WILD) have found wheels on ECP brake-equipped trains with defects such as tread build up, flat spots, and wheel shelling. In the current ECP brake operation, these trains are handled as unit trains and are less subject to switching operations, therefore it appears, from BNSF's ECP experience, that higher brake usage is leading to increased wear and stress on wheels than might otherwise be seen on conventional air brake equivalent trains.

The Oliver Wyman Report merely makes the statement above but does not present evidence to support that ECP-equipped trains have experienced more of these types of defects than equivalent unit trains with conventional air brakes operating under the same conditions on the same track. Notwithstanding, some initial increase in wheel wear, such as thermal mechanical shelling, is explainable—and, possibly, expected—during the familiarization phase when new train crews gather knowledge about the braking capabilities of ECP braking. PHMSA and FRA addressed this issue in the RIA on page 217. However, the Oliver Wyman Report does not provide the necessary context for the information to allow PHMSA and FRA to draw any judgments about its statements. To adequately evaluate such reports, it is important to untangle the potential causes so that we can determine whether the reported wheel wear was caused by issues related to ECP braking. The Oliver Wyman Report does not do that. As a result, it is impossible to conclude that the reported wheel wear is caused by ECP braking as opposed to factors related to track conditions or usage.

PHMSA and FRA do note that the phrase ''higher brake usage'' possibly could explain the greater wheel wear found by some ECP brake operations. The wheel wear per unit time per car is higher because the cars tend to operate more miles. The savings in wheel wear, detailed on pages 263–266 of the RIA, are based on car-miles, as explained in the flow assumptions on pages 252–254 of the RIA. There is no evidence to suggest the cars with ECP brakes have more wheel wear per car-mile. As an example, if the cars have more wheel wear per unit of time and are experiencing a 50 percent reduction in wheel wear, that implies the cars are used for more than twice as many miles per car-year as cars not equipped with ECP brakes. PHMSA and FRA believe this is a reasonable inference to draw from the data and notes that it further contradicts other AAR assertions that more ECP-equipped tank cars will be needed. Evidence that ECP-equipped wheel temperatures are more even, as offered in the Oliver Wyman Report, makes it likely that savings per car mile are being realized in ECP-equipped trains. Neither AAR, nor the Oliver Wyman Report, offers any evidence of less wheel savings per car-mile than estimated in the RIA.

The Oliver Wyman Report also states that rail renewal will not be coordinated with wheel maintenance because the tank car maintenance will be the responsibility of the tank car owners, not the railroad. FRA staff, including inspectors with recent employment experience on railroads, are not aware of any efforts to coordinate wheel maintenance with rail renewal on any operating railroads. This seems doubly irrelevant, as the RIA does not estimate rail savings as a quantifiable business benefit, while the Oliver Wyman Report describes a failure to coordinate maintenance in a way that is not current railroad practice.

Brake Inspections: The Oliver Wyman Report contends that North American operations have produced no data to support PHMSA's claim that the overall tank car fleet size can be reduced because cycle times will improve due to longer intervals between brake inspection stops with ECP brake equipment.

The Oliver Wyman Report contention does not comport with reality. Railroads do see advantages from increasing the current 1,000-mile brake inspection distance to 3,500 miles.[26] FRA allowed the longer distance between inspections in its 2008 ECP Brake rule at the request of railroads as an incentive to the railroads to test ECP brake equipment and because of the safety features inherent in ECP brake systems. *See* 73 FR 61512 (Oct. 16, 2008). FRA has recently granted a request from BNSF and NS allowing these railroads to move forward with a pilot program that increases the distance between brake inspections to 5,000 miles on certain ECP-equipped trains. This pilot program allows BNSF and NS to conduct test operations using an ECP-equipped train from the Powder River Basin to Macon, Georgia with only one brake inspection per trip compared to four inspections (one Class I and three Class IA inspections) for the same train operated using conventional brakes. It follows

[26] The recent TTCI ECP Brakes presentation notes that permitting 3,500 miles between brake inspections results in about 50 fewer inspections per year for high-mileage cars. TTCI concluded that the current regulatory relief on brake inspections for trains with ECP brakes is a '' 'reliable' benefit for high mileage cars ($220/car/year),'' with a potential peak of $300/car/year. These estimates are comparable—although slightly less—to the $330/car/year benefits PHMSA estimated.

that if the railroads did not envision a benefit to the decreased frequency of brake inspections, they would not be pursuing the 5,000-mile waiver.

Cycle Times: The Oliver Wyman Report argues that PHMSA's assumptions regarding reduced cycle times and reductions in car fleet size are overstated because trains must still regularly stop for servicing events and crew changes. Additionally, the Oliver Wyman Report contends that the speed of a single train will be influenced by other trains on the system, and skipping inspections does not exempt a train from network congestion. These arguments, which are addressed in part above, do not present a compelling rationale for eliminating the ECP brake requirement for HHFUTs.

Class IA brake tests can take several hours, and are usually performed in yards. If the ECP-equipped train is ready for departure eight hours earlier than usual, the train may be dispatched ahead of other trains that would have been dispatched before it in that eight-hour window, and, it will, on average, arrive at the next yard eight hours earlier, as congestion effects are likely to be random. Also, there is no reason to revise the estimated reduction in tank car fleet size assumed by PHMSA and FRA. Train crew changes do not require Class IA brake tests, and are not relevant to this issue. Further, the Oliver Wyman Report's suggestion that wheel wear is increased because of increased usage would indicate that unit trains are experiencing shorter cycle times.

Brake Shoe Savings: The Oliver Wyman Report contends based on a singular statement from an unnamed BNSF employee that it is unlikely that any brake shoe savings would be possible for ECP brakes compared to conventionally braked trains.

While PHMSA and FRA did not calculate any savings for brake shoes in its analysis of business benefits, it appears that there might be a benefit, based on the comment in the Sismey and Day Report, cited in the Oliver Wyman Report, that shoe wear was very even on ECP-equipped trains when compared to trains with conventional air brakes. Thus, the concerns raised by the Oliver Wyman Report in this area are not relevant to PHMSA and FRA's determinations about ECP brakes.

Network Capacity Benefits: The Oliver Wyman Report questions the RIA to the extent that it includes a statement that ''FRA found that ECP brakes offered major benefits in train handling, car maintenance, fuel savings, and increased capacity under the operating conditions present.'' The Oliver Wyman Report is unclear about the basis for this claim because it contends that ''FRA has not publically reported on any data collection and analysis from North American railroad test operations using ECP brakes.''

The increased capacity discussed in the RIA comes from a statement in the Booz Allen Report. However, those benefits were based on ECP brakes being installed on a large proportion of the trains on a line. PHMSA and FRA do not expect the same situation with respect to HHFUTs. As a result, PHMSA and FRA did not include capacity benefits in the quantified business benefits.

4. Reliance on Business Benefits Compared to Safety Benefits of ECP Brakes

AAR contends that PHMSA must rely on theoretical business benefits, even if not supported by actual experience, because AAR believes the costs far exceed the potential safety benefits of the final rule. We disagree. The safety benefits of ECP brakes are integral to the final rule. As such, PHMSA and FRA relied on both the business benefits and safety benefits to support the ECP brake requirement adopted in the final rule.

PHMSA and FRA consider the safety benefits to be a fundamental element of the overall benefits and believe that the safety benefits estimated in the RIA are reasonable based on the evidence. The safety benefits of ECP brakes are thoroughly described in detail in the RIA on pages 78–120 discussing both low consequence events and high consequence events. This discussion examines the probability of these events occurring and includes a range of benefits. Furthermore, the RIA thoroughly examines the effectiveness rate for ECP brakes on pages 246–251 in the context of accident mitigation and avoidance, finding that ECP brakes reduce the probability of tank car punctures in the event of derailment by about 20 percent.

With respect to AAR's argument that PHMSA overly relied on theoretical business benefits, PHMSA and FRA requested comments from the industry in the NPRM. Industry did not submit any data to contradict our findings.[27] Moreover, between the NPRM and final rule, PHMSA and FRA continued to conduct research to determine benefits that would be most accurate looking at real world experiences. The business benefits relied upon by PHMSA came from documented sources, including testimony and reports from Class I railroads. These sources include reports addressing operations on CP, BNSF, Quebec Cartier Mining, UP, and NS, as well as operations on international railroads. PHMSA and FRA's views were also informed by review of the Booz Allen report prepared for FRA in 2006. All these reports are cited in the RIA on pages 34, 217, 235, 236, and 263.

These sources discuss the actual effects of ECP brake usage on multiple railroads. Indeed, long before PHMSA began the rulemaking process for the final rule, BNSF reported fleet reductions on trains equipped with ECP brakes. Similarly, NS reported that ECP-equipped trains experienced a reduction in dwell time, operated at track speed for longer periods of time, were able to better control their speed, and had faster loading processes and better car loading performances than trains with conventional braking. This information is consistent with the recent TTCI ECP Brakes presentation noted above, which found among other things that ECP brakes could increase equipment utilization, allow for longer trains, and permit higher train speeds. While this presentation was not used in the development of the final rule, it is helpful in informing the current discussion on ECP brakes. However, even without the TTCI ECP Brakes presentation, PHMSA is confident the information cited in the RIA supports its analysis.

5. Cost Related to Implementation of ECP Brakes

AAR argues that PHMSA underestimated the cost of implementing ECP braking in the final rule, and that the actual cost to implement ECP brakes on HHFUTs is more than six times PHMSA's estimate. This argument is based on AAR's contention that ECP brake-equipped tank cars and locomotives will not run in dedicated sets, segregated from the rest of the fleet. AAR contends that segregated fleets are not operationally possible. As a result, it suggests that 10 times as many locomotives will need to be equipped with ECP brakes as we estimated and that PHMSA underestimated the number of tank cars needed for ECP brake service on HHFUTs by more than 25 percent. *See* Oliver Wyman Report, pp. 49–70.

These arguments are not new. PHMSA and FRA considered AAR's comments to the NPRM on this subject. We expect that railroads will be able to manage HHFUT fleets, which can be kept as captive fleet unit trains. Similar to unit coal trains that currently operate with ECP brakes, HHFUTs are expected

[27] Even in the appeal process, the Oliver Wyman Report provides little verifiable data to support its findings. Instead, the report relies almost exclusively on interviews conducted with various unnamed railroad employees.

to stay together, including the locomotive. *See* RIA, p. 220. While railroads may regularly shift locomotives under current operations, PHMSA and FRA are confident that, like coal unit trains, railroads can manage a specialized fleet of ECP-equipped locomotives to handle HHFUTs. *See* RIA, p. 221. In this sense, managing locomotives for HHFUTs likely is similar to managing distributed power locomotives, which is already a common practice. Not all trains have distributed power, but the railroads have a history of being able to manage these assets efficiently.

PHMSA and FRA do recognize there are costs associated with keeping a fleet of HHFUT locomotives. As a result, PHMSA and FRA estimated that it would cost around $80 million (undiscounted) to equip all the necessary locomotives with ECP brakes. This included equipping four locomotives for every train, even though we expect that railroads will only need an average of three locomotives for operations. We also included the cost of wrap-around cables to provide a backup preventing the lack of locomotives from becoming a bottleneck. Wrap-around cables allow a train to operate in ECP brake mode even when one or more locomotives or cars are not equipped with ECP brakes. Additionally, PHMSA and FRA accounted for fleet management costs.

The Oliver Wyman Report assumes that all locomotives will be equipped with ECP brakes, with a total cost of about $1.8 billion. This appears to overestimate the costs, as it assumes that railroads cannot manage their locomotive fleets. Given the railroads' history of effectively managing their equipment, it is unlikely that railroads will equip all locomotives. However, if a railroad chooses to equip all locomotives, it will be an operating practices decision and not due to the regulation.

The costs that PHMSA and FRA used are well documented in the RIA. They incorporate the comments PHMSA received to the NPRM. Many of these comments came from the rail industry, including AAR, RSI, and car manufacturers. For example, we estimated that it would cost $7,800 to retrofit a tank car with ECP brakes and $7,300 to equip a new car with ECP brakes. This was based on comments from RSI. The average cost—based on the estimated number of new construction tank cars needed compared to the number of retrofit tank cars needed—was $7,633. AAR in its ''Supplemental Comments,'' which were posted to the docket on January 30, 2015, stated that the cost of ECP brakes per tank car is $7,665. The Oliver Wyman Report states that the cost per tank car for ECP brakes is $9,665. *See* p. 58. Based on the evidence available, PHMSA made a reasonable estimate of the cost of equipping each required tank car with ECP brakes.

With respect to the cost of locomotives, the Oliver Wyman Report estimates the cost of equipping a current locomotive to be $88,300 and provides no estimate for equipping new locomotives. PHMSA and FRA anticipate that 2,532 locomotives would be needed to operate all HHFUTs in ECP brake mode. As discussed, this number is based on an average of three locomotives per HHFUT plus an additional locomotive for each HHFUT to act as a buffer when another locomotive is shopped. Therefore, based on current production, PHMSA and FRA expect that the railroads will be able to operate HHFUTs using new locomotives. We estimate the incremental cost of equipping a new locomotive with ECP brakes over current technology electronic brakes (*i.e.* Wabtec Fastbrake or New York Air Brake CCB–2) to be about $40,000. This information was provided by FRA's Motive Power and Equipment Division, and was based on the Division's background knowledge resulting from information from the manufacturers. As a result, PHMSA and FRA are confident that the estimate is reasonable.

The Oliver Wyman Report also assumes that every employee must be trained on ECP brake systems. PHMSA and FRA believe the ECP brake requirements in the final rule can reasonably be accomplished without training every employee. Indeed, we significantly increased the number of employees we estimated would need to be trained from the NPRM to the final rule. This was because PHMSA and FRA reassessed their initial position from the NPRM based on the public comments. Using the waybill sample, we determined that approximately 68 percent of the total ton-miles were on routes that had crude oil or ethanol unit trains. As a result, PHMSA and FRA adjusted the number of employees to include 68 percent of the total crews. According to these estimates, around 51,500 employees would need to be trained, as described on page 242 of the RIA.

The Oliver Wyman Report also states that it takes significantly more time to make repairs on trains equipped with ECP brakes. We acknowledged that the lack of training and unfamiliarity with the ECP brake components likely contribute to such delays.[28] *See* RIA, pp. 223–224. However, once all employees who work at locations with ECP-equipped HHFUTs are adequately trained, PHMSA and FRA expect the repair time will be reduced to match that of conventional brakes.

6. Potential for Network Disruption

AAR contends that mandating ECP brakes will cause significant collateral damage because ECP brakes are unreliable. AAR similarly believes that deployment of ECP brakes will disrupt major arteries in the national railroad network, thereby degrading the performance and capacity of the network. Further, AAR argues that the ECP brake requirement could delay Positive Train Control (PTC) implementation, which has been deemed safety-critical.

PHMSA and FRA addressed these arguments in the RIA in our discussion on the reliability of ECP brakes. *See* RIA, pp. 222–226. PHMSA and FRA conducted substantial research into the implementation of ECP brakes and found no examples of damage to the network where ECP brakes were properly integrated. As a result, we expect that with the correct infrastructure in place—such as sufficient training of railroad personnel and proper deployment of equipment and ECP brake components to ensure that they are readily available when needed—railroads can manage the ECP brake implementation without a disruption to the network. As noted in the RIA, at least one manufacturer has stated that the issue with ECP brake systems ''is not reliability, but rather, availability of power and shops.'' ''The Science of Train Handling'', William C. Vantuono, Railway Age, June 2012, at 25–26. Because of these issues, PHMSA recognized that there may be delays associated with ECP brake implementation at the initial stages, as there would be during the roll-out of any newer technology. However, given that the ECP brake operations are not required on HHFUTs until January 1, 2021, for trains transporting a loaded tank car of Class 3, PG I, flammable liquid, and May 1, 2023, for all other HHFUTs transporting Class 3 flammable liquids, PHMSA believes there is sufficient time built into the implementation to ensure the network is not significantly disrupted by delays attributable to ECP braking technology.

AAR's reliance on the Oliver Wyman Report does not alter PHMSA and FRA's

[28] The current lack of availability of the necessary ECP brake system components can also contribute to delays.

position. The Oliver Wyman Report claims that ''[a]dding a second braking technology to a large portion of the North American rolling stock fleet will materially increase the operational complexity of the railroad industry, and will reverse gains in productivity achieved over the past 35 years.'' *See* Oliver Wyman Report, p. 79. We analyzed the size of the fleet that would be required to be equipped with ECP brakes in the RIA. The number of cars and locomotives required to operate an HHFUT fleet equipped with ECP brakes likely would be relatively small and captive (a maximum of 633 unit trains on the network at any given time, *see* RIA, p. 219) when compared to the total universe of train movements.

The Oliver Wyman Report also raises a number of issues, including concerns about ECP cables, ECP brake-equipped locomotives, ECP brake car components, crosstalk, and unexpected stopping. None of these purported issues support eliminating the ECP brake requirement in the final rule. Much of what is presented is anecdotal evidence based on reports from unnamed railroad personnel that are lacking in data or analysis. Further, some of the railroads cited as providing information on their ECP braking experience have no experience with the current version of ECP brakes that is compliant with July 2014 update to the AAR Standard S–4200 series. For example, CP has not used ECP braking since removing it from limited operations in 2012, while UP has not operated ECP-equipped trains in approximately six years.

AAR raised the ECP brake cable issue in its comments to the NPRM and PHMSA and FRA addressed those comments in the final rule. *See* 80 FR 26702. AAR commented that the cables and batteries for ECP brakes would need to be replaced every five years. PHMSA and FRA accounted for this cost in the RIA on page 228.

We also addressed the crosstalk issue in the RIA at page 225. Crosstalk occurs when there is an interruption in the signal, usually caused when two ECP brake trains pass in close proximity, which results in an ECP-equipped train going into emergency brake mode. PHMSA and FRA acknowledged that this was an issue in earlier iterations of ECP brake systems, but software updates to the ECP brake programming had resolved the problem. *See* ''The ECP Brake—Now it's Arrived, What's the Consensus?'' Indeed, AAR acknowledged this by incorporating the software update into the AAR Standard S–4200 series in July 2014.

The Oliver Wyman Report further contends that PHMSA and FRA incorrectly assessed the effect of ECP brakes on wheel wear. The basis for this contention appears to be some recent ''test operations'' on BNSF where wheel defects such as tread build up, flat spots, and wheel shelling have been found. *See* Oliver Wyman Report, p. 94. PHMSA and FRA note that the quoted ''BNSF 14 Run Overview 2014'' has not been provided for reference, and, as discussed above, the report does not present any evidence that ECP-equipped trains actually experience more of these types of defects than equivalent trains with conventional air brakes operating under the same conditions over the same track. Although some initial increase in wheel wear, such as thermal mechanical shelling, would be explainable during the familiarization phase when new train crews gather knowledge about the braking capabilities of ECP brakes, *see* RIA, p. 217, the Oliver Wyman Report does not put its information in a context that allows PHMSA and FRA to draw any judgments about that information. The same is true with respect to the reporting of a recent situation where a single train had 14 separate wheel exceptions taken. The Oliver Wyman Report merely concludes the wheel exceptions were due to ECP braking without examining the potential causes to determine whether the reported wheel wear was actually caused by issues related to ECP braking or something else. Therefore, as presented, there is no evidence that the reported wheel wear is caused by ECP braking as opposed to factors related to usage or other track conditions. This is important because wheel wear is a function of use. Further, as noted above, the phrase ''higher brake usage'' possibly explains the greater wheel wear found in some operations. The wheel wear per unit time per car is higher because the cars operate more miles. PHMSA and FRA calculated the savings in wheel wear, detailed on pages 263–266 of the RIA, based on car-miles, as explained in the flow assumptions on pages 252–254 of the RIA. There is no evidence to suggest these cars have more wheel wear per car-mile.

The Oliver Wyman Report also argues that PHMSA and FRA did not address potential problems with buffer cars for HHFUTs. In the RIA, p. 238, we address the costs associated with equipping the buffer cars with wrap around cables. This was considered the lowest cost option. PHMSA and FRA recognized that there are other options, as the Oliver Wyman Report details. The Oliver Wyman Report option of equipping a fleet of buffer cars with ECP brakes is significantly more expensive than the reasonable alternative we provided. If railroads chose to use a permanent fleet of ECP-equipped buffer cars, that would be a business decision, not a regulatory requirement.

Finally, AAR contends that the ECP brake requirements in the final rule may delay implementation of PTC. Railroads are currently required by statute to implement PTC by the end of the year 2015. The ECP brake requirement for HHFUTs does not become effective until January 1, 2021, or May 1, 2023, depending on the commodity being transported. This means that railroads should have PTC implemented well in advance of the ECP brake requirement. Thus, we do not foresee a situation where the ECP brake requirements will delay PTC implementation.

7. Reliance on the Sharma Report

AAR contends that PHMSA and FRA erred in using the new Sharma & Associates report (Sharma Report) to calculate the benefits due to the reduced probability of punctures on HHFUTs operating in ECP brake mode. It argues that the assumptions used in the Sharma Report are flawed in numerous ways. AAR provides the ''Summary Report Review of Analysis Supporting 'Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains' Final Rule'' (TTCI Summary Report), which TTCI personnel prepared, as a supporting document. We disagree with AAR's contentions. For the reasons discussed below, PHMSA and FRA find that AAR's arguments do not support eliminating the ECP brake requirement in the final rule.

Statistical approach: The statistical approach used in the Sharma Report to analyze the potential benefits of ECP brakes in the final RIA is not flawed. The confidence band suggested by the TTCI Summary Report is applicable to situations where a minimum value is being specified. The confidence band is needed to understand the range of values and the potential for values to fall below the specified value. For example, when specifying tensile strength of a material (based on average test values) it is important to know the potential variability, in the form of a confidence band, of the strength. In the case of the RIA, PHMSA and FRA's analysis determined the effectiveness of ECP brakes based on the average of the calculated number of punctures. Implicit in a comparison of averages is that in some cases the effectiveness will be less than the average and in others greater than the average.

Consider the notion of ''test'' versus ''simulation.'' As an example, if one were conducting a physical test to determine the effect of a change in thickness on the impact energy of a specimen, one might have to conduct several tests and then apply statistical techniques to the measured values to arrive at the results. On the other hand, if one were using a finite element simulation to measure the same condition, one set of simulations would be sufficient. In fact, every simulation with the same set of input parameters would produce the same output. The variability that is associated with ''testing'' is not there.

Another problem with using the conventional statistical methods, such as confidence intervals and margins of error, is that the cases PHMSA is ''sampling'' are not random. In fact, they were deliberately chosen to represent a range of input conditions. Additionally, the methods suggested in the TTCI Summary Report would not be appropriate because there is no variance in the ''measured'' results of our trials. Each trial (a simulation with a specific set of inputs) always produces the exact same set of outputs. Hence, our ''variation'' is not produced by the random variation of factors beyond our control; it is essentially the result of specific input conditions, though the outputs are not predictable from the outset.

The Sharma Report considers all different combinations of initial speed and number of cars behind the point of derailment (POD). The sample size for the conventional and ECP brake systems consists of 162 cases (separate derailment simulations) each. For the two-way EOT brake configuration, 90 cases were considered. As indicated above, these cases were used to simulate average derailment conditions using each brake configuration. The methodology is not trying to predict the outcome of a specific derailment within some margin of error, nor is it being used to assure that all outcomes meet some minimum requirement within some confidence interval (such as how a set of tensile tests would be used to establish a design stress for a material). For these reasons, the TTCI Summary Report analogy of an election is, again, flawed, as the system is not trying to predict the results of one particular event.

Inconsistent values in tables: The TTCI Summary Report also points to number of inconsistencies in the values reported for the most likely number of punctures and the analyses in which they are used throughout the RIA. PHMSA recognizes that there was a transcription error in Table BR4 of the RIA, see p. 210, and corrects those errors here. Table BR4 should read as follows:

TABLE BR4—RISK IMPROVEMENT DUE TO BRAKING, WITH POD DISTRIBUTED THROUGHOUT THE TRAIN

Tank type	Speed, mph	Most-Likely number of punctures			Percent improvement due to ECP brakes only compared to two-way EOT
		Conventional brakes	Two-way EOT (DP: lead + rear)	ECP Brakes	
7/16″ TC128, 11 gauge jacket, ½″ full-height head shield	30	3.75	3.25	2.91	10.5
	40	6.80	6.14	4.64	24.4
	50	9.31	7.86	7.23	8.0
9/16″ TC128, 11 gauge jacket, ½″ full-height head shield	30	3.03	2.66	2.12	20.3
	40	5.64	5.09	3.78	25.7
	50	7.82	6.57	6.01	8.5

The TTCI Summary Report suggested that the effectiveness rate calculated in Table BR7 would change as a result of the transcription error in Table BR4. However, this is incorrect because Table BR7 calculates the effectiveness of ECP brakes after the effectiveness of the tank car upgrades is calculated. In other words, the ECP brake effectiveness values reported in Table BR7 reflect the effectiveness of ECP brakes in derailments involving DOT–117 and DOT–117R specification tank cars. As a result, Table BR7 continues to read as follows:

TABLE BR7—EFFECTIVENESS RATE OF ECP BRAKES WEIGHTED BY VOLUME OF PRODUCT SPILLED IN A DERAILMENT

	Number of incidents	Total spill volume	Share of total volume	ECP effectiveness rate at 30, 40, 50 mph	Cumulative effectiveness rate (%)
Below 34 mph	33	798,433	22.8	20.10	4.6
35–44 mph	8	1,488,350	49.2	25.80	12.7
45 mph and above	5	980,180	28	8.60	2.4
Total	46	3,499,656	100	....	19.7

Modeling used in the final rule: The TTCI Summary Report contends the modeling and analytical approach used in the final rule is sufficiently different from the modeling and analytical approach used in the NPRM, suggesting that reliance on the final Sharma report for the final rule warranted additional notice and comment. Yet AAR discussed this very work in detail in its comments to the NPRM review. AAR's comments to the NPRM appended a 13-page critique of the LS-Dyna methodology authored by Dr. Steven Kirkpatrick of Applied Research Associates. In addition, the main body of AAR's comments to the NPRM contained several references to both Dr. Kirkpatrick's critique as well as Sharma's reliance on the LS-Dyna work. In developing the final rule, we refined the modeling and analytical approach used in the NPRM to account for and take into consideration many elements of AAR's comments and Dr. Kirkpatrick's critique. For example, the modeling conducted during preparation of the NPRM was limited to modeling the results of a derailment of a 100-car train, assuming the derailment occurred at the first car behind a train's locomotive. In response to AAR's comments and Dr. Kirkpatrick's critique, in developing the final rule, we conducted additional modeling again using a 100-car train model, but this time to more accurately represent real life derailment scenarios, we modeled and analyzed the effects of cars derailing throughout the train consist (*i.e.,* assuming the 20th, 50th, and 80th cars in a consist derail), not just the first car. Similarly, to address AAR and Dr. Kirkpatrick's concerns regarding the impactor size used in the modeling, we conducted a sensitivity analysis using both smaller and larger-sized impactors than used in the NPRM modeling. This sensitivity analysis demonstrated that impactor size affected the number of tank cars punctured and the velocity at which those cars punctured only negligibly.

One element of the analysis that was introduced for the final rule was the mechanism for calculating overall effectiveness based on the distribution of PODs along the train. This addition to the analysis was in response to the critique of the technique by AAR/TTCI in comments to the NPRM suggesting that this distribution be accounted for in the analysis. This element was added to the analysis in the final rule stage in response to AAR's comments critiquing the NPRM.

The Sharma Report model was validated in both the number of cars derailed and number of punctures in real life derailments such as Aliceville. Indeed, the rear car distance traveled in one set of Dyna simulations matched the Aliceville locomotive's event recorder data with a difference of less than four percent. This indicates that, in spite of all the potential variations, the derailment simulations closely matched what actually occurred in the Aliceville accident as evidenced by the event recorder download. *See* RIA, p. 214.

On the issue of impactor size distribution, the TTCI Summary Report notes that ''the distribution of impactor size was very similar.'' PHMSA and FRA disagree. The average impactor size variation between the three distributions was 58 percent. We would not characterize that as ''similar.'' Past work on tank car puncture resistance—including substantial work conducted by Dr. Kirkpatrick (and funded by the industry/AAR)—shows that the effect of a 58 percent variation in impactor size is quite significant.

Furthermore, the review of Sharma's modeling in AAR's comment to the NPRM suggested that the distribution presented above might be skewed towards smaller impactors. However, as noted by Dr. Kirkpatrick in his earlier work, when the combinations of complex impactor shapes (such as couplers and broken rail) and off-axis impactor orientations are considered, many objects will have the puncture potential of an impactor with a characteristic size that is less than 6 inches. *See* ''Detailed Puncture Analysis of Tank Cars: Analyses of Different Impactor Threats and Impact Conditions,'' Kirkpatrick, SW., DOT/FRA/ORD–13/17, March 2013.[29] The impactor distributions considered in PHMSA and FRA's analysis in the final rule are consistent with this notion.

Need for additional study: The TTCI Summary Report contends that the modeling and analysis utilize a number of assumptions and simplifications, the effects of which need further study. AAR made a similar comment in its comments on the NPRM, and the extended analysis in the final rule addressed these issues by studying/reviewing several additional elements of the methodology. PHMSA and FRA addressed several prior criticisms submitted in connection with the NPRM, including:

- The effect of varying the POD along the length of the train
- The effect of alternate train lengths
- The effect of varying internal pressures
- The effect of varying impactor sizing, etc.

In addition, the RIA for the final rule includes justification for many of the assumptions made in the analysis, including the friction coefficients used, the coupler model, and the lateral derailment load values. *See* RIA, pp. 63–72, 207–212, 213–216, and 246–247. In other words, this is similar to AAR's earlier critique on the topic and we addressed most elements of that critique in the RIA.

Derailment location: The TTCI Summary report states that ''the probability distribution for derailment location within the train does not appear to take train length into account,'' thus exaggerating the benefit of operating in ECP brake mode. The Sharma Report estimated the distribution of PODs using the best available data, which included all reasonable derailments. Any ''exaggeration'' of benefits towards ECP brakes due to the PODs being skewed towards the front of the train would tend to exaggerate the benefit of DP trains even more. Thus, even if the distribution was skewed towards the front, the Sharma Report does not exaggerate the relative benefits of ECP brakes compared to DP trains.

Use of derailment data from all train types: The TTCI Summary Report asserts that the analysis performed on the probability of derailments occurring throughout the train seems to use data from all train types to derive a distribution of derailment locations. This is true. The locations of train derailments are more uniformly spread under mixed traffic conditions compared to unit trains. This tends to push the average location of POD further towards the rear of the train. In fact, the POD, as a percent of the length of train for unit trains, is about half that of freight trains (21% compared to 41%). As a result, PHMSA and FRA expect that the use of derailment data of all train types (as opposed to unit trains only), results in a prediction of lower benefits for ECP braking. Using PODs from unit trains only would have led to ECP brake benefits being higher. We considered this during development of the final rule and determined our assumptions were conservative.

Analyzing the number of cars trailing POD: The TTCI Summary Report notes that ''[t]he critical parameter is not the first car in the train that was derailed, but rather the number of cars trailing the first car derailed.'' PHMSA and FRA agree. This is exactly how all the LS-Dyna modeling was done. We modeled 100 cars, 80 cars, 50 cars, and 20 cars behind the POD, and interpolated the results for the other cases.

Net braking ratios: The TTCI Summary report notes that PHMSA and FRA make multiple references in the RIA to the use of higher net braking ratios (NBR) with ECP brakes. While the RIA does make reference to a higher NBR, the LS-Dyna simulations were all performed with the same braking ratio. The results presented in the RIA are based on ECP brakes with 12 percent NBR, the same used for the other brake systems considered. *See* RIA, pp. 324. So, the benefits attributed to ECP brakes regarding the reduced number of cars punctured do not include any contribution from increased braking ratio.

However, it is important to note that even though the NBR allowed for the different brake systems are theoretically the same, the use of ECP brakes does, as a practical matter, allow a train to better approach the high end of the limit. This

[29] *https://www.fra.dot.gov/eLib/details/L04420.*

is because features inherent to ECP brake design allow a more uniform and consistent effective brake cylinder pressure to be maintained as compared to conventional pneumatic brakes.[30] Closed loop feedback control of the cylinder pressure is an inherently more reliable method of obtaining the commanded pressure than the open loop, volume displacement method used in conventional brake systems. Furthermore, trains equipped with ECP brakes can detect and report low brake cylinder pressure malfunctions on individual cars, which can then be addressed. In contrast, a malfunctioning pneumatic control valve generating lower than commanded pressure may go unnoticed indefinitely. Additionally, the overall braking ratio of a train equipped with ECP brakes can be much closer to the allowable upper limit than a conventionally-braked train because the cars in an ECP-equipped train are all braking at the same effective brake ratio (to the extent that the physical capacity of their individual construction allows). The brake ratios of cars in a conventionally-braked train can vary over the allowable range (8.5 percent to 14 percent loaded NBR), so the train average brake ratio is limited by this variation already built into the existing fleet. For these reasons, PHMSA and FRA expect that DOT–117/DOT–117R cars (with ECP brakes) can be built (or converted from existing cars) with an NBR close to 14 percent and operated (in ECP trains) with a train average brake ratio also very close to 14 percent. In contrast, the train average brake ratio of a train with conventional air brakes is likely to be significantly lower, even if some of the cars have close to a 14 percent NBR.

Control of unit trains: The TTCI report takes issue with a statement in the RIA to the final rule concerning unit train operations being more difficult to control than other types of trains. The excerpts, and TTCI's comments, are qualitative characterizations of unit train operations. However, the excerpt from the RIA did not influence the objective analysis we performed in support of this rule.

Peak ECP brake benefits: TTCI takes issue with the modeling that shows ECP brake effectiveness peaking at 40 mph. The TTCI Summary reports states, ''[i]ntuitively, it would seem that the benefit of ECP brakes would either increase or decrease as speed increases.'' Derailment performance is the result of several physical phenomena. Consider a derailment that happens at a very slow speed. Given the physical strength of the tanks and the energy levels involved, there would be no punctures for either a conventionally braked train or an ECP-equipped train. As a result, there would be no perceived derailment benefit to ECP brakes at very low speeds when the benefit is measured by puncture probability. As the speeds increase, and one starts seeing multiple punctures as a result of the derailment, the benefits of ECP braking become more apparent. However, at higher speeds, the percentage of braking time spent in the ''propagation mode'' (where ECP brakes offer the most benefit) is a smaller portion of the overall time spent braking. Consequently, the relative benefits of ECP braking start to diminish at speeds over 40 mph.

Derailment rates: The derailment rate we used was based on the most recent five complete years of data: 2009–2013. Using the most recent years to construct this rate largely incorporates the factor of 10 decrease in the observed derailment rate cited by TTCI into our estimate of future derailments. It is not realistic to expect tenfold decreases in the derailment rate to continue indefinitely. In our judgement, the rate decrease may have bottomed out, so we used a constant rate based on the most recent data, which reduces the rate to the fewest derailments per carload observed in the available data, to forecast future derailments.

Criticism of Train Operation and Energy Simulator (TOES) modeling: The TTCI Summary Report attempts to respond to perceived criticism of the TOES modeling TTCI used to evaluate emergency braking scenarios involving ECP brakes. As an example, the TTCI Summary Report takes issue with the statement in the RIA that TTCI's modeling ''only captures a part of the benefit of ECP.'' *See* RIA, p. 70. TTCI contends that

> [t]his statement implies that the ECP braking system has an effect on other aspects of the derailment dynamics that were included in the DOT analysis, such as impactor size distributions and tank car puncture resistance. In fact, the amount of energy is the only thing that ECP brakes (or any brake system, for that matter) can directly affect.

The TTCI Summary Report's contention, however, ignores the reduced coupler force benefits of ECP braking. The lower coupler forces inherent to an ECP brake application reduce the chaos/energy input into the simulation. The TTCI Summary Report did not consider or even acknowledge the benefits associated with this aspect of ECP braking.

The TTCI Summary Report also takes issue with statements in the RIA discussing PHMSA and FRA's conclusion that AAR's predictions of two-way EOT or DP performance are overestimated. *See* RIA, pp. 68 and 70. This is because AAR's comments, which rely on a TTCI Summary Report, expect that DP and two-way EOT devices offer a benefit if the derailment occurs in the rear half of the train. This is incorrect. There is no benefit to DP if the POD is in the second half of the train. Under derailment conditions (where trains break in two), DP offers no benefit over conventional brakes. By keeping the train together in their simulations, AAR attributed benefits to DP and two-way EOT devices where none exist. Indeed, this issue is addressed in NTSB's Train Brake Simulation Study, published on July 20, 2015. *See* p. 12. While this newly issued study was not used in the development of the final rule, it is informative on ECP brake performance in emergency braking compared to DP emergency braking. Indeed, the NTSB specifically looked at derailments with air hose separation and train separation occurring in the second half of the train and found ''there is no benefit to DP if the emergency is initiated in the second half of the train.'' [31] Thus, the NTSB study determined that trains operating in ECP brake mode ''[are] not substantially affected by the location of the emergency initiation.''

Finally, The TTCI Summary Report argues that ''there is no analysis produced that shows that reducing the number of cars in the Aliceville derailment from 26 to 24.5 (or even 24) cars would have resulted in a significant—or any—benefit in terms of reduced severity of the accident.'' We disagree. The reduction of the number of cars punctured is fundamental to improving tank car safety. All the comments from AAR and the industry, whether it is adding head shields, jackets, or thickness, have aimed exactly for this result: reducing the number of cars punctured. One way to reduce the number of cars punctured is to stop them from entering the pile-up in the first place. By TTCI's own analysis, which is skewed towards overestimating the benefits of DP, ECP braking provides an eight percent reduction in the

[30] The NTSB's recent study notes that ECP brake systems can provide the same target NBR for each car in the consist and apply a consistent braking force to each car nearly simultaneously, which allows all cars to decelerate at a similar rate. This minimizes run-in forces, and therefore reduces the likelihood of a wheel derailment and the sliding of braked wheels. All of these factors potentially allow ECP brakes to operate nearer to AAR's upper limit for NBR. *See* ''Train Braking Simulation Study,'' pp. 10–11.

[31] NTSB also notes that this scenario is more consistent with recent tank car derailments than a derailment where there is no train separation.

number of cars entering the pile-up, and a further twelve percent reduction in kinetic energy, a combined benefit of about 20 percent due to ECP braking. If one then combines this benefit with the structural benefit such as jackets and head shields, one starts seeing cumulative significant reductions in damage severity, which is the intent of the final rule.

8. Integration of ECP Brakes With Positive Train Control (PTC)

Relying on the Oliver Wyman Report, AAR asserts that requiring ECP brakes on HHFUTs will present integration challenges with PTC for two reasons. First, implementation of the ECP brake requirement will require new braking algorithms. Second, there will be difficulties associated with installing two complex technologies on locomotives simultaneously. PHMSA and FRA addressed both of these arguments in the final rule and do not find either argument compelling.

The Oliver Wyman Report states that braking algorithms will need to be modified and that there will be great difficulty and expense creating algorithms for PTC for ECP trains. PHMSA and FRA previously addressed this argument in the preamble to the final rule. *See* 80 FR 26702–26703. We recognize that PTC coupled with ECP brakes may result in significant business benefits—such as increased fluidity and higher throughputs—but there is simply no regulatory requirement directing that ECP brake systems be integrated with PTC. Further, the Oliver Wyman Report assertion that integration is necessary for safety reasons is not supported by data or analysis. PTC operates on a block system with forced braking to ensure that a single block is not occupied by two trains at once. In other words, if one train is occupying the block, then a trailing train cannot enter the block. An algorithm based on a conventionally braked train will provide a conservative cushion for the stopping distance for a train operating in ECP brake mode, but it does not change the fact that under PTC only one train will occupy the block at a time. Operations during this time could be used to safely collect the data needed to develop the algorithm to apply to trains operating in ECP brake mode. Of course, once developed, the benefits of shorter stopping distances can then be safely integrated into the system, but such actions would be voluntary business decisions by a railroad based on a belief that integration between ECP brakes and PTC will provide efficiencies not otherwise available.

The Oliver Wyman Report further contends that there will be costs associated with placing locomotives in the shop to install ECP brake systems in addition to PTC programming. PHMSA and FRA accounted for the costs of installing ECP brakes on locomotives on page 219–220 of the RIA, assigning a cost of $40,000 per locomotive.[32] This is for new locomotives, because PHMSA and FRA expect that the allotment of locomotives needed to operate HHFUTs will come from new builds. As a result, shop time likely will be reserved for regular inspections (*e.g.,* 92-day and 368-day inspections), at which time the railroads may take the opportunity, to the extent necessary, to focus on PTC installation issues.

The Oliver Wyman Report attempts to buttress its argument on costs by stating that there will be hidden costs due to the complexity of integrating PTC and ECP brakes on the same locomotive. Such comments are purely anecdotal and not supported by any data or analysis. The purported costs are unquantified in the Oliver Wyman Report and appear to be based solely on the comments of an unnamed UP mechanical officer. PHMSA notes that UP has minimal experience with ECP brakes, using the technology for about eight months over six years ago.

Finally, PHMSA and FRA note that the Oliver Wyman Report states ECP braking is not a mature technology and, therefore, ''will increase operational disruption and failures that compromise safety.'' PHMSA and FRA addressed contentions about technological readiness in the RIA at page 222–225. It is unclear why the Oliver Wyman Report insists on characterizing ECP brake technology as ''immature.'' Such statements are unsupported and, indeed, contradicted by various other sources. In the RIA, we cited an independent report calling ECP a ''mature'' technology. To place the quote in context, PHMSA and FRA now cite to the entire paragraph:

> Application of ECP-brakes in freight trains is a technology that can reduce derailment frequency. The technology for ECP-brakes is mature and such brakes are applied in passenger trains and in block trains for freight in Spoornet, South Africa and by Burlington Northern Santa Fe (BNSF) and Norfolk Southern (NS) in the USA. ECP-brakes in freight trains would reduce the longitudinal forces in the train during braking and brake release, and in particular for low speed braking it would significantly reduce the risk of derailment.[33]

PHMSA and FRA recognize that ECP brakes are not in widespread use in the U.S., but that is not a proxy for maturity of the technology. AAR first began developing interchange standards for ECP brake systems in 1993. As noted in the RIA, North American railroads have used ECP brakes in some form since at least 1998. Australian railroads began widespread use of ECP brakes in 2005. The technology has grown and improved over that time as the industry has worked to resolve ''crosstalk'' and ''interoperability'' issues. Even TTCI, in its recent ECP Brakes presentation, notes that AAR ''agrees that ECP is a mature technology.'' Of course, this is not to suggest that no issues will arise with ECP brakes as railroads implement the braking system on HHFUTs. However, PHMSA and FRA account for such issues in the RIA, recognizing there will need to be significant investment in training and to ensure sufficient equipment is on hand to address normal operational issues. Therefore the accumulation of business benefits was assumed to be demonstrated one year after ECP trains are put into service, recognizing that this change in operating culture will take time. *See* RIA pg. 218.

9. Impact on Small Business

AAR contends that the final rule fails to address or mitigate the harmful impact on small business, including Class III railroads, commuter railroads, smaller contractors, and hazardous materials shippers. The basis for this contention is that federal law requires PHMSA and FRA to assess the impact of the final rule on small business and consider less burdensome alternatives. We did assess the impact of the final rule on small business and considered less burdensome alternatives to develop the final rule.

PHMSA and FRA conducted a Regulatory Flexibility Analysis (RFA), which looked at the costs associated with small businesses for the entire final rule. *See* 80 FR 26725–26735. The RFA included a focused analysis of braking requirements. *See* 80 FR 26732–26733. As stated in the RFA, about 22 percent of short lines (160 of 738 small railroads) transport flammable liquids in

[32] PHMSA notes that its $40,000 estimate is consistent with a recent TTCI ECP Brakes presentation. In that presentation, TTCI estimated the cost of equipping a locomotive with ECP brakes at $40,000 based on a 2011 study. That is less than half the cost estimated in the Oliver Wyman Report. PHMSA recognizes that costs can change over time, but the presentation is instructive on the issue of costs.

[33] *See* ''Assessment of freight train derailment risk reduction measures: A4—New Technologies and Approaches,'''', Report for European Railway Agency, Report No. BA 000777/05, April 19, 2011, at 9, *http://www.era.europa.eu/Document-Register/Documents/DNV%20Study%20-%20Final%20A4%20Report%20-%2020110419%20-%20Public.pdf.*

HHFTs and most small railroads the final rule affects do not operate at speeds higher than the restricted speeds. Indeed, before we issued the NPRM and the final rule, the American Short Line and Regional Railroad Association (ASLRRA) recommended to their members that they voluntarily operate unit trains of crude oil at a top speed of no more than 25 mph on all routes. ASLRRA issued this letter in response to the Secretary's Call to Action on February 12, 2014, and it has been added to the docket.

PHMSA and FRA did acknowledge that some small railroads may be affected by the ECP brake mandate because they accept unit trains of crude oil (and other trains that trigger the mandate) from Class I railroads. However, we accounted for this impact in two ways in the final rule. First, as discussed on page 220 of the RIA, PHMSA and FRA assumed an overlay ECP brake system. This will allow the tank cars to work both with ECP brakes and conventional air brakes. While the initial cost to the car owner is slightly higher than a stand-alone ECP brake system, we expect that the added flexibility of an overlay system makes it the most likely alternative to be chosen by car owners. Aa a result, any small railroad that accepts a unit train of crude oil would be able to use their own power (locomotives) because the trains would travel at a maximum speed of 30 mph and would be able to use conventional air brakes. Second, PHMSA and FRA also anticipate that Class I and smaller railroads will make use of alternatives, such as trackage rights or interchange agreements, which will allow smaller railroads to avoid equipping their locomotives with ECP brakes. Under this type of scenario, Class I railroad crews operating an HHFUT in ECP brake mode could continue operating over the smaller railroad's line, and the HHFUT would pass through the interchange with the train intact.

AAR also raised the concern that short line railroads would be assuming the responsibility for troubleshooting ECP brake-related problems by accepting HHFUTs from Class I railroads. AAR states that this type of troubleshooting requires expertise beyond that of most small railroads because they do not have the resources to hire trained electronic engineers with the necessary expertise to identify the source of ECP system failures. PHMSA and FRA addressed the need for training on small railroads in the RIA on page 220. Because the final rule includes the less burdensome alternatives discussed above, PHMSA and FRA believe that there are effective methods for avoiding the type of training described.

Finally, AAR states that where an interchange agreement requires the small railroads to use existing power, there would be an enormous expense for the small railroad because that railroad would need to equip locomotives with ECP brakes for handling interchanged unit trains. AAR asserts that this is a particularly large problem because most small railroads have older locomotives that are not processor-based and that lack the required space to install an ECP brake system. It estimates it would cost approximately $250,000 to equip a non-processor based locomotive with ECP brakes. For the reasons discussed above, PHMSA and FRA do not anticipate that older locomotives would need to be equipped.

10. Conflict With the Statute Requiring Two-Way EOT Devices

AAR argues that the ECP brake requirement in the final rule is prohibited by 49 U.S.C. 20141. This statute provides that ''[t]he Secretary shall require two-way end-of-train devices (or devices able to perform the same function) on road trains, except locals, road switchers, or work trains, to enable the initiation of emergency braking from the rear of a train.'' The statute further requires the Secretary to establish performance based regulations to govern the use of two-way EOT devices and allows the Secretary ''to allow for the use of alternative technologies that meet the same basic performance requirements.'' *See* 49 U.S.C. 20141(b)(2). AAR contends that PHMSA and FRA's ECP braking requirement is defective because it directs freight railroads to use ECP brake systems instead of two-way EOT devices. This argument is without merit because any HHFUT operating in ECP brake mode must comply with the ECP–EOT requirements in part 232, subpart G. *See* § 174.310(a)(3); 80 FR 26748.

FRA initially issued regulations governing the use of conventional two-way EOT devices in 1997. *See* 62 FR 278 (Jan. 2, 1997). These regulations are in part 232, subpart E, and are targeted at trains with conventional air brakes. Subpart E requires a conventionally braked train to have a two-way EOT device or an alternative technology unless it meets one of the explicit exceptions identified in § 232.407(e). For example, under § 232.407(e), a conventionally braked train is not required to operate with a two-way EOT device if a locomotive or locomotive consist is located at the rear of the train that is capable of making an emergency brake from the rear—as would occur with a lined and operative DP locomotive located at the rear of the train—or when the train does not operate over heavy grade and the speed of the train is limited to 30 mph.[34]

AAR appears to be under the misconception that the final rule fails to comply with 49 U.S.C. 20141 because it foregoes the requirements in part 232, subpart E, for HHFUTs operating in excess of 30 mph. However, the final rule pertaining to ECP brakes does comply with 49 U.S.C. 20141. It mandates compliance with part 232, subpart G, for any HHFUT operating in ECP brake mode. Indeed, subpart G contains EOT device requirements that are specific to trains operating in ECP brake mode. *See* § 232.613.

The ECP–EOT device requirements in section 232.613 were promulgated as part of FRA's ECP regulations in 2008. *See* 73 FR 60512 (Oct. 16, 2008). These regulations were issued, in part, under 49 U.S.C. 20141.[35] *See* 73 FR at 61552. While ECP–EOT devices perform many of the same functions as conventional two-way EOT devices, FRA recognized that ECP–EOT devices also have different features than those required for trains operated using conventional air brakes:

> In addition to serving as the final node on the ECP brake system's train line cable termination circuit and as the system's 'heart beat' monitoring and confirming train, brake pipe, power supply line, and digital communications cable continuity, the ECP–EOT device transmits to the [head end unit or] HEU a status message that includes the brake pipe pressure, the train line cable's voltage, and the ECP–EOT device's battery power level.

See 73 FR 61545. Although FRA noted that the ECP–EOT device operates differently than a conventional two-way EOT device, the ECP–EOT device does ensure that an automatic emergency brake application occurs in the event of a communication breakdown:

> Since the ECP–EOT device—unlike a conventional EOT device—will communicate

[34] *See* 49 CFR 232.407(e), identifying additional exceptions to the two-way EOT requirement for trains with conventional air brakes.

[35] It is worth noting that FRA's ECP regulations were also issued under 49 U.S.C. 20306. This provision allows the Secretary to waive the statutory provisions in 49 U.S.C. ch. 203 ''when those requirements preclude the development or implementation of more efficient railroad transportation equipment or other transportation innovations under existing law.'' FRA held public hearings on October 4, 2007, and October 19, 2007, which included comments and discussion about ECP–EOT devices. Based on the comments received during these public hearings and a related public hearing on January 16, 2007, FRA determined it was appropriate to exercise the Secretary's authority under 49 U.S.C. 20306 to promulgate its ECP regulations.

with the HEU exclusively through the digital communications cable and not via a radio signal, it does not need to perform the function of venting the brake pipe to atmospheric pressure to engage an emergency brake application. However, ECP–EOT devices do verify the integrity of the train line cable and provide a means of monitoring the brake pipe pressure and gradient, providing the basis for an automatic—rather than engineer commanded—response if the system is not adequately charged. In the case of ECP brakes, the brake pipe becomes a redundant—rather than primary—path for sending emergency brake application commands. Under certain communication break downs between the ECP–EOT device, the HEU, and any number of CCDs, the system will self-initiate an emergency brake application.

Id. Section 232.613 requires the ECP–EOT device to send a beacon every second from the rear unit of the train to the controlling locomotive. The EOT beacon works as a kind of fail-safe. It functions virtually identically to the radio signal of a conventional two-way EOT device with one important exception: if the EOT Beacon is lost for six seconds on a train operated in ECP brake mode, then the train goes into penalty brake application, which will brake all cars in the train simultaneously. In contrast, a two-way EOT device may lose communication for up to 16 minutes, 30 seconds, at which point the train speed must be reduced to 30 mph.

Based on these factors, PHMSA and FRA conclude that the ECP brake component of the final rule complies with the requirements of 49 U.S.C. 20141. AAR should be aware that HHFUTs operating in ECP brake mode must have an ECP–EOT or an appropriate alternative, such as an ECP-equipped locomotive, at the rear of the train. This requirement is consistent with FRA's ECP brake regulations at part 232, subpart G.

For the above reasons, AAR's appeal to eliminate the new ECP brake standard of the final rule is denied.

III. Summary

PHMSA denies the appellants' (DGAC, ACC, AAR, AFPM, and Treaty Tribes) appeals on Scope of Rulemaking, Tribal Impacts and Consultation, Retrofit Timeline and Tank Car Reporting Requirements, Thermal Protection for Tank Cars, and Advanced Brake Signal Propagation Systems. We conclude we reasonably determined how to apply new regulations and provided the regulatory analysis to support those decisions. While we understand that shippers, carriers, and tank car manufacturers for Class 3 flammable liquids will face new challenges in the wake of these regulations, we maintain that they are capable of complying with the final rule.

We also deny DGAC's appeal to eliminate or provide further guidance for the Sampling and Testing program. The sampling and testing program is reasonable, justified, necessary, and clear as written. Additionally, we disagree that a delayed compliance date of March 31, 2016 should be provided for implementation of the requirements in § 173.41 for shippers to implement changes for training and documentation.

With respect to Information Sharing/Notification, PHMSA announced in a May 28, 2015, notice that it would extend the Emergency Order applicable to the topic of Information Sharing/Notification indefinitely, while it considered options for codifying the disclosure requirement permanently. Furthermore, on July 22, 2015, FRA issued a public letter instructing railroads transporting crude oil that they must continue to notify SERCs of the expected movement of Bakken crude oil trains through individual States. While the treaty tribes and other stakeholders will have the opportunity to comment on these future regulatory proposals in the course of that rulemaking proceeding, PHMSA will continue to seek opportunities to reach out to the tribes and consultation from tribal leaders.

Issued in Washington, DC on November 5, 2015.

Marie Therese Dominguez,

Administrator, Pipeline and Hazardous Materials Safety Administration.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 622

[Docket No. 101206604–1758–02]

RIN 0648–XE290

Coastal Migratory Pelagic Resources of the Gulf of Mexico and South Atlantic; 2015–2016 Accountability Measure and Closure for King Mackerel in Western Zone of the Gulf of Mexico

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Temporary rule; closure.

SUMMARY: NMFS implements an accountability measure (AM) for commercial king mackerel in the western zone of the Gulf of Mexico (Gulf) exclusive economic zone (EEZ) through this temporary final rule. NMFS has determined that the commercial quota for king mackerel in the western zone of the Gulf EEZ will be reached by November 17, 2015. Therefore, NMFS closes the western zone of the Gulf EEZ to commercial king mackerel fishing on November 17, 2015. This closure is necessary to protect the Gulf king mackerel resource.

DATES: The closure is effective at noon, local time, November 17, 2015, until 12:01 a.m., local time, on July 1, 2016.

FOR FURTHER INFORMATION CONTACT: Susan Gerhart, NMFS Southeast Regional Office, telephone: 727–824–5305, email: *susan.gerhart@noaa.gov.*

SUPPLEMENTARY INFORMATION: The fishery for coastal migratory pelagic fish (king mackerel, Spanish mackerel, and cobia) is managed under the Fishery Management Plan for the Coastal Migratory Pelagic Resources of the Gulf of Mexico and South Atlantic (FMP). The FMP was prepared by the Gulf of Mexico and South Atlantic Fishery Management Councils (Councils) and is implemented by NMFS under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) by regulations at 50 CFR part 622.

The commercial quota for the Gulf migratory group king mackerel in the western zone is 1,071,360 lb (485,961 kg) (76 FR 82058, December 29, 2011), for the current fishing year, July 1, 2015, through June 30, 2016.

Regulations at 50 CFR 622.388(a)(1) require NMFS to close the commercial sector for Gulf migratory group king mackerel in the western zone when the quota is reached, or is projected to be reached, by filing a notification to that effect with the Office of the Federal Register. Based on the best scientific information available, NMFS has determined the commercial quota of 1,071,360 lb (485,961 kg) for Gulf migratory group king mackerel in the western zone will be reached by November 17, 2015. Accordingly, the western zone is closed to commercial fishing for Gulf migratory group king mackerel effective at noon, local time, November 17, 2015, through June 30, 2016, the end of the current fishing year. The western zone of Gulf migratory group king mackerel is that part of the EEZ between a line extending east from the border of the United States and Mexico and 87°31.1' W. longitude,