FEDERAL REGISTER

Vol. 76 Tuesday,
No. 55 March 22, 2011

Part IV

Department of Transportation

Federal Railroad Administration

49 CFR Part 228
Hours of Service of Railroad Employees; Substantive Regulations for Train Employees Providing Commuter and Intercity Rail Passenger Transportation; Conforming Amendments to Recordkeeping Requirements; Proposed Rule

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

49 CFR Part 228

[Docket No. FRA–2009–0043, Notice No. 1]

RIN 2130–AC15

Hours of Service of Railroad Employees; Substantive Regulations for Train Employees Providing Commuter and Intercity Rail Passenger Transportation; Conforming Amendments to Recordkeeping Requirements

AGENCY: Federal Railroad Administration (FRA), Department of Transportation (DOT).

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: FRA is proposing to amend its hours of service recordkeeping regulations, to establish hours of service regulations, including maximum on-duty periods, minimum off-duty periods, and other limitations, for train employees (*e.g.,* locomotive engineers and conductors) providing commuter and intercity rail passenger transportation. The proposed regulations would require that railroads employing such train employees analyze and mitigate the risks for fatigue in the schedules worked by these train employees, and that the railroads submit to FRA for its approval the relevant schedules and fatigue mitigation plans. This proposed rule would also make corresponding changes to FRA's hours of service recordkeeping regulation, to require railroads to keep hours of service records and report excess service to FRA in a manner consistent with the new requirements. This proposed regulation is authorized by the Rail Safety Improvement Act of 2008.

DATES: *Comments:* Written comments must be received by May 23, 2011. Comments received after that date will be considered to the extent possible without incurring additional delay or expense.

Public hearing: FRA anticipates being able to resolve this rulemaking without a public hearing. However, if FRA receives a specific request for a public hearing prior to March 29, 2011, one will be scheduled, to be held in the Washington, DC area, on a date prior to the end of the comment period, and FRA will publish a supplemental notice in the **Federal Register** to inform interested parties of the date, time, and specific location of any such hearing.

ADDRESSES: Comments, which should be identified by Docket No. FRA–2009–0043, Notice No. 1, may be submitted by any one of the following methods:

- *Fax:* 1–202–493–2251;
- *Mail:* U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue, SE., Washington, DC 20590;
- *Hand Delivery:* U.S. Department of Transportation, Docket Operations, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue, SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays; or
- Electronically through the Federal eRulemaking Portal, *http://www.regulations.gov.* Follow the online instructions for submitting comments.

Instructions: All submissions must include the agency name, docket name, and docket number or Regulatory Identification Number (RIN) for this rulemaking. Note that all comments received will be posted without change to *http://www.regulations.gov,* including any personal information provided. Please *see* the Privacy Act section of this document.

Docket: For access to the docket to read background documents or comments received, go to *http://www.regulations.gov* at any time or to the U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Mark H. McKeon, Special Assistant to the Associate Administrator for Railroad Safety/Chief Safety Officer, FRA, 1200 New Jersey Avenue, SE., RRS–1, Mail Stop 25, Washington, DC 20590 (telephone: 202–493–6350); Dr. Thomas G. Raslear, Staff Director, Human Factors Research Program, Office of Research and Development, FRA, 1200 New Jersey Avenue, SE., RPD–321, Mail Stop 20, Washington, DC 20590 (telephone 202–493–6356); or Colleen A. Brennan, Trial Attorney, Office of Chief Counsel, FRA, 1200 New Jersey Avenue, SE., RCC–12, Mail Stop 10, Washington, DC 20590 (telephone 202–493–6028 or 202–493–6052).

SUPPLEMENTARY INFORMATION:

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I. Executive Summary

This NPRM proposes hours of service regulations for train employees who provide commuter or intercity rail passenger transportation (passenger train employees). FRA seeks comment on all aspects of this proposal.

Federal laws governing railroad employees' hours of service date back to 1907 with the enactment of the Hours of Service Act (Pub. L. 59–274, 34 Stat. 1415), and FRA, under delegations from the Secretary of Transportation (Secretary), has long administered statutory hours of service requirements for the three groups of employees now covered under the statute, namely employees performing the functions of train employees, signal employees, and dispatching service employees, as those terms are defined at 49 U.S.C. 21101. *See* 49 CFR 1.49; 49 U.S.C. 21101–21109, 21303.

These requirements have been amended several times over the years, most recently in the Rail Safety Improvement Act of 2008 (Pub. L. 110–432, Div. A; RSIA). The RSIA substantially amended the requirements of 49 U.S.C. 21103, applicable to train employees, defined as "* * * individual[s] engaged in or connected with the movement of a train, including

a hostler." 49 U.S.C. 21101(5). However, the RSIA also granted the Secretary authority to prescribe regulations governing the hours of service of passenger train employees. 49 U.S.C. 21109(b)–(c). As will be discussed below, FRA interprets commuter or intercity rail passenger transportation to include rail passenger transportation by tourist, scenic, excursion, and historic railroads. The RSIA provided that this particular subset of train employees would continue to be governed by 49 U.S.C. 21103 as it existed prior to the enactment of the RSIA (old Section 21103), until the earlier of, the effective date of final regulations prescribed by the Secretary, or the date that is three years from the date of enactment of the RSIA. 49 U.S.C. 21102(c). In the absence of a final rule in effect governing this group of train employees, the requirements of the RSIA currently in effect for other train employees (new Section 21103) will go into effect for passenger train employees on October 16, 2011. 49 U.S.C. 21102(c).

As will be discussed further below, FRA reviewed the applicable fatigue science, and sought input from FRA's Railroad Safety Advisory Committee (RSAC). Based on FRA's understanding of current fatigue science, and information received through RSAC, FRA determined that the requirements imposed on train employees by the RSIA were not appropriate for passenger train employees. The chart below compares and contrasts (1) the hours of service requirements in 49 U.S.C. 21103 as amended by the RSIA, (2) the hours of service requirements applicable to all train employees immediately prior to the RSIA, which are currently still applicable to passenger train employees, and (3) the requirements of this proposed regulation that if adopted would apply to passenger train employees.

	FRA Freight train employee statute	Train employee provisions immediately prior to RSIA and currently applicable only to passenger train employees	FRA passenger train employee NPRM
Citation	49 U.S.C. 21103 (as amended by the RSIA effective July 16, 2009) (new section 21103) (Applies to train employees on freight railroads. Will apply to train employees on commuter and intercity passenger railroads if no regulations are in effect by October 16, 2011).	49 U.S.C. 21103 as it existed prior to the October 16, 2008, enactment of the RSIA (old section 21103) (Train employees providing commuter and intercity rail passenger transportation are currently covered by these provisions pursuant to 49 U.S.C. 21102(c).).	Proposed 49 CFR part 228, subpart F.
Use of Fatigue Science.	None	None	NRPM requires schedules to be analyzed under a validated biomathematical fatigue model such as the Fatigue Avoidance Scheduling Tool™, with the exception of certain schedules (completely within the hours of 4 a.m. and 8 p.m. and otherwise in compliance with the limitations in the regulation) deemed as categorically presenting an acceptable level of risk for fatigue that does not exceed the defined fatigue threshold.
Limitations on Time on Duty in a Single Tour.	12 consecutive hours of time on duty or 12 nonconsecutive hours on duty if broken by an interim release of at least 4 consecutive hours uninterrupted by communication from the railroad likely to disturb rest, in a 24-hour period that begins at the beginning of the duty tour.	12 consecutive hours of time on duty or 12 nonconsecutive hours on duty if broken by an interim release of at least 4 consecutive hours, in a 24-hour period that begins at the beginning of the duty tour.	12 consecutive hours of time on duty or 12 nonconsecutive hours on duty if broken by an interim release of at least 4 consecutive hours, in a 24-hour period that begins at the beginning of the duty tour.
Limitations on Consecutive Duty Tours.	May not be on duty as a train employee after initiating an on-duty period on six consecutive days without receiving 48 consecutive hours off duty free from any service for any railroad carrier at the employee's home terminal. Employees are permitted to initiate a seventh consecutive day when the employee ends the sixth consecutive day at the away-from-home terminal, as part of a pilot project, or as part of a grandfathered collectively bargained arrangement. Employees performing service on this additional day must receive 72 consecutive hours free from any service for any railroad carrier at their home terminal before going on duty again as a train employee.	None	No more than six "Type 2" assignments (generally, those including time on duty between 8 p.m. and 4 a.m.) without 24 consecutive hours off duty at the employee's home terminal. No more than 14 "Type 1" assignments (those not Type 2) without 2 consecutive calendar days off duty at the employee's home terminal. Employees may be permitted to perform service on an additional day to facilitate their return to their home terminal.

	FRA Freight train employee statute	Train employee provisions immediately prior to RSIA and currently applicable only to passenger train employees	FRA passenger train employee NPRM
Cumulative Limits on Time on Duty.	Limited to 276 hours of time on duty, in deadhead transportation to a point of final release, or any other mandatory activity for the railroad carrier. Limited to 30 hours of time spent on duty and waiting for or in deadhead transportation to a point of final release after reaching 12 hours of time on duty and waiting for or in deadhead transportation to a point of final release.	None	None.
Mandatory Off-Duty Periods.	10 consecutive hours of time off duty free from any communication from the railroad likely to disturb rest, with additional time off duty if on-duty time plus time in or awaiting deadhead transportation to final release exceeds 12 hours. 48 consecutive hours off duty, free from any service for any railroad carrier, after initiating an on-duty period for 6 consecutive days. If 7 consecutive days are permitted, mandatory off-duty period extended to 72 consecutive hours.	8 consecutive hours (10 consecutive hours if time on duty reaches 12 consecutive hours).	8 consecutive hours (10 consecutive hours if time on duty reaches 12 consecutive hours).
Specific Rules for Nighttime Operations.	None	None	Schedules that include any time on duty between 8 p.m. and 4 a.m. must be analyzed using a validated biomathematical model of human performance and fatigue approved by FRA. Schedules with excess risk of fatigue must be mitigated or supported by a determination that mitigation is not possible and the schedule is operationally necessary and approved by FRA.
Specific Rules for Unscheduled Assignments.	None	None	The potential for fatigue presented by unscheduled work assignments must be mitigated as part of a railroad's FRA-approved fatigue management plan.
Recordkeeping requirements.	Record for each duty tour must contain 15 elements specified in 49 CFR 228.11(b).	Record for each duty tour must contain the first 11 elements specified in 49 CFR 228.11(b), as items 12 through 15 relate to RSIA requirements not applicable to train employees providing commuter or intercity rail passenger transportation.	Record for each duty tour must contain the first 12 elements specified in 49 CFR 228.11(b). Item 12 refers to recording the number of consecutive days, which would be required by the proposed rule.
Excess Service Reporting Requirements.	Requires reporting of any of 10 different ways in which hours of service limitations may be exceeded.	Requires reporting of any of 4 different ways in which hours of service limitations may be exceeded.	Requires reporting of any of 10 different ways in which hours of service limitations may be exceeded (reflecting various ways of violating new consecutive-days requirements).

This proposed rule would leave intact the existing limitations set by old section 21103 on the maximum number of hours in a duty tour and minimum number of hours in a statutory off-duty period. An additional limitation would be added on the number of consecutive days that a passenger train employee may work, depending on the time of day of the assignment. This differentiation takes into account the fact that work during nighttime hours may present a greater risk for fatigue. Conforming changes would also be made to the recordkeeping and reporting requirements to accommodate the consecutive limitations on consecutive days.

The limitations on maximum hours worked, minimum hours of rest, and consecutive days would provide a "floor," a minimum set of limitations, within which the proposed rule would require railroads subject to this proposed rule to analyze their schedules using a validated and calibrated biomathematical model of human performance and fatigue, and to mitigate any fatigue identified that exceeds the fatigue threshold for the model. The fatigue threshold is a level of fatigue at which safety may be compromised. As will be discussed below, there are two models that currently have been validated and calibrated using data from freight railroads, that can be used for the analysis required by this proposed rule. The proposed rule also allows for the development of new models. It

discusses procedures for validating and calibrating a model, and provides that evidence of a new model's validation and calibration may be submitted to FRA for approval.

The proposed rule would define as a "Type 1 assignment" any assignment that requires an employee to report for duty no earlier than 4 a.m. and be released from duty no later than 8 p.m. Based on analysis conducted during the formulation of this proposal, FRA proposes to subject such assignments to a less restrictive consecutive-days limitation, and to deem such schedules as presenting an acceptable level of fatigue when otherwise in compliance with the limitations established in this proposal, such that these schedules would not be required to be submitted to FRA for approval, nor would the application of fatigue mitigation tools to these schedules be required.

A "Type 2 assignment" would be any assignment having any period of time during a calendar day before 4 a.m. or after 8 p.m. Within 180 days of the effective date of a final regulation in this rulemaking, the proposed rule would require railroads to analyze the fatigue risk of assignments they make to their passenger train employees. If the analysis shows that a schedule does not exceed the fatigue threshold, and the schedule is otherwise in compliance with the limitations of the proposed rule and does not require the employee to be on duty for any period of time between midnight and 4 a.m., the proposed rule would allow that schedule to be treated as a Type 1 assignment for the purposes of the consecutive-days limitation, and there would be no requirement to mitigate fatigue in that schedule. However, for those schedules that analysis indicates have a level of risk for fatigue exceeding the fatigue threshold, the railroad would be required to mitigate the fatigue. Railroads would also be required to complete their analysis and submit any schedules with a risk exceeding the fatigue threshold, and the mitigation tools the railroad applied to mitigate the fatigue risk in those schedules to FRA for approval. In addition, any schedule, the fatigue risk of which could not be sufficiently mitigated to within the fatigue threshold, but which the railroad deems operationally necessary, must also be submitted for FRA approval, along with a declaration of operational necessity.

The proposed rule would also require railroads to submit any schedule changes that would result in a schedule that would have been required to be submitted if it were an original schedule, unless the new schedule was the same as another schedule that had previously been analyzed and approved.

Within 120 days of any railroad submission, FRA will notify the railroad of any exceptions taken to its submission. While the proposed rule would require FRA approval of the schedules and fatigue mitigation tools, FRA expects that it would work with a railroad to make necessary modifications to schedules or mitigation tools to minimize fatigue to the greatest extent possible. FRA does not intend to dictate a required schedule for operations. FRA seeks comment on the logistics of schedule review and approval and the collaboration between FRA and the railroad to address any areas of concern.

Railroads would be required to consult with affected employees and applicable labor organizations regarding the analysis of work schedules, fatigue mitigation tools, and submissions to FRA. Should the employees or labor organizations disagree with the railroad, they have the opportunity, under the proposal to file a statement for FRA's consideration in reviewing the submission and determining whether to approve it.

Finally, the proposed rule would require initial fatigue training, addressing a list of subjects, and refresher training every three years. This training may be combined with other training the railroads are providing to their employees.

FRA has analyzed the economic impacts of this proposed rule against two baselines. One is a "status quo" baseline that reflects present conditions (*i.e.,* primarily, the statutory hours of service provisions (specifically, old section 21103) and, secondarily, the hours of service recordkeeping and reporting regulations) that have applied, and will continue to apply, to passenger railroads, with respect to their train employees, until either the passenger railroads become subject, with respect to the same employees, to either the freight hours of service laws on October 16, 2011 or an FRA-issued hours of service rule prior to that). The other baseline is a "no regulatory action" baseline that reflects what would happen in absence of this rulemaking (*i.e.,* the freight hours of service laws are applied to passenger railroads with respect to their train employees).

With respect to the "status-quo" baseline, the FRA proposal would impose costs that are higher than the quantified safety benefits. Costs compared to the "status quo" baseline total $2.1 million (undiscounted), $1.4 million (PV, 7 percent), and $1.7 million (PV, 3 percent). Quantified benefits compared to the "status quo" baseline total $1.4 million (undiscounted), $.7 million (PV, 7 percent), and $1.0 million (PV, 3 percent). However, there are additional benefits that have not been quantified, but should be considered when comparing the overall costs and benefits. For instance, safety and health benefits will accrue from the transfer of knowledge to employees, their families, friends and others with whom they may share the fatigue knowledge they acquire from the required fatigue awareness training programs. This fatigue awareness will result in more optimal decisions regarding rest and sleep leading to less fatigue and improved safety outside of passenger train operations during the course of daily activities that may include the operation of motor vehicles or other heavy machinery. This fatigue awareness will also result in proper identification and treatment, if necessary, of fatigue symptoms. Separately, accident avoidance will result in fewer unplanned delays to passengers and freight commodities impacted by passenger train accident and incidents that result in blocking one or more tracks for prolonged periods. These costs can be very substantial given the need to investigate accidents and often clear wreckage. Finally, there is the non-quantified benefit of ensuring that passenger railroads do not unknowingly require train employees to work schedules with unacceptable high-fatigue risk levels. It is not unreasonable to expect that the unquantified benefits will raise the benefits to a level quite comparable to the costs. FRA also believes that the unquantified benefits coupled with the quantified safety benefits compare very well with the costs associated with meeting the intent of the statutory mandate as proposed.

With respect to the "no regulatory action" baseline, FRA found that its proposal represents a substantially more cost-effective alternative for achieving the goal of identifying and mitigating unacceptable fatigue risk levels and thus ensuring the safety of passenger train operations. Over the 20-year period analyzed, the undiscounted costs associated with the "no regulatory action" alternative total $75.5 million compared to $2.1 million for the FRA proposal. Similarly, when discounted at 7 percent, the costs associated with the "no regulatory action" alternative total $59.0 million compared to $1.4 million for the FRA proposal and when discounted at 3 percent, the costs associated with the "no regulatory action" alternative total $66.8 million

compared to $1.7 million for the FRA proposal.

Cost description	No-action alternative			NPRM		
	Undiscounted	PV@7%	PV@3%	Undiscounted	PV@7%	PV@3%
New Engineer Training, Initial (20% New Hires)	$31,237,549	$26,299,825	$28,705,081	0	0	0
New Engineer Training, Refresher (20% New Hires)	4,599,050	2,278,431	3,327,802	0	0	0
New Conductor Training, Initial (20% New Hires)	30,847,974	25,942,971	28,330,908	0	0	0
New Conductor Training, Refresher (20% New Hires)	8,636,745	4,278,146	6,249,071	0	0	0
Work Schedule Analysis (No-Reg Action)/Initial Analysis of Work Schedules + Follow-up Analysis and Fatigue Mitigation Plan Review (NPRM)	189,723	177,312	184,198	($126,482 + $240,316) = $366,799	($118,208 + $122,175) = $240,382	($122,798 + $175,894) = $298,692
Biomathematical Model of Fatigue Software	0	0	0	417,500	268,723	337,240
Use of Rest Facilities	0	0	0	30,988	28,961	30,086
Fatigue Training	0	0	0	1,329,673	841,748	1,065,188
TOTAL (rounded)	75,511,041	58,976,685	66,797,059	2,144,960	1,379,815	1,731,206

FRA estimates that the recordkeeping and reporting costs per employee record under the no-regulatory action alternative and FRA proposal will be practically the same.

The estimated accident reduction benefits of the proposed rule relative to the statutory hours of service requirements currently in place include prevented accident damages, injuries, and fatalities. The table below presents the estimates for the 20-year period of analysis.

INTERCITY PASSENGER, COMMUTER, TOURIST AND EXCURSION RAILROADS

[All track types]

Accident reduction benefits	VSL = $6 M undiscounted benefits	VSL = $6 M discounted PV@ 7%	VSL = $6 M discounted PV@ 3%
Property Damage	$829,366	$439,316	$616,943
Injuries	120,547	63,854	89,672
Fatalities	429,088	227,288	319,187
TOTAL (rounded)	1,379,001	730,458	1,025,803

FRA does not expect that the overall number of casualties and property damages prevented under the proposed rule will differ from those that would be prevented under the statutory freight hours of service requirements.

FRA seeks comments on all aspects of the economic impacts of its proposal.

II. Statutory Background and History

Federal laws governing railroad employees' hours of service date back to 1907 with the enactment of the Hours of Service Act. These laws, codified as amended primarily at 49 U.S.C. 21101–21109, are intended to promote safe railroad operations by limiting the hours of service of certain railroad employees and ensuring that they receive adequate opportunities for rest in the course of performing their duties. Public Law 103–272 (1994). The Secretary is charged with the administration of those laws, collectively referred to in this document as the hours of service laws (HSL). This function has been delegated to the FRA Administrator. 49 U.S.C. 103(c); 49 CFR 1.49(d).

Congress substantially amended the HSL on three occasions. The first significant amendments occurred in 1969. Public Law 91–169, 83 Stat. 463. The 1969 amendments reduced the maximum time on duty for train employees [1] from 16 hours to 14 hours effective immediately, with a further reduction to 12 hours automatically taking effect two years later. Congress also established provisions for determining, in the case of a train employee, whether a period of time is to be counted as time on duty. 49 U.S.C. 21103(b). In so doing, Congress also addressed the issue of deadhead

[1] A "train employee" is defined at 49 U.S.C. 21101(5) and 49 CFR 228.5 as an individual engaged in or connected with the movement of a train, including a hostler. FRA also interpreted this statutory term in published interpretations in 49 CFR part 228, Appendix A, providing: "Train or engine service refers to the actual assembling or operation of trains. Employees who perform this type of service commonly include locomotive engineers, firemen, conductors, trainmen, switchmen, switchtenders (unless their duties come under the provisions of section 3) and hostlers." Other employees, such as food service providers or sleeping car attendants, who may work on passenger trains, but have no responsibility for assembling or operating the train, are not within the definition of a train employee, and are, as such, not generally covered by this proposed rule, or any other hours of service limitations, but they would be covered if they performed functions related to assembling or operating the train, regardless of the employee's job title.

transportation [2] time, providing that "[t]ime spent in deadhead transportation to a duty assignment" is counted as time on duty. (Emphasis added). Although time spent in deadhead transportation from a duty assignment to the point of final release is not included within any of the categories of time on duty, Congress further provided that it shall be counted as neither time on duty nor time off duty. 49 U.S.C. 21103(b)(4). This provision effectively created a third category of time, known commonly as "limbo time."

In 1976, Congress again amended the HSL in several important respects. Most significantly, Congress expanded the coverage of the laws, by including hostlers within the definition of employees now termed "train employees", and adding the section providing hours of service requirements for "signal employees", now codified at 49 U.S.C. 21104. Congress also added a provision that prohibited a railroad from providing sleeping quarters that are not free from interruptions of rest caused by noise under the control of the railroad, and that are not clean, safe, and sanitary, and prohibited the construction or reconstruction of sleeping quarters in an area or in the immediate vicinity of an area in which humping or switching operations are performed. *See* Public Law 94–348, 90 Stat. 818 (1976).

Section 108 of the RSIA also amended the HSL in a number of significant ways, most of which became effective July 16, 2009. *See* Section 108 of Public Law 110–432, Div. A, and FRA Interim Statement of Agency Policy and Interpretation at 74 FR 30665 (June 26, 2009). The RSIA established a limit of 276 hours per calendar month for train employees on service performed for a railroad and on time spent in or waiting for deadhead transportation to a point of final release, increased the quantity of the statutory minimum off-duty period after being on duty for 12 hours in broken service from 8 hours of rest to 10 hours of rest, prohibited communication with train or signal employees during certain minimum statutory rest periods, and established mandatory time off duty for train employees of 48 hours after initiating an on-duty period on six consecutive days, or 72 hours after initiating an on-duty period on seven consecutive days. 49 U.S.C. 21103–21104. The RSIA also revised the definition of "signal employee" to include contractors who perform the work of a signal employee within the scope of the statute. 49 U.S.C. 21101(4).

However, Section 108(d) of the RSIA, which became effective on October 16, 2008, provided that the requirements described above for train employees would not go into effect on July 16, 2009, for train employees when providing commuter or intercity rail passenger transportation. 49 U.S.C. 21102(c). Section 108(d) further provided that these train employees, who provide commuter or intercity passenger rail service, would continue to be governed by the old HSL (as they existed immediately prior to the enactment of the RSIA, at 49 U.S.C. 21103 prior to its 2008 amendment), until the effective date of regulations promulgated by the Secretary. 49 U.S.C. 21102(c). However, if no new regulations are in effect before October 16, 2011, the provisions of Section 108(b), which applied to train employees, would be extended to these employees at that time. *Id.*

Section 108(e) of the RSIA specifically provides the Secretary with the authority to issue hours of service rules and orders applicable to train employees engaged in commuter rail passenger transportation and intercity rail passenger transportation (as defined in 49 U.S.C. 24102), that may be different from the statute applied to other train employees. 49 U.S.C. 21109(b). It further provides that such regulations and orders may address railroad operating and scheduling practices, including unscheduled duty calls, communications during time off duty, and time spent waiting for deadhead transportation or in deadhead transportation from a duty assignment to the place of final release, that could affect employee fatigue and railroad safety. *Id.*

Section 108(e) of the RSIA also provides:

> [i]n issuing regulations under subsection (a) the Secretary shall consider scientific and medical research related to fatigue and fatigue abatement, railroad scheduling and operating practices that improve safety or reduce employee fatigue, a railroad's use of new or novel technology intended to reduce or eliminate human error, the variations in freight and passenger railroad scheduling practices and operating conditions, the variations in duties and operating conditions for employees subject to this chapter, a railroad's required or voluntary use of fatigue management plans covering employees subject to this chapter, and any other relevant factors.

49 U.S.C. 21109(c). Section 21109(a) of title 49 of the U.S. Code refers to other regulatory authority granted to FRA, as the Secretary's delegate related to the HSL, which is not relevant to this proposed rule. However, FRA believes that one of the goals of the present rulemaking is to identify and reduce fatigue for the employees who will be covered by the final rule. Therefore, as will be described below, FRA has based these proposed regulations on scientific research related to fatigue and fatigue abatement, as applied to railroad scheduling practices and operating conditions for train employees providing commuter and intercity rail passenger transportation. Section III below will describe the primary scientific foundation and support for the requirements contained in this proposed rule. In addition, scientific considerations will also be addressed in discussion of various elements of this proposal, including in the discussion of specific provisions in the Section-by-Section Analysis below.

III. Scientific Background

Most mammals, including human beings, have an approximately 24-hour sleep-wake cycle known as a "circadian rhythm." Rapid changes in the circadian pattern of sleep and wakefulness disrupt many physiological functions such as hormone releases, digestion, and temperature regulation. Human function can be affected, performance may be impaired, and a general feeling of debility may occur until realignment is achieved. Jet lag when flying east is the most commonly experienced syndrome similar to the experience of consistently working on a less-than-24-hour cycle.

Fatigue risk in an industry that operates 24 hours a day and 7 days per week is not just dependent on how many hours per day a person is permitted to work, or the amount of time that a person is required to be off duty between periods of work. Other significant factors in the level of fatigue risk include the time of day that an employee works and the number of consecutive days that an employee works. In addition, the quantity and quality of sleep vary with the time of day. Because of natural circadian rhythms and environmental and social factors, most people are able to achieve the best quality and most restful sleep at night.

As previously mentioned, the statutory hours of service requirements currently in effect for train employees providing commuter and intercity rail passenger transportation establish a maximum on-duty time of 12 hours in a 24-hour period, and a minimum off-duty time of 8 hours in a 24-hour period, or 10 hours after a period of 12 consecutive hours on duty. Statutory requirements applicable to train

[2] Deadheading is defined at 49 CFR 228.5 as the physical relocation of a train employee from one point to another as a result of a railroad-issued verbal or written directive.

employees on freight railroads, as revised by the RSIA, include a limitation on the number of consecutive days on which a train employee may initiate an on-duty period. However, the HSL for the railroad industry have never, up to the present day, differentiated in their requirements based on the time of day in which service is performed, or the time of day that a period is available for rest.

As will be discussed further below, FRA conducted two work/rest diary studies with train employees in freight and passenger operations. Data from these studies indicate that train employees get more sleep than the average U.S. adult. While 46 percent of U.S. adults get less than seven hours of sleep, only 35 percent of freight train employees and 41 percent of passenger train employees get less than seven hours of sleep. This amount of sleep results in a level of fatigue that increases accident risk by 21 to 39 percent.[3] Moreover, certain operational characteristics of commuter and intercity passenger service mitigate the fatigue associated with this amount of sleep loss relative to freight service. For example, many train employees on commuter and intercity passenger railroads work scheduled assignments, in which they begin and end their work day at approximately the same time each day. These employees also usually begin and end their duty tour at the same location, meaning that they can go home at the end of their work day and sleep in their own beds. In addition, very few scheduled assignments on most railroads operate during late night hours, and many of them result in duty tours significantly shorter than the maximum hours that the employee would be allowed to remain or go on duty under the existing law or this proposed regulation. Because these characteristics are more likely to allow for periods of rest that are consistent with normal circadian rhythms, they will provide better opportunities for rest, and less risk for fatigue. In addition, as will be discussed further below, two FRA work/rest diary studies demonstrate that levels of fatigue are not equivalent in freight and passenger operations (Work Schedules and Sleep Patterns of Railroad Train and Engine Service Workers *http://www.fra.dot.gov/downloads/Research/ord0922.pdf* (which included data from a small number of train employees in passenger operations); Work Schedules and Sleep Patterns of Railroad Train and Engine Employees in Passenger Operations [in review—the diary study conducted to support this rulemaking]).

For all of these reasons, FRA has determined that some of the specific limitations that Congress applied to train employees on freight railroads in the RSIA are not appropriate for train employees on commuter and intercity passenger railroads.

However, FRA also recognizes that some train employees covered by this proposed rule will experience a level of fatigue at which safety may be compromised. This is particularly true of those employees who do not work scheduled assignments and may not return home at the end of each duty tour, or who are required to perform service during late night hours, or to work duty tours of the maximum length allowed by existing requirements, with only the minimum required rest between duty tours. FRA has attempted, in this proposed regulation, to specifically address those employees who are most at risk for fatigue, even when in compliance with specific hours of service limitations. As will be discussed below, research that resulted in the validation of fatigue models using data from freight railroads demonstrated that fatigue increases the risk of a human factors accident. In addition, as will be discussed below, diary data show the risk of fatigue in passenger operations. The risk must be measured in order to be managed, and fatigue models allow for that measurement.

An effective proactive fatigue risk management program needs to balance the amount of work performed against when the work is performed, how long a work schedule is in effect in terms of hours in a day, consecutive days, and other variables. This proposed regulation would address fatigue risk by going beyond establishing limitations on the amount of time that an employee may work, and the minimum amount of time that an employee must be off duty between duty tours. It would additionally require the analysis of the fatigue risk in employee work schedules using a biomathematical model of performance and fatigue, identification of those schedules that present an unacceptable level of fatigue risk, and mitigation of the identified fatigue risk. In addition, the proposed regulation would establish different requirements for schedules of employees who operate trains during the late night hours in which the fatigue risk is greatest. Thus, the proposed rule would specifically address those schedules the characteristics of which present a risk for fatigue, even when otherwise in compliance with required maximum on-duty and minimum off-duty periods and other limitations. These risks would not be addressed by a regulation that simply established maximum on-duty and minimum off-duty periods, just as they are not addressed by the existing statutory requirements.

A. Validated and Calibrated Fatigue Models [4]

A biomathematical model of performance and fatigue that has been properly validated and calibrated predicts accident risk based on analysis of identified periods of wakefulness and periods available for sleep.

"Validation" of a biomathematical model of human performance and fatigue means determining that the output of a biomathematical model of human performance and fatigue actually measures human performance and fatigue. There are two dimensions to this validation. The first is that the model must be demonstrated to be consistent with currently established science in the area of human performance, sleep, and fatigue. The second part of the validation process involves determining that the model output has a statistically reliable relationship with the risk of a human factors accident caused by fatigue, and that the model output does not have such a relationship with nonhuman factors accident risk.

In general, and for the purpose of compliance with this rule, a model will be validated if statistical analyses demonstrate the existence of a statistically significant relationship between the output of the model and the human factors accident risk ratio, and the absence of such a relationship between the output of the model and the nonhuman factors accident risk ratio. The presence of a statistically significant relationship is evaluated by way of the correlation coefficient (r) with statistical significance requiring a *p*-value of less than 0.05. The first step is the selection of bin [5] edges that correspond to varying levels of fatigue (*e.g.,* the "not fatigued" bin and the "severely fatigued" bin). The "not fatigued" bin is determined by the output of the model when sleep occurs or can occur for 8 or more hours, without abrupt phase changes, between 10 p.m. and 10 a.m. This is similar to the amount of fatigue produced by the standard 9 a.m. to 5 p.m., Monday

[3] *See* Hursh, *et al. infra* at footnote 8.

[4] For a discussion of existing models and their application, *see* Dean II, D.A., Fletcher, A., Hursh, S.R. and Klerman, E.B., *Developing Models of Neurobehavioral Performance for the* "*Real World*"*,* J. Biol Rhythms 2007; 22; 246.

[5] In statistics, a "bin" is a discrete, nonoverlapping interval of a variable. Here, the variable is the level of fatigue.

through Friday work week. The performance bin "severely fatigued" is determined by the output of the model when there is total sleep deprivation for 42.5 hours after waking at 7 a.m. This is similar to the amount of fatigue produced by a permanent night shift schedule with six consecutive 12-hour work periods followed by 1 day off. These two bins are the "anchor" bins for the validation procedure. Four additional bins, equally spaced between the anchor bins, accommodate the intermediate fatigue scores.

Calibration is, in general, the assignment of numerical values to represent aspects of empirical observations. In the case of human fatigue and performance, the calibration of a fatigue scale would start with the assignment of values to "not fatigued," and the most fatigued condition might be described as "severely fatigued." The calibration process starts during the validation process with the assignment of model output values to anchor bins for "not fatigued" and "severely fatigued." The next step consists of determining the fatigue threshold. Given a scale for human fatigue and performance and a relationship between that scale and human factors accident risk, a final calibration point would be to determine the fatigue value at which fatigue becomes unacceptable because the increase in accident risk at that level compromises safety. This is the fatigue threshold.

The procedure for determining the fatigue threshold consists of several computations. First, the cumulative risk for the six fatigue score bins is determined for human factor and nonhuman factor accidents. Next, a 95-percent confidence interval is calculated for the cumulative risk in each bin. Finally, the fatigue score bin in which human factor cumulative risk exceeds both human factors Accident Risk Ratio = 1 and the mean non-human factors risk is determined. This is the fatigue threshold for the model.

The accident risk is defined as an odds ratio, expressed as a percentage of accidents occurring when employees involved in the accident are within a given range of fatigue, divided by the percentage of time spent by the individual working in that given range of predicted fatigue. For example, if 20 percent of accidents occur when an employee is within a particular range of predicted fatigue, and 10 percent of an employee's time in a given duty tour is spent within that range of predicted fatigue, then that specific range of predicted fatigue has doubled the accident risk.[6]

1. Fatigue Avoidance Scheduling Tool™ Model

FRA-sponsored research resulted in the development of a Sleep, Activity, Fatigue, and Task Effectiveness (SAFTE) model and Fatigue Avoidance Scheduling Tool™ (FAST) that have been validated and calibrated using data from freight railroads. FAST is a biomathematical model of performance and fatigue that can be used to assess the risk of fatigue in work schedules and to plan schedules that ameliorate fatigue. The model takes into account the time of day when work occurs (circadian rhythm) and opportunities for sleep based on work schedules.[7]

The model validation used work histories from 400 human factors accidents and 1,000 non-human factors accidents on freight railroads. The model has not specifically been validated using passenger railroad accidents, because there were not enough such accidents in the relevant time period to obtain statistically significant results, and had the period of analysis been extended sufficiently to capture enough passenger railroad accidents, much of the needed work schedule data for the employees involved in those accidents would no longer be available. However, FAST measures fatigue and effectiveness, based on laboratory analysis of cognitive and sensory motor functions during sleep deprivation, which are not job specific. Furthermore, the tasks associated with freight and passenger train operations are actually highly similar. In addition, there was no statistically significant difference between the proportion of accidents in categories associated with fatigue, between freight and passenger railroads. For all of these reasons, FRA has determined that the model is valid for use in evaluating fatigue levels in passenger railroad schedules for the purposes of this proposed rule. Indeed, the FAST model has been used by other entities, including the military and the airline industry.

FAST was used to calculate cognitive effectiveness (the inverse of fatigue) on a scale from 0 (worst) to 100 (best) using the 30-day work histories of locomotive engineers prior to the accidents and at the time of the accidents.[8] Cognitive effectiveness is a metric that tracks speed of performance on a simple reaction time test and is strongly related to overall response speed, vigilance, and the probability of lapses.

The analysis revealed a significant high correlation between reduced predicted crew effectiveness (as a result of increased fatigue) and the risk of a human factor accident for freight railroads. As was discussed above, although FAST was validated using freight railroad accidents, the cognitive and sensory motor functions it measures are not job specific, so the resulting determinations of effectiveness and accident risk are equally applicable to passenger railroads. There was no significant relationship between increased fatigue and non-human factor accidents. In addition, the data showed that there is a reliable relationship between the time of day of human factor accidents and the expected, normal circadian rhythm. The circadian pattern was not reliably present for non-human factor accidents. The risk of a human factor accident is increased by 20 percent by working during the hours from midnight to 3 a.m. *Id.*

The study showed that there is an elevated risk of human factors accidents at any effectiveness score below 90, and accident risk increased as effectiveness decreased. The risk of a human factors accident is increased by 21 percent at effectiveness scores at or below 70, which is a level of risk elevated beyond chance level, and greater than the mean risk of non-human factor accidents. Twenty-three percent of the freight accidents examined occurred when an employee involved was at or below an effectiveness score of 70. The study also found that cause codes associated with accidents that occurred at or below an effectiveness score of 70 showed an over-representation of the type of human factors accident that might be expected of a fatigued crew, such as passing a signal indicating stop, or

[6] For more information on the proper procedures for validation and calibration of a biomathematical model of performance and fatigue, *see* Raslear, T.G., *Criteria and Procedures for Validating Biomathematical Models of Human Performance and Fatigue; Procedures for Analysis of Work Schedules.* (A copy of this document has been placed in the docket for this rulemaking.)

[7] For a description of the FAST model, *see* Hursh, S. R., Redmond, D. P., Johnson, M. L., Thorne, D. R., Belenky, G., Balkin, T. J., Storm, W. F., Miller, J. C., and Eddy, D. R. (2004). *Fatigue models for applied research in warfighting. Aviation, Space, and Environmental Medicine, 75,* A44–53.

[8] Hursh, S. R., Raslear, T. G., Kaye, A. S., and Fanzone, J. F. (2006). *Validation and calibration of a fatigue assessment tool for railroad work schedules, summary report* (Report No. DOT/FRA/ORD–06/21). Washington, DC: U.S. Department of Transportation. *http://www.fra.dot.gov/downloads/Research/ord0621.pdf;* Hursh, S. R., Raslear, T. G., Kaye, A. S., and Fanzone, J. F. (2008). *Validation and calibration of a fatigue assessment tool for railroad work schedules, final report* (Report No. DOT/FRA/ORD–08/04). Washington, DC: U.S. Department of Transportation. *http://www.fra.dot.gov/downloads/Research/ord0804.pdf.*

exceeding the maximum authorized speed, which confirmed that the detected relationship between accident risk and predicted effectiveness is meaningful.

Other research, comparing the effects of alcohol and sleep deprivation on performance on a driving simulator, has also indicated that an effectiveness score of 70 is the rough equivalent of a 0.08 blood alcohol level, or the equivalent of being awake for 21 hours following an 8-hour sleep period the previous night.[9] However, direct comparisons between the performance effects of alcohol and fatigue must be made with caution. Some aspects of a complex task, such as driving an automobile simulator, show a high degree of congruence between the effects of alcohol and fatigue, while the effects of alcohol and fatigue on other aspects of the same task are highly dissimilar. For instance, Arnedt *et al.* (2001) found that tracking, tracking variability, and speed variability were all similarly affected by alcohol and fatigue in a driving simulator. However, Arnedt *et al.* found that, while subjects drove faster after consuming alcohol, fatigue did not affect driving speed. In addition, alcohol produced a more rapid deterioration in performance in off-road events (incidents in which the simulated vehicle was driven off the road) than did fatigue. Thus, while it is clear that alcohol and fatigue can both cause deterioration in task performance, the effect of alcohol is often more severe and extensive.[10]

As a result of this analysis, a fatigue threshold (the fatigue level at which there is an unacceptable accident risk due to fatigue) of 70 was established for FAST.[11] Accordingly, an effectiveness score of less than 70 would exceed that threshold for the purposes of this proposed regulation.[12]

2. Fatigue Audit InterDyne ™ Model [13]

Another biomathematical model of performance and fatigue that has recently been validated and calibrated is the Fatigue Audit InterDyne ™ (FAID). FAID was validated and calibrated using the same accident data from freight railroads as FAST used.[14] For the same reasons described above with regard to FAST, FRA has determined that FAID is valid for use in evaluating fatigue levels in passenger railroad schedules for the purposes of this proposed rule.

Analysis of the FAID scores resulted in a statistically significant correlation for both human factor and non-human factor accidents, which meant that FAID could be validated for freight railroads, and as explained above FRA has determined that it is equally applicable to passenger railroads. The FAID model was validated with scores of 40 and 120, corresponding to "not fatigued" and "extremely fatigued." FAID scores showed a statistically reliable relationship with the risk of a human factors accident but did not show such a relationship with other accident risk.

However, in analyzing the FAID data for the purpose of calibration, none of the confidence intervals demonstrated a statistically significant increase in cumulative risk. This was true for both human factors and non-human factors accidents. An alternative procedure, using FAST, which was already a validated and calibrated model, allowed for calibration of FAID. The alternative procedure required correlating FAST and FAID scores. The calibration of FAST is the equivalent of fundamental measurement in physics, while the calibration of FAID by reference to FAST is the equivalent of derived measurement, both of which are valid measurement methods.[15]

Correlation of individual FAST and FAID scores found a high level of variation in the individual FAST scores within a FAID bin, so linking fatigue scores on an individual level was not feasible. An alternative method is to calculate confidence intervals for the population or mean score. Since biomathematical models are known to be more accurate at predicting population behavior rather than individual behavior, the confidence intervals of the bin means were compared. When analyzed at the population level, the regression line for FAID scores as a function of FAST scores, or FAST scores as a function of FAID scores, has an r of 0.909.

The calibration of FAID indicated that FAID scores above 80 indicate a severe level of fatigue, and that FAID scores between 70 and 80 indicate extreme fatigue. A fatigue threshold (as with FAST, the fatigue level at which there is an unacceptable accident risk due to fatigue) of 60 was established for FAID, and an effectiveness score greater than 60 would exceed that threshold.[16]

FRA believes that the prediction of the effectiveness of an employee's performance may be used to improve work schedules, to alter to the extent possible the timing of safety-critical tasks to coincide with periods of optimal performance, and to apply countermeasures to reduce the fatigue risk, and the corresponding risk of accidents or other errors associated with that fatigue. It is for this reason that FRA has concluded that it is appropriate to require analysis of employee work schedules using a validated and calibrated biomathematical model of performance and fatigue, as an essential component of these proposed hours of service regulations.

As will be discussed in detail below, this proposed rule would require the railroads to mitigate the fatigue resulting from following a certain work schedule, and submit the schedules and fatigue mitigations to FRA for approval. These requirements will be triggered when analysis reveals that an employee working a given schedule will experience 20 percent or more of the employee's working time at an effectiveness score at or exceeding the fatigue threshold under the model used for analysis; that is to say, at an effectiveness score of 70 or less determined by FAST, or at an effectiveness score of 60 or greater as determined by FAID. The applicable effectiveness score could be different if a railroad were using another model that had been properly validated and calibrated. FRA encourages the development, validation, and calibration of alternative models, and their submission to FRA for approval under proposed § 228.407(c), by any

[9] *See* Arnedt, J.T., Wilde, G.J., Munt, P.W., and MacLean, A.W. (2001). How do prolonged wakefulness and alcohol compare in the decrements they produce on a simulated driving task? *Accident Analysis and Prevention, 33,* 3, 337–44; Dawson, D., and Reid, K. (1997). "Fatigue, alcohol and performance impairment." *Nature 388,* 23.

[10] *See also* Williamson, A., Feyer, A.-M., Friswell, R., and Finlay-Brown, S. (2000). *Development of Measures of Fatigue: Using an Alcohol Comparison to Validate the Effects of Fatigue on Performance* (Road Safety Research Report CR 189). Canberra, Australia: Australian Transport Safety Bureau.

[11] *See* Hursh, *et al., supra* note 8.

[12] A 21-day free trial of the FAST Model can be downloaded at *http://fatiguescience.com/products/fast.*

[13] For a description of FAID, *see* Roach, G. D., Fletcher, A., and Dawson, D. (2004). A model to predict work-related fatigue based on hours of work. *Aviation, Space, and Environmental Medicine, 75,* A61–9.

[14] For details *see* Tabak, B., and Raslear, T. G. (2010). *Procedures for Validation and Calibration of Human Fatigue Models: The Fatigue Audit InterDyne (FAID) Tool* (Report No. DOT/FRA/ORD–10/14). Washington, DC: U.S. Department of Transportation. (*http://www.fra.dot.gov/rpd/downloads/TR_Procedures_or_Validation_and_Calibration_final.pdf*)

[15] Kranz, D.H., Luce, R.D., Suppes, P., and Tversky, A. (1971). Foundations of measurement. Volume 1. Additive and polynomial representations. New York: Academic Press.

[16] A free trial of the FAID Model can be downloaded at *http://www.faidsafe.com/products-main.htm#faid330.*

railroad desiring to use an alternative model for the analyses required by this proposed rule.[17]

B. Diary Study of Train Employees on Commuter and Intercity Passenger Railroads

To further support this proposed rule, FRA conducted primary research specifically directed to train employees of commuter and intercity passenger railroads (OMB Control Number 2130–0588). The results of the study provided valuable evidence of the actual levels of fatigue experienced by train employees on commuter and intercity passenger railroads, because it allowed analysis of the actual periods of time that an employee reports having worked, slept, or spent in other activities during the period analyzed, which may be different from the assigned schedule and presumed periods available for sleep.

FRA had previously conducted similar surveys for signal employees (OMB Control Number 2130–0558), maintenance of way employees (OMB Control Number 2130–0561), dispatching service employees (OMB Control Number 2130–0570), and train employees generally (OMB Control Number 2130–0577). The purpose of these studies was to characterize, using a consistent statistical survey methodology, the work schedules and sleep patterns of each unique group of railroad workers. Because each of these studies used a random sample of each worker population, they provide defensible and definitive data on work/rest cycle parameters and fatigue for the respective group. The small number of train employees on commuter and intercity passenger railroads represented in the previous study of train employees generally did not allow for meaningful conclusions with regard to this subpopulation of train employees. As a result, the present study, specifically focused on this population, was necessary. The present study of train employees on commuter and intercity passenger railroads used the same methodology as the previous studies.

The primary objectives of this study were to design and conduct a survey to collect work schedule and sleep data from train and engine service (T&E) employees, and to analyze the data to characterize the work/sleep patterns and to identify work schedule-related fatigue issues. The goal was to characterize train employees on commuter and intercity passenger railroads as a group, not to characterize such employees on a specific railroad.

The research described in this report had three phases: preparation; field data collection; and data analysis. Since no existing source would provide answers to the study's research questions, a survey of train employees was the only means to obtain the necessary data. The preparation phase included securing approval from the Office of Management and Budget for the proposed data collection. Representatives from the Brotherhood of Locomotive Engineers and Trainmen (BLET) and the United Transportation Union (UTU) worked closely with the researchers throughout the study.

The study used two survey instruments—a background survey and a daily log. Survey participants used the background survey to provide demographic information, descriptive data for their type of work, type of position, and work schedule, and a self-assessment of overall health. The daily log provided the means for survey participants to record their daily activities in terms of sleep, personal time, time spent commuting to and from work, work time, limbo time, and periods of interim release. Study participants also provided self-assessments of the quality of their sleep and their level of alertness at the start and end of each work period. This study used a 14-day data-collection period to accommodate those train employees who did not work a regular schedule.

Researchers drew a random sample of 1275 train employees on commuter and intercity passenger railroads. The size of the sample from each of the two unions was proportional to that organization's representation in the total number of eligible participants. Retirees, full-time union officials, and anyone currently holding a railroad management position were not eligible for the study. Determination of the sample size assumed a 95-percent confidence interval on the estimates for mean sleep time, an error tolerance of 15 percent, and a 33-percent response rate.

Mailing of the survey materials occurred on December 31, 2009. Ten days later, every potential survey participant received a postcard, signed by his or her union president, to encourage the employee to participate in the survey. Three weeks after distribution of the materials, a second postcard thanked those who had decided to participate and encouraged those who had not yet done so to participate.

The overall response rate for the survey was 21 percent. Of the 269 complete responses, 13 could not be part of the analysis because either there were problems with the respondents' log books, or the respondents were not in crafts covered by the survey. (It was not possible to identify these individuals from the information contained in union membership databases.) The nonresponse-bias study based on age found no difference between survey respondents and nonrespondents.

The results of the study support the approach that FRA has taken in this rule. For instance, the results are consistent with the separate analysis during the development of this proposed rule of schedules provided by commuter and intercity passenger railroads, indicating that a fairly small percentage of employee work time (about 1.8 percent) exceeds the fatigue threshold. The proposed rule would focus additional attention and effort specifically on those schedules presenting this fatigue risk by requiring the mitigation of that risk, while schedules not at risk for fatigue would not be subject to these additional requirements.

In addition, when compared to the results of the previous study that primarily considered train employees on freight railroads, the results support a significantly different approach. Train employees on freight railroads were found to experience some level of fatigue (equivalent to an effectiveness score <90 using the FAST model) during 73 percent of their work time, while train employees on commuter and intercity passenger railroads experienced this level of fatigue during 14 percent of their work time. The substantive limitations imposed on train employees on freight railroads in the RSIA would largely be unnecessary for the commuter and intercity passenger railroad industry, as well as ineffective to target the specific areas where there is a fatigue risk.

IV. Railroad Safety Advisory Committee (RSAC) Process

A. Overview of the RSAC

In March 1996, FRA established RSAC,[18] which provides a forum for developing consensus recommendations to FRA's Administrator on rulemakings and other safety program issues. The Committee includes representation from all of the agency's major stakeholder groups, including railroads, labor organizations, suppliers, and manufacturers, and other interested parties. A list of member groups follows:

[17] *See* Raslear, *supra* note 6 for information on procedures for validating and calibrating a model.

[18] For more information about RSAC activities, *see http://rsac.fra.dot.gov/*. Meetings of the full RSAC are also announced by publication in the **Federal Register.**

- American Association of Private Railroad Car Owners (AARPCO);
- American Association of State Highway and Transportation Officials (AASHTO);
- American Chemistry Council;
- American Petroleum Institute;
- American Public Transportation Association (APTA);
- American Short Line and Regional Railroad Association (ASLRRA);
- American Train Dispatchers' Association (ATDA);
- Association of American Railroads (AAR);
- Association of Railway Museums;
- Association of State Rail Safety Managers (ASRSM);
- Brotherhood of Locomotive Engineers and Trainmen (BLET);
- Brotherhood of Maintenance of Way Employes Division (BMWED);
- Brotherhood of Railroad Signalmen (BRS);
- Chlorine Institute;
- FRA;
- Federal Transit Administration (FTA); *
- Fertilizer Institute;
- High Speed Ground Transportation Association (HSGTA);
- Institute of Makers of Explosives;
- International Association of Machinists and Aerospace Workers;
- International Brotherhood of Electrical Workers (IBEW);
- Labor Council for Latin American Advancement; *
- League of Railway Industry Women; *
- National Association of Railroad Passengers (NARP);
- National Association of Railway Business Women;*
- National Conference of Firemen & Oilers;
- National Railroad Construction and Maintenance Association (NRC);
- National Railroad Passenger Corporation (Amtrak);
- National Transportation Safety Board (NTSB); *
- Railway Supply Institute (RSI);
- Safe Travel America (STA);
- Secretaria de Comunicaciones y Transporte; *
- Sheet Metal Workers International Association (SMWIA);
- Tourist Railway Association, Inc.;
- Transport Canada; *
- Transport Workers Union of America (TWU);
- Transportation Communications International Union/BRC (TCIU/BRC);
- Transportation Security Administration (TSA); * and
- United Transportation Union (UTU).

* Indicates associate, non-voting membership.

When appropriate, FRA assigns a task to RSAC, and after consideration and debate, RSAC may accept or reject the task. If the task is accepted, RSAC establishes a working group that possesses the appropriate expertise and representation of interests to develop recommendations to FRA for action on the task. These recommendations are developed by consensus. A working group may establish one or more task forces to develop facts and options on a particular aspect of a given task. The individual task force then provides that information to the working group for consideration. If a working group comes to unanimous consensus on recommendations for action, the package is presented to the full RSAC for a vote. If the proposal is accepted by a simple majority of RSAC, the proposal is formally recommended to FRA. FRA then determines what action to take on the recommendation. Because FRA staff plays an active role at the working group level in discussing the issues and options and in drafting the language of the consensus proposal, FRA is often favorably inclined toward RSAC recommendations. However, FRA is in no way bound to follow the recommendation, and the agency exercises its independent judgment on whether the recommended rule achieves the agency's regulatory goal, is soundly supported, and is in accordance with policy and legal requirements. Often, FRA varies in some respects from the RSAC recommendation in developing the actual regulatory proposal or final rule. Any such variations would be noted and explained in the rulemaking document issued by FRA. If the working group or RSAC is unable to reach consensus on a recommendation for action, FRA moves ahead to resolve the issue through traditional rulemaking proceedings.

B. RSAC Proceedings in This Rulemaking

FRA proposed Task No. 08–06 to the RSAC on April 2, 2009. The RSAC accepted the task, and formed the Passenger Hours of Service Working Group (Working Group) for the purpose of developing implementing regulations for the hours of service of train employees of commuter and intercity passenger railroads under the RSIA.

The Working Group is comprised of members from the following organizations:

- AASHTO;
- Amtrak;
- APTA;
- ASLRRA;
- ATDA;
- AAR, including members from BNSF Railway Company (BNSF), Canadian National Railway Company (CN), Canadian Pacific Railway, Limited (CP), CSX Transportation, Inc. (CSXT), Iowa Interstate Railroad, Ltd. (IAIS), Kansas City Southern (KCS) railroads, Metra Electric District, Norfolk Southern Corporation (NS) railroads, and Union Pacific Railroad Company (UP);
- BLET;
- BRS;
- FRA;
- Federal Transit Administration (FTA);
- IBEW;
- Long Island Rail Road (LIRR);
- Metro-North Commuter Railroad Company (Metro-North);
- National Association of Railroad Passengers (NARP);
- National Railroad Construction and Maintenance Association;
- National Transportation Safety Board (NTSB);
- Southeastern Pennsylvania Transportation Authority (SEPTA);
- Tourist Railway Association; and
- UTU.

The Working Group completed its work after six meetings and several conference calls. The first meeting of the Working Group took place on June 24, 2009, in Washington, DC. At that meeting the group heard several presentations on fatigue science, including a report on the diary study that was to be conducted as described above. The group discussed the general approach for the rulemaking, and it was agreed that analysis of the railroads' work schedules would support the rulemaking. Subsequent meetings were held on February 3, 2010; March 4, 2010; April 6, 2010; May 20, 2010; and June 29, 2010. In addition, a Task Force was formed that met on January 14–15, 2010, March 30–31, 2010, and April 28–29, 2010.

At the conclusion of the June 29, 2010 meeting, the Working Group voted to approve a draft of the proposed rule text, with the exception of two sections, to which the group had suggested numerous edits. It was agreed that FRA would address the remaining issues in those sections and circulate a revised draft, on which the group would vote electronically. After the revised draft was produced, the Task Force had several conference calls to discuss the revised provisions, and FRA also participated in several calls with task force members. Ultimately, on September 22, 2010, the Working Group voted unanimously to agree to the rule text presented in this proposed rule. The group's recommendation was presented to the full RSAC on

September 23, 2010. The full RSAC agreed to vote electronically on the rule text recommended by the Working Group, and ultimately accepted its recommendation. Although only a majority was required, the vote was unanimous.[19]

Following the vote of the Working Group and the full RSAC, FRA recognized the need to make two changes to the recordkeeping and reporting requirements in 49 CFR 228.11 and 228.19, to accommodate a new substantive limitation contained in the proposed rule as approved by the RSAC. While the RSAC voted in favor of the substantive requirement in question, and all other elements of the proposed rule, the corresponding amendments to the recordkeeping and reporting provisions were not presented to them.

With the exception of the proposed revisions to 49 CFR 228.11 and 228.19, this proposed regulation is consistent with the recommendation of the Working Group and the full RSAC.

At the February 3, 2010, meeting, FRA presented a strawman draft of the rule text, identifying the basic concepts and direction of the rulemaking. Based on discussions at that meeting, a more complete draft was presented at the March 4, 2010 meeting, and the text was refined and supplemented at subsequent meetings. In addition, during the course of the Working Group and Task Force meetings, a number of significant issues were discussed that resulted in changes in the proposed rule text or common understanding of the intent of specific provisions that should be explained. Some such issues will be explained in this section, while other subjects of discussion by the Working Group and the Task Force will be discussed in the Section-by-Section Analysis at Section V of the preamble.

In addition, as discussed below in the Regulatory Impact and Notices section of the preamble, Section VI, FRA has considered the costs and benefits of this proposed rule. Implementation costs would be associated with analyzing work schedules, training, and rest facilities. However, relative to the "no regulatory action" alternative in which passenger railroad train employees would become subject to the new HSL in effect for freight train employees, the proposed rule would result in a cost savings of $57.6 million (discounted at 7 percent) and $65 million (discounted at 3 percent) over a 20-year period. The quantified accident reduction benefits achieved under both the "no regulatory action" baseline and the proposed rule total $1.4 million (undiscounted), $0.7 million (PV, 7 percent), and $1.0 million (PV, 3 percent). FRA does not expect that the overall number of casualties and property damages prevented will differ under either scenario. Implementation of the proposed rule would yield these benefits at lower cost. While the proposed rule has lower monetized benefits than costs, when compared to the current HSL, FRA believes that there are unquantified benefits that could close the gap.

[19] The rule text voted on by the full RSAC and recommended to FRA is available on the RSAC Web site.

C. Significant Task Force Contributions

As was noted above, the Working Group created the Task Force, comprised of representatives from BLET, UTU, APTA, AAR, and FRA. The Task Force met between Working Group meetings to provide additional input and advice to the Working Group on the approach to the proposed rule, specific concerns as to the rule text, and implementation of the proposed regulatory requirements. Although the Task Force was extremely helpful throughout the development of the proposed rule in offering suggestions as to the rule text, its primary contributions were in the areas of schedule analysis and the creation of a fatigue mitigation tool box.

1. Schedule Analysis

The diary study discussed in Section III B of the preamble provided valuable evidence of the actual levels of fatigue experienced by train employees on commuter and intercity passenger railroads. However, since many of these employees work scheduled assignments, it was also valuable to evaluate the schedules themselves, to get a sense of the parameters of those assignments that would result in fatigue exceeding the threshold, which informed some of the provisions of this proposed rule. The Task Force assisted the Working Group by evaluating the schedules and presenting their results to the Working Group.

APTA hired a consultant to analyze the schedules provided by the railroads that were worked by their train employees. The railroads provided all of their schedules for the month of July 2009. The schedules were analyzed using the FAST model, including conservative assumptions about the sleep that would be obtained by an employee working that schedule. For example, the analyses assumed that employees did not sleep during periods of interim release.

The analyses that the Task Force presented to the Working Group demonstrated that most schedules did not result in an employee's exceeding the fatigue threshold. This was true even for schedules in which the employee reported for duty at 4 a.m. and was relieved from duty at 8 p.m., for a 16-hour duty tour that included a total of 12 hours on duty and a 4-hour interim release. Most of the problematic schedules identified through the analysis presented by the Task Force involved duty tours in which some time was spent working during late night hours. These analyses formed the parameters for FRA's definitions of "Type 1 assignment" and "Type 2 assignment" for which different requirements would apply in this proposed rule.

2. Fatigue Mitigation Tool Box

Because a major aspect of this proposed rule would require mitigation of the fatigue risks identified in those schedules that resulted in an employee's exceeding the fatigue threshold, and experiencing a level of fatigue at which safety may be compromised, the Task Force assisted the Working Group by developing a fatigue mitigation tool box, a document that would illustrate the variety of ways in which a railroad might seek to address the fatigue risks in its schedules. (A copy of this document has been placed in the docket for this rulemaking.) The tool box itself is not intended to become a part of the regulatory text. Instead, it is intended to provide the variety of methods from which a railroad may propose, in its plans submitted to FRA for approval, to mitigate identified fatigue risks in its work schedules, to bring them into compliance with the regulation. It is expected that not every tool will be appropriate for each railroad, or for individual locations or schedules on a given railroad, and that the railroads, in consultation with their labor organizations, will choose the mitigation tools most appropriate to each circumstance, subject to FRA review and approval. In addition, the tool box is expected to be a living document, as the available fatigue mitigation tools will change over time as fatigue science continues to develop, or as railroad operations change, either generally or as related to specific properties or schedules. The tool box as a whole will not be approved by FRA, nor will it be maintained by FRA as it evolves. FRA will evaluate the appropriateness of specific fatigue mitigation tools as they are submitted to FRA as part of a railroad's plan to mitigate fatigue risks associated with particular schedules.

This section will describe a representative sample of the variety of the tools included in the tool box developed by the Task Force, which may be applied to mitigate fatigue risk. This is not intended to be an all-inclusive list of the possible fatigue mitigation tools. A railroad is free to use any fatigue mitigation tool that it believes is effective in reducing the fatigue risk found in its schedules, subject to FRA's review and approval.

Perhaps the easiest mitigation tool to understand that was identified by the Task Force is the adoption and implementation of a napping policy, and the provision of facilities for employees to take a nap during interim releases or other periods between assignments that may be available for rest during a duty tour. Addition of a period of sleep to the employee's schedule would have a clear impact on the employee's current level of fatigue, and the level of fatigue that the employee would be expected to experience throughout the remainder of the duty tour after a nap, which might reduce the risk of fatigue sufficiently to bring the schedule and the employee's effectiveness score within the fatigue threshold.

To use this tool to mitigate fatigue, a railroad would be required to identify, in consultation with its labor organizations or employees, the facilities that would be available for the purpose of rest during the duty tour, that are appropriate to the schedule and location at issue. This would not always require a bunk or a quiet room, though this might be available at some locations and in certain situations. However, the period available for rest would have to be at least 90 minutes for this mitigation tool to be applied, as this amount of time would provide sufficient opportunity for an employee to get to his or her napping location and fall asleep, having enough time for a nap of sufficient duration to be beneficial to the employee's level of fatigue, and then also allowing the employee time to be fully awake and ready to resume the duty tour.

Another mitigation tool, applicable to railroads and locations using employees from an extra board, would be the use of multiple extra boards that are temporally separated, so that employees would be scheduled to work morning assignments or evening assignments, rather than being subject to calls for assignments at all times of day. For example, employees assigned to a morning extra board might be subject to being called only for assignments requiring them to report for duty between 4 a.m. and 10 a.m., while employees assigned to an evening extra board might be subject to being called only for assignments requiring them to report for duty between 4 p.m. and 10 p.m. Employees on either extra board would know that they would not be called for an assignment requiring them to report for duty outside the times established for the employee's particular assigned extra board. This would lead to greater predictability of schedule and ability to plan rest, while also avoiding (1) circadian shifts between duty tours resulting from changes in the time of day that the employee is awake and (2) difficulties in adjusting to changing periods available for sleep.

Call windows (*i.e.,* limited periods of time during which an employee is subject to receiving calls from the railroad to report for duty) are another mitigation tool in the tool box, which may be combined with a temporally separated extra board, but could also be used even if the extra board were not so divided. For example, a railroad might decide to establish a call window that would reduce or eliminate calls to the employee during the time from 11 p.m. and 5 a.m. Open assignments that would need to be filled from an extra board of employees who would otherwise be called for the assignment during that time would instead be filled before 11 p.m., which would give the employees greater predictability and ability to plan rest, as well as allowing them more rest during the late night hours.

Another possible tool would be to allow employees a period of uninterrupted rest, similar to the requirement that applies to train employees on freight railroads, which is found at 49 U.S.C. 21103(e). The uninterrupted rest could be applied to an employee's statutory off-duty period before or after the employee is to work a schedule exceeding the fatigue threshold. It could also be applied to periods of interim release within the duty tour.

Education could also be part of the tools that a railroad will use to mitigate fatigue in certain circumstances, and is also a key component of the other mitigation tools. The mitigation tools will not be beneficial if the employees working the schedules to which they are applied do not understand the available tools, and how to properly use them to reduce their fatigue and increase their effectiveness. If employees do not take advantage of the mitigation tools, and use them properly to increase their rest, even those mitigation tools most likely to have the greatest and most tangible impact on reducing fatigue will not have the desired effect. FRA has also recognized the importance of education as a component of fatigue management by specifically requiring in this proposed rule that employees and supervisors receive training on fatigue and strategies for reducing it.

Finally, one additional mitigation tool was discussed by the Task Force that was extremely well-received and supported by the Working Group, including FRA representatives. That suggestion was to develop software that would link the railroad's crew management resources to both the employee's electronic hours of service records (created and maintained in compliance with subpart D of 49 CFR part 228), and a valid biomathematical model of performance and fatigue.

The idea is that the fatigue model would be able to look back at previous duty tours and rest periods to determine which schedules might have sufficiently rested employees available to report for the assignment, not only under the limitations on time on duty and required minimum time off duty that would be established by this proposed rule, but also in terms of the fatigue threshold. The model would have the benefit of the data from the previous duty tours to take into account in determining whether these schedules would exceed the fatigue threshold during the duty tour, as well as at the report-for-duty time. If the analysis revealed that the employees on these schedules would be too fatigued to report for the assignment, or would exceed the fatigue threshold during the duty tour, crew management would be alerted that these employees could be at risk if they work this particular assignment. Employees would have to affirm their fitness for duty if asked to work such assignments and be empowered to reject the assignments, because the model is being used to predict group (average) fatigue from work schedules that could be worked by several individuals. Any individual could be more or less fatigued than the average or group. Employees have a responsibility to indicate if they feel fit to work or not, regardless of the effectiveness score that a model would predict. The employer's responsibility is to arrange schedules that minimize fatigue.

While all of the parties to the Working Group agreed that this idea showed great promise as an effective fatigue mitigation tool for the future, it is not something that the railroads will be able to apply immediately, for technological reasons. Most railroads that would be subject to this proposed rule do not yet create and maintain their hours of service records electronically in

compliance with subpart D, although there is interest among those railroads in developing hours of service electronic recordkeeping programs. In addition, software would need to be developed that would allow the fatigue model to retrieve data from the electronic recordkeeping system, without any possibility of altering or otherwise affecting the integrity of the records maintained in the system. Likewise, software would be needed to connect the fatigue model to the crew management system, so that it could appropriately alert that system and prevent an employee being placed on an assignment for which he or she would be too fatigued. If the necessary systems and software can be developed, compliance with the fatigue threshold would become much easier, and there would be much less excessive fatigue to be mitigated.

D. Areas of Working Group and Task Force Concern

During the course of the Task Force and Working Group meetings, a few issues resulted in significant discussion. Some issues were related to specific provisions in the rule text, while other concerns were about the broader implications of the rule, as well as its effects on aspects of railroad operations or existing collective bargaining agreements.

1. Definitions of "Type 1 Assignment" and "Type 2 Assignment"

Some members of the Working Group suggested that there should be a way to determine a template for schedules that would be deemed not to exceed the fatigue threshold. As was discussed above, the Task Force presented schedule analyses showing that a schedule in which an employee began work at 4 a.m. and was relieved at 8 p.m., resulting in a duty tour with a total time on duty of 12 hours, with a 4-hour period of interim release, did not exceed the fatigue threshold.

Based on this analysis, FRA initially defined any assignment beginning no earlier than 4 a.m. and ending no later than 8 p.m., assuming at least a 4-hour period of interim release, as a Type 1 assignment, which would be deemed not to exceed the fatigue threshold. Assignments that included any period of time outside the defined time parameters of a Type 1 assignment would be considered a Type 2 assignment, which would be subject to more stringent requirements, including analysis of the schedule using a scientifically valid biomathematical model, and a more restrictive limit on the number of consecutive days that employees working such assignments could initiate an on-duty period.

However, some Task Force members pointed out that there could be assignments that include time outside the time parameters of a Type 1 assignment that would not exceed the fatigue threshold. In some cases these schedules would only have a small amount of their overall time outside of the Type 1 parameters. For example, an assignment might begin at 4:30 a.m. and end at 8:30 p.m. In addition, some assignments might not exceed the threshold because of the short duration of the duty tour involved, such as, perhaps, an assignment from 5 p.m. until 9:30 p.m.

Based on these considerations, FRA amended the definition of a Type 2 assignment to indicate that if an assignment does not include any time between midnight and 4 a.m., then the particular time of day or night that an assignment is to be performed is not the only determinant of whether an assignment is considered a Type 2 assignment. In particular, a Type 2 assignment that is analyzed using a scientifically valid biomathematical model and is determined not to exceed the fatigue threshold, and that includes no period of time between midnight and 4 a.m., would be considered a Type 1 assignment.

FRA also added language to the definitions of both "Type 1 assignment" and "Type 2 assignment" to require compliance with the substantive limitations contained in proposed § 228.405. FRA expects that railroads would not be operating schedules that violate these limitations; most schedules have long been in effect for the railroads subject to this proposed rule, and this was an implicit assumption of the Working Group. For example, a schedule that requires an employee to report for duty at 4 a.m. and to be released from duty at 8 p.m. would have to include a period of interim release of at least 4 hours that is not time on duty, as defined by proposed § 228.405(b). However, this language is added to the definitions to make clear that the schedule analysis and fatigue mitigation requirements of this proposed rule supplement, but do not replace, the specific limitations, and any schedule that violated other provisions of this proposed rule (for example, exceeded 12 hours total time on duty, or did not allow for at least 8 hours off duty, or 10 hours off duty after 12 consecutive hours) could not be deemed "approved" by FRA and subject to the less stringent requirements applicable to Type 1 assignments.

2. Limitations on Number of Consecutive Days

In the Working Group, both the railroads and labor contended that FAST and/or FAID analysis would suggest that an employee could work beyond the limitations in this proposed rule without adversely affecting safety. One requirement about which this was specifically argued was the proposed limitation on the number of consecutive days that an employee would be permitted to work under this regulation, which would differ depending on the time of day that the employee works. *See* proposed § 228.405(a)(3) and (a)(4). In the Working Group, the railroads and labor unions presented fatigue analyses for theoretical schedules that would have an employee initiating on-duty periods for numbers of days that exceeded those permitted by the proposed rule. The railroads and labor also indicated that the current agreements or practices on their properties allow for such schedules.

Research shows that work on successive days without a full day off exponentially increases the accident risk as the number of days worked increases. For instance, after working four consecutive day shifts, there is a 17-percent increase in risk, and after working four consecutive night shifts, there is a 36-percent increase in risk.[20] FRA research on train crew work schedules and sleep patterns[21] has shown that train crews average a 10.25-hour day (work period, limbo time, and commute time) and get 6.88 hours of primary sleep per day. A follow-up study on passenger train crews found that workers on split shift assignments average a 13.75-hour day (work period, interim release, and commute time) and get 6.18 hours of primary sleep. Laboratory studies of restricted sleep[22] show a 5-percent decrease in performance after 7 days with 7 hours of sleep per day and a 15-percent decrease after 7 days with 5 hours of sleep per day. These studies are consistent with the previously noted increase in accident risk with the number of days worked.

[20] Folkard, S. and Akerstedt, T., *Trends in the Risk of Accidents and Injuries and Their Implications for Models of Fatigue and Performance,* Aviat. Space Environ. Med. (2004).

[21] Gertler, J., and DiFiore, A. (2009). Work schedules and sleep patterns of railroad train and engine service workers (Report No. DOT/FRA/ORD–09/22). Washington, DC: U.S. Department of Transportation

[22] Balkin, T., Thorne, D., Sing, H. (2000). *Effects of sleep schedules on commercial driver performance* (Report No. DOT–MC–00–133). Washington, DC: U.S. Department of Transportation.

Therefore, FRA reasoned that, even if an employee were working a schedule for which the employee's effectiveness score did not exceed the fatigue threshold, even when the schedule was worked for more consecutive days than the regulation would permit, at some point the employee would have to use some of the time between duty tours (time that a model would otherwise view as available for rest) to attend to other personal activities. This time spent in activities other than rest would decrease the time actually available to the employee for rest, and, therefore, the employee's actual effectiveness score. This circumstance would be particularly problematic for schedules featuring long duty tours, such as the maximum 12 hours on duty, including an interim release, for a total time of 16 hours in the duty tour, followed by the minimum of 8 consecutive hours off duty before reporting for the next duty tour. From this perspective, FRA believes that, although the available research does not identify the exact number of consecutive days allowed under this proposed rule as the maximum that can be safely worked, the limitations that FRA has established are reasonable. FRA seeks comment on this.

FRA is aware that the requirements of the proposed rule may have an impact on the collective bargaining agreements affecting the railroads and employees covered by proposed subpart F. For example, there may be some agreements that would allow employees to work a greater number of consecutive days than would be allowed by this proposal. FRA is also mindful that the law provides an option that enables the regulated community to seek waivers to implement pilot projects in accordance with the requirements of 49 U.S.C. 21108(a) and encourages members of the regulated community to consider this option. Pursuant to 49 CFR part 211, subpart C, the Railroad Safety Board will consider whether or not granting such waivers would be in the public interest and consistent with railroad safety. Where warranted, and upon the necessary showing, FRA may grant waivers of the requirements of this proposed rule, including requirements concerning the maximum number of consecutive days an employee may work, to allow for the establishment of pilot projects to demonstrate the possible benefits of implementing alternatives to the strict application of the requirements contained in this proposed rule.

3. Precision of Fatigue Models and Threshold

There was considerable discussion in the Working Group of the precision embodied in the FAST model or the FAID model, and the appropriateness of requiring compliance with a specific fatigue threshold. The railroads argued that models such as the FAST model and the FAID model are not scientifically precise enough to warrant the adoption of a specific threshold, and that different types of operations could safely function at different levels of fatigue. For example, the railroads contended that yard switching activities could safely operate at a different level of fatigue than passenger operations or through-freight activities.

The railroads conceded, however, that the regulatory structure contained in this proposal would not be problematic for passenger operations. The railroads' concern was that, in the future, someone might argue for adoption of the same regulatory structure for freight operations and, were that to occur, schedules might be prohibited from use that should, in fact, be acceptable from a fatigue perspective.

In FRA's view, a specific threshold is desirable because it provides regulatory certainty as to what railroads must do to be considered in compliance with the regulations. FRA has based its regulation on the best available fatigue science, including the FAST model and the FAID model, which are the only currently validated models, and the thresholds established by those models. FRA has left open the possibility that other models may be validated, and other thresholds established in the future, which could be used for the purpose of compliance with this regulation.[23]

Inasmuch as FRA has determined that use of these models and their established thresholds adequately protect safety, that the regulations proposed in this rule would not present significant implementation problems for passenger service, and that a specific threshold would provide the desired regulatory certainty, FRA believes that it is appropriate to include in the regulations a requirement for a specific threshold, based on the understanding that the regulatory requirements will be satisfied based on a "70/20 threshold" using the FAST model (meaning that the fatigue threshold is exceeded if an employee's effectiveness score is *less* than 70 for 20 percent or more of the employee's time on duty), or a "60/20 threshold" using FAID (meaning that the fatigue threshold is exceeded if an employee's effectiveness score is *more* than 60 for 20 percent or more of the employee's time on duty).[24]

In proposing an hours of service regulation with a specific threshold for train employees in passenger service, FRA is not drawing any conclusion about the suitability of such a regulatory scheme for freight operations. There may be substantial differences between freight railroad operating and crew schedules and passenger operating and crew schedules. Passenger railroads have analyzed the results of applying the proposed regulations to their work schedules and concluded that this proposal is feasible. Freight railroads have not undertaken such analysis, nor would they be required to under the proposed regulations, except to the extent that employees of freight railroads may work in passenger service.

4. Freight Railroad Employees Acting as Pilots for Commuter or Intercity Passenger Trains

The Working Group also discussed the application of the requirements of proposed subpart F to train employees of freight railroads who occasionally provide pilot service to a commuter railroad or intercity passenger railroad. FRA's locomotive engineer certification regulations require a pilot to assist an engineer who may not be sufficiently familiar with the territory over which he or she is called to operate. *See* 49 CFR 240.231(b). The railroads indicated that a request for a pilot may come without advance notice, so that it would be difficult to comply with the substantive hours of service limitations and recordkeeping requirements of this regulation, and even more difficult to adhere to the schedule analysis requirements, for an employee who did not otherwise regularly engage in commuter or intercity rail passenger transportation.

The Working Group also cited the safety benefits of having a pilot available on a route when necessary, and the potential risk if commuter or intercity passenger railroads were to become less likely to request a pilot, or freight railroads less likely to be able to make a pilot available when requested, because of concerns about the proposed requirements of this regulation. FRA acknowledges these benefits. Therefore, although a pilot is performing covered service under the HSL on the assignment on which the pilot service is provided, FRA will not consider a train employee employed by a freight railroad

[23] *See* Raslear, *supra* note 6.

[24] *See* Hursh, *et al., supra* note 8, and Tabak and Raslear, *supra* note 13.

who serves as a pilot on a train operated by a commuter railroad or intercity passenger railroad to be a train employee who is engaged in commuter or intercity rail passenger transportation, provided that the employee does not serve as a pilot more than four times in a calendar month, or engage in any other commuter or intercity rail passenger transportation.

V. Section-by-Section Analysis

Subpart A—General

228.1 Scope

FRA proposes to revise this section by adding paragraph (c), which indicates that the regulation prescribes substantive hours of service requirements for train employees engaged in commuter or intercity rail passenger transportation.

228.5 Definitions

FRA proposes to amend this section to add definitions of "Associate Administrator for Railroad Safety/Chief Safety Officer" and "FRA" as used in this part. Associate Administrator for Railroad Safety/Chief Safety Officer became the title of FRA's Associate Administrator for Safety because Section 101 of the RSIA refers to FRA's "Associate Administrator for Railroad Safety" and emphasizes that the Associate Administrator is the Chief Safety Officer.

FRA also proposes to add definitions of the terms "Type 1 assignment" and "Type 2 assignment." As was previously discussed in Section IV above, these definitions were the subject of significant discussion in the Task Force and the Working Group, particularly because of the implications of a particular schedule's status as a Type 1 assignment or a Type 2 assignment for determining the application of the limitations on consecutive days in proposed § 228.405 and the requirements for analysis of schedules and submission of schedules to FRA for approval in proposed § 228.407. FRA believes the proposed definitions accommodate the concerns expressed in the Working Group regarding schedules outside the time parameters for a Type 1 assignment that may still present very little risk of an effectiveness score that would exceed the fatigue threshold and compromise safety. At the same time, however, the proposed definitions recognize the increased risk of fatigue associated with working late night and very early morning hours, which justifies the application of the more stringent requirements.

FRA has added these terms to this general definitions section for Part 228, rather than the definitions specific to subpart F, because these terms are also used in the recordkeeping provisions of subpart B, as amended by this proposed rule.

Subpart B—Records and Reporting

228.11 Hours of Duty Records

FRA proposes to revise paragraph (c) of this section to indicate that paragraphs (13) through (15) of paragraph (b) do not apply to the records of train employees providing commuter or intercity passenger rail transportation. These paragraphs relate to substantive provisions of the HSL for train employees, added by the RSIA. As was described above, these requirements were not extended to train employees on commuter and intercity passenger railroads. The requirements referred to in paragraphs (13) through (15) of paragraph (b) are not required by this proposed rule and therefore would continue not to apply to train employees providing commuter and intercity rail passenger transportation.

Paragraph (c) of this section, as published in FRA's hours of service recordkeeping regulation on May 27, 2009 (74 FR 25330, 25348–49), provided that paragraphs (13) through (16) of paragraph (b) did not apply to the records of train employees providing commuter or intercity passenger rail transportation. However, paragraph (16) requires that a record include the number of consecutive days on which a period of time on duty was initiated. Because this proposed rule would limit the number of consecutive days on which train employees providing commuter or intercity passenger rail transportation may initiate an on-duty period, it is appropriate to require that an employee's hours of service record include the number of consecutive days on which that employee has initiated an on-duty period, so that it is possible for both the railroad and FRA to determine compliance with the limitation established by this proposed rule. Thus, this paragraph is revised to include the requirement in paragraph (16) of paragraph (b), while continuing to exclude the requirements of paragraphs (13) through (15) of paragraph (b), which relate to provisions that do not apply to train employees providing commuter or intercity passenger rail transportation.

FRA recognizes that most railroads and employees subject to this subpart are currently keeping their hours of service records manually, and it may be burdensome for an employee to be required to keep track of his or her consecutive days worked and mark it on the hours of service record each day. However, the railroad will have to have some way to track this information. Therefore, if a railroad wishes to keep this information centrally for all of its employees, this will be considered sufficient to satisfy the requirement that the hours of service record include the number of consecutive days that an employee has worked, provided this information is made available to FRA upon request.

228.19 Monthly Reports of Excess Service

FRA proposes to revise paragraph (c) of this section to require railroads to report to FRA instances of excess service related to new substantive limitations contained in § 228.405(a)(3) and (a)(4) of this proposed rule. Those paragraphs propose to limit the number of consecutive days that train employees engaged in commuter or intercity passenger railroad transportation may initiate an on-duty period, and to require a minimum amount of time off duty after an employee has reached the maximum number of consecutive days, before the employee may return to duty, with different requirements depending on the time of day of the employee's assignment.

Subpart F—Substantive Hours of Service Requirements for Train Employees Engaged in Commuter or Intercity Rail Passenger Transportation

228.401 Applicability

This proposed section would establish the specific applicability of proposed new subpart F, which differs from that of existing subparts in this part. The requirements of subpart F apply to railroads and their officers and agents, only with respect to their train employees engaged in commuter or intercity rail passenger transportation. For purposes of subpart F, FRA interprets commuter or intercity passenger transportation to include rail passenger transportation by tourist, scenic, excursion, and historic railroads (referred to collectively for the purposes of this discussion as tourist railroads). FRA believes that Congress intended that these regulations apply to all railroads providing rail passenger transportation, and that Congress did not intend to apply the new statutory provision at 49 U.S.C. 21103 to tourist railroads because tourist railroad operations are more similar to the other passenger service than they are to freight service. The provisions of the HSL that apply to train employees on freight railroads are not as appropriate, therefore, for train employees on tourist

railroads. For fatigue purposes, the most salient difference between passenger and freight operations is that most passenger operations tend to be scheduled, whereas freight operations tend to be unscheduled. Virtually all passenger crew assignments have scheduled on-duty and off-duty times, and the vast majority of passenger crew assignments are to report in the morning and go off duty in the late afternoon or early evening, thereby reducing the likelihood of fatigue. Like classic intercity and commuter rail operations, tourist rail operations tend to be scheduled.

228.403 Nonapplication, Exemption, and Definitions

This proposed section would establish the situations in which this subpart shall not apply, provide circumstances in which a railroad may seek an exemption from the provisions of this subpart, and provide key definitions specifically applicable to this subpart.

Proposed paragraph (a) of this section would establish the situations in which this subpart shall not apply, such as an act of God. This proposed paragraph is substantively identical to the nonapplication provision of the HSL (49 U.S.C. 21102(a)), which was unchanged by the RSIA. The provisions of this proposed rule would therefore not apply to train employees engaged in commuter or intercity passenger service in the same situations as the statutory hours of service requirements would not apply to other train employees, or to signal employees or dispatching service employees.

Proposed paragraph (b) of this section would provide the possibility of an exemption from the requirements of this subpart for a railroad having not more than a total of 15 train employees, signal employees, and dispatching service employees. This proposed paragraph is substantively identical to the exemption provision of the HSL at 49 U.S.C. 21102(b), which was unchanged by the RSIA. It would provide the same opportunity for a railroad to seek an exemption from the requirements of this subpart as a railroad would have to seek an exemption from the statutory requirements applicable to its other employees.

Proposed paragraph (c) of this section defines several key terms specifically applicable to this subpart. It defines ''commuter or intercity rail passenger transportation'' as the terms ''commuter rail passenger transportation'' and ''intercity rail passenger transportation'' have been defined at 49 U.S.C. 24102. This definition is consistent with FRA's authority to issue this proposed rule, as Section 108(e) of the RSIA defined these terms as they are defined at 49 U.S.C. 24102.

This proposed paragraph would also define ''train employee who is engaged in commuter or intercity rail passenger transportation'' to establish that the term includes any train employee performing that function, regardless of whether the train employee is employed by a commuter or intercity passenger railroad, or another type of railroad or other entity. The term also includes all train employees employed by a commuter or intercity passenger railroad. The term excludes a train employee employed by another type of railroad or entity who is engaged in work train service.

228.405 Limitations on Duty Hours of Train Employees Engaged in Commuter or Intercity Rail Passenger Transportation

This proposed section provides the substantive limitations on the duty hours of train employees subject to this subpart.

Paragraphs (a)(1) and (a)(2) of this proposed section establish the maximum time on duty in a duty tour and the required minimum time off duty in a 24-hour period. These limitations are substantively identical to the statutory requirements of 49 U.S.C. 21103(a)(1) and (a)(2) as they existed prior to July 16, 2009, the effective date of the amendments to that section arising from the RSIA, which requirements currently still apply to train employees engaged in commuter or intercity rail passenger transportation. FRA proposes to retain these limitations because there is limited evidence of fatigue-related accidents in operations that would be subject to this proposed rule, and analysis of the schedules provided by the railroads subject to this proposed rule, that are worked by their employees subject to this rule, indicate that many of them are not likely to be at risk for a level of fatigue at which safety may be compromised. Thus, there does not appear at this time to be sufficient justification to change these limitations. Should further research or other evidence or events suggest that different limitations are necessary, FRA will reconsider this issue.

Proposed paragraphs (a)(3) and (a)(4) of § 228.405 would establish limitations on the number of days that an employee may work, with proposed paragraph (a)(3) providing the limitation for an employee who works one or more Type 2 assignments, and proposed paragraph (a)(4) providing the limitation for an employee who works only Type 1 assignments.

Proposed paragraph (a)(3) provides that an employee who initiates an on-duty period on 6 consecutive calendar days including one or more Type 2 assignments must have at least 24 consecutive hours off duty at the employee's home terminal. However, if the on-duty period initiated on the sixth consecutive calendar day does not end at the employee's home terminal, the employee may initiate an on-duty period or deadhead on a seventh consecutive calendar day in order to return to the home terminal, and must then have at least 24 consecutive hours off duty at the home terminal before returning to duty.

Proposed paragraph (a)(4) provides that after an employee has initiated on-duty periods in a period of 14 consecutive calendar days and has not had a total of at least two calendar days within that 14-day period in which the employee has not initiated an on-duty period, the employee must have two consecutive calendar days off duty at the home terminal. However, if the on-duty period initiated on the 14th calendar day does not end at the employee's home terminal, and the employee has not had at least two calendar days within the 14-day period in which the employee has not initiated an on-duty period, the employee may initiate an on-duty period or deadhead on a 15th calendar day in order to return to the home terminal, and must then have at least two consecutive calendar days off duty at the employee's home terminal. However, a new 14-day period begins when the employee accumulates a total of two calendar days in the period of 14 days in which the employee has not initiated an on-duty period.

If an employee works only Type 1 assignments for a period of more than 6 but fewer than 14 calendar days on which the employee has initiated an on-duty period, and then works a Type 2 assignment—for example, a Type 2 assignment on the eighth consecutive day after having worked Type 1 assignments on the previous 7 days—the ''Type 2'' limitation will apply at that time, and the employee must have 24 hours off duty following the Type 2 assignment (or work or deadhead to the home terminal the next day and then have 24 hours off duty at the home terminal) and then begin a new period of consecutive days upon returning to duty.

Although many train employees engaged in commuter or intercity passenger service regularly end their duty tour at their home terminal, FRA

recognizes that this will not be the case for all employees and all railroads subject to this subpart. The language of these paragraphs allows the railroad the flexibility to get the employee back to his or her home terminal, while at the same time ensuring that the employee will observe the required rest period at the home terminal.

As was discussed in Section IV above, members of the Working Group expressed concern about these requirements, because the schedule analysis done by the Task Force had indicated a number of situations in which employees who worked consecutive days beyond the limitations proposed by FRA would not exceed the fatigue threshold. However, as also stated above, FRA still believed the limitations were appropriate, based on accepted fatigue science indicating that work on successive days increases the risk of accidents as the number of successive days of work increases, and because of the likelihood that an employee working an indefinite number of consecutive days will eventually attend to other activities during time that a fatigue model would consider available for rest.

FRA accommodated the concerns of Working Group members in revising the definition of "Type 2 assignments" as discussed above. In addition, the "consecutive day" limitation of paragraph (a)(4) that applies to employees working only Type 1 assignments allows employees to work two consecutive hold downs (allowing the employee to exercise seniority to select and work the full cycle of two 6-day or 7-day schedules for which the incumbent employee is on vacation or otherwise unavailable), before being required to have two consecutive days off. This flexibility eliminates some potential conflict with existing operations and agreements.

At the same time, an employee who does not work the maximum number of consecutive days will be able to restart the count toward 14 consecutive days after having accumulated two calendar days in which the employee does not initiate an on-duty period. This language eliminates a concern that the railroad and the employee would have to look back and find two days off at any point in time to be in compliance.

Paragraph (b) of this proposed section describes how various periods of time are counted for the purpose of determining total time on duty. This paragraph is substantively identical to the provisions for determining time on duty in 49 U.S.C. 21103(b), which were unchanged by the RSIA. Therefore, these provisions are currently in effect for train employees of commuter and intercity passenger railroads, as well as for other train employees. FRA recognizes that any change in these provisions would require significant changes for the industry in operations and recordkeeping. FRA does not believe that there is any reason to change these provisions at the present time.

Paragraph (c) of this proposed section allows a train employee to work additional hours in emergency situations. This paragraph is substantively identical to the "emergency" provision of 49 U.S.C. 21103(c), which was unchanged by the RSIA.

228.407 Analysis of Work Schedules; Submissions; FRA Review and Approval of Submissions; Fatigue Mitigation Plans

This proposed section would require a railroad subject to this subpart to analyze the schedules that the railroad intends its employees subject to this subpart to work, to identify those schedules at risk for fatigue exceeding the fatigue threshold, and to report to FRA in certain circumstances.

Proposed paragraph (a) would require the railroads to analyze one work cycle, of each schedule, using a valid biomathematical model of performance and fatigue, to determine whether the fatigue risk posed by the schedule exceeds the fatigue threshold. A work cycle is the cycle within which the schedule repeats. For example, if a schedule called for an employee to work Monday through Friday from 8 a.m. until 4 p.m., with Saturday and Sunday off, and then report again Monday at 8 a.m., the work cycle is the Monday to Sunday schedule that then repeats. Other schedules on some railroads may operate over a two-week period, with certain days off within the two-week cycle.

For the purpose of this section, FRA considers a Type 1 assignment to present an acceptable level of risk for fatigue that does not exceed the fatigue threshold.

Based on this analysis, the railroad is required to identify those schedules at risk for resulting in a level of fatigue that would exceed the fatigue threshold. To the extent possible, the railroad is required to apply fatigue mitigation tools identified in the railroad's fatigue mitigation plan (including, but not limited to, those tools described in Section IV above) to mitigate the fatigue risk in those schedules to a level that does not exceed the fatigue threshold. If the railroad is unable to mitigate the risk for fatigue presented by a particular schedule to the point that it no longer exceeds the fatigue threshold, and the schedule cannot be modified to reduce the fatigue risk sufficiently, then the railroad must make a determination that the fatigue risk cannot be sufficiently mitigated to bring it within the fatigue threshold, but that the schedule is operationally necessary. Any schedule that has been identified as having a risk for fatigue that exceeds the fatigue threshold must be reported to FRA within 180 days of the effective date of the final rule in this rulemaking.

Paragraph (b) of this proposed section provides further details as to the requirements and procedures for submission of schedules and other information to FRA for review within 180 days of the effective date of the final rule.

A railroad must submit to FRA those schedules for which it has mitigated the fatigue risk so that it no longer exceeds the fatigue threshold, along with the fatigue mitigation tools it applied to each particular schedule to reduce the fatigue risk.

A railroad must also submit to FRA those schedules for which it is unable to mitigate the fatigue risk to a level that does not exceed the fatigue threshold, but which the railroad has determined are operationally necessary. A railroad must also submit the fatigue mitigation tools that the railroad applied to each schedule, if any, to reduce its fatigue risk even if it could not be reduced to the point that it no longer exceeded the fatigue threshold. Finally, a railroad must submit the basis for its determination that each schedule is operationally necessary.

If a railroad performs the required analysis of its schedules and determines that none of its schedules presents a risk for a level of fatigue that exceeds the fatigue threshold and requires transmittal to FRA, the railroad must submit a declaration that it has performed the required analysis and determined that none of its schedules exceed the fatigue threshold, and therefore none are required to be submitted.

FRA will review the submissions, and will notify the railroad if the agency takes any exception to the submitted information within 120 days of FRA's receipt of the submission. FRA expects that it will work with a railroad to address any concerns with the schedules, mitigation tools, or determinations of operational necessity, and does not intend to dictate how a schedule must be modified. FRA seeks comments on the process for resolving concerns about a railroad's submissions.

FRA will also audit each railroad's work schedules and mitigation tools every two years to ensure compliance with the requirements of this proposed section.

Paragraph (c) of this proposed section provides a railroad's options with regard to the use of a biomathematical model of performance and fatigue. Proposed paragraph (c)(1) provides that a railroad may submit to FRA's Associate Administrator for Railroad Safety/Chief Safety Officer for approval evidence of the scientific validation of any biomathematical model of performance and fatigue that it wishes to use for the analysis required by this proposed section. Decisions of the Associate Administrator for Railroad Safety/Chief Safety Officer regarding the validity of a model are subject to review as provided by 49 CFR 211.55. If the Associate Administrator for Railroad Safety/Chief Safety Officer approves a new model as having been validated and calibrated, so that it can be used for schedule analysis in compliance with this regulation, FRA will publish notice of this determination in the **Federal Register**. Proposed paragraph (c)(2) provides that a railroad may use a model that has already been approved, and further provides that FRA has approved the use of both the FAST model and the FAID model, both of which are discussed in Section II above, for the analysis required by this proposed section.

Paragraph (d) of this proposed section requires a railroad that changes its schedules to analyze certain of those schedules and submit them to FRA for approval.

Paragraph (d)(1)(i) requires a railroad to analyze and submit for approval any schedule that has been changed such that it would differ from the parameters of any schedule that had been previously analyzed and approved. In other words, a railroad would not have to submit a revised schedule to FRA if it is the same as any of its schedules that had been previously approved, or is a schedule that would not have had to be analyzed or submitted if it were an original schedule.

Specifically, if a schedule is revised so that it is now the same as another schedule that has previously been submitted to and approved by FRA, that schedule would not have to be analyzed or submitted. A railroad would also not have to analyze or submit any schedule that, as revised, is wholly within the hours of 4 a.m. to 8 p.m. (a Type 1 schedule, which FRA considers per se to present an acceptable level of risk for fatigue that would not exceed the fatigue threshold). A railroad would also not be required to submit a schedule that, as revised, is now the same as another schedule that includes time outside the 4 a.m. to 8 p.m. hours, but that the railroad analyzed and found not to exceed the fatigue threshold, and that does not include any time between midnight and 4 a.m. (because such a schedule would qualify for treatment as a Type 1 assignment).

However, any revised schedule that includes time outside the hours of 4 a.m. to 8 p.m. that is not either the same as a schedule previously approved, or the same as a schedule previously analyzed and found not to exceed the fatigue threshold and not including any time between midnight and 4 a.m., would have to be analyzed by the railroad. Further, a railroad must submit to FRA any revised schedules that, when analyzed, are found to exceed the fatigue threshold, along with the fatigue mitigation tools that the railroad has applied to mitigate the fatigue risk in those schedules to a level that does not exceed the fatigue threshold. In addition, if the railroad analyzes a revised schedule and finds that it cannot be mitigated so that the risk for fatigue does not exceed the fatigue threshold, but is operationally necessary, the railroad must submit the schedule, along with any fatigue mitigation tools that have been applied, and the railroad's determination of the operational necessity of the schedule and the basis for that determination.

Paragraph (d)(1)(ii) of this proposed section requires a railroad to analyze any revised schedule that has been altered to an extent that employees working the schedule may be at risk of experiencing a level of fatigue that exceeds the fatigue threshold. This means that the railroad must analyze a schedule that previously was not at risk of exceeding the fatigue threshold but that may be at risk as revised. If such a revised schedule is in fact found to exceed the fatigue threshold, the fatigue risk must be mitigated or the schedule determined to be operationally necessary, just as in the initial analysis required by paragraph (a) of this proposed section.

In addition, any schedules that were previously found to exceed the fatigue threshold and either mitigated or found to be operationally necessary would also have to be analyzed when those schedules are changed, and submitted to FRA if the revised schedule exceeds the fatigue threshold. Even though the schedule was already known to present a fatigue risk, the level of risk presented by the schedule as revised could increase or decrease, and different mitigations may be warranted, or the determination of operational necessity could be different, depending on the level of fatigue risk, as that determination is based on balancing the necessity with the risk. Therefore, FRA review of these revised schedules, along with the relevant fatigue mitigation tools or determinations of operational necessity, is required.

Paragraph (d)(2) of this proposed section requires that revised schedules and supporting documentation that are required to be submitted to FRA must be submitted as provided by paragraph (b) of this proposed section, as soon as practicable prior to the use of the new schedule. Some railroads expressed the concern that work schedule changes are sometimes not finalized until shortly before the schedules are to begin operation, and the FRA approval process could delay work schedule implementation and published timetable changes. However, the regulatory language does not require FRA approval before a new schedule may begin operation, just that it be submitted as soon as practicable prior to use. In addition, given the limited nature of the schedules that require FRA review, FRA would expect some degree of advance planning for those kinds of schedules, so that the fatigue implications of the revised schedules can be fully understood by the railroad, as well as by FRA.

Some APTA members also expressed concern about compliance with these requirements for special trains that they are sometimes called upon to operate. Many special events require advance notification and planning. For those events of which the railroad does not have advance notice, FRA will address those situations and work with the railroad on a case-by-case basis.

Paragraph (e) of this proposed section requires a railroad to have and comply with a written fatigue mitigation plan, to mitigate the potential for fatigue in its work schedules, identified through the analysis required by paragraphs (a) and (d) of this proposed section. The railroad is required to review the plan every two years and update it as necessary.

Paragraph (f) of this proposed section requires a railroad to consult in good faith with its directly affected employees and any labor organization representing them, on the analysis of work schedules, selection of mitigation tools, and any submissions to FRA required by this proposed section. If the railroad and its affected employees or their labor organization cannot reach consensus on any of those items, the employees or labor organizations may file a statement with FRA's Associate

Administrator for Railroad Safety/Chief Safety Officer, explaining their views on any issue on which consensus was not reached. Any such statements will be considered by FRA during the review and approval of any submissions required by this proposed section.

228.409 Requirements for Railroad-Provided Employee Sleeping Quarters During Interim Releases and Other Periods Available for Rest Within a Duty Tour

This proposed section provides that any rest facilities provided by a railroad for the use of its employees during periods of interim release or other periods during a duty tour must be "clean, safe, and sanitary," and give the employee "an opportunity for rest free from the interruptions caused by noise under the control of the" railroad. This is consistent with statutory language for sleeping quarters at 49 U.S.C. 21106, including sleeping quarters provided for the use of employees during the required minimum off-duty period.

Paragraph (b) of this proposed section provides that if the facilities are proposed as a fatigue mitigation tool, for the purpose of mitigating fatigue identified by the schedule analysis required by § 228.407, then those facilities are subject to the requirement in § 228.407(f), that the railroad consult with affected employees and labor organizations.

228.411 Training

This proposed section would establish training requirements for this proposed rule. FRA believes this provision is especially important because the schedule analysis and fatigue mitigation required by other sections of this proposed rule have little meaning if employees are not aware of the level of fatigue predicted to occur as a result of their work schedule, and the mitigation tools available to the employee to reduce the fatigue risk. For example, suppose that a railroad submits a schedule to FRA for approval that exceeds the fatigue threshold, but as a mitigation tool, the railroad indicates that it will provide facilities and allow employees working that schedule to take a nap during a two-hour break between scheduled trains, and that the insertion of a nap at that point decreases the fatigue level so that the threshold is no longer exceeded. If the employee working that schedule does not realize that his or her work schedule exceeds the fatigue threshold (which is a level of fatigue at which, according to the model, safety may be compromised), or is unaware of facilities and policies allowing the employee to take a nap, or is unaware of the beneficial effect of the nap on the predicted fatigue level, then the employee will not take advantage of the mitigation tool purported to reduce the fatigue risk in that schedule, and the risk will not actually be reduced. Employees who are not currently working assignments that exceed the fatigue threshold will also benefit from the training required by this section, as it may raise awareness of, and provide strategies for addressing, other circumstances in their lives that contribute to their actual level of fatigue that are not accounted for in work schedule analysis. The training requirements in this proposed rule were the subject of extensive discussion within the working group, and members of the working group recommended the content of training, as well as the proposed training interval.

Paragraph (a) of this proposed section would require railroads to provide training to employees subject to this subpart and their immediate supervisors. Paragraph (b) of this proposed section lists the minimum subjects that must be covered in training, based on the most current available scientific and medical research and literature. Although the subjects to be covered are quite broad, the specific information to be covered may change over time based on scientific developments or changes in a railroad's operations that may make additional topics appropriate. The format of the required training is not prescribed, as FRA specifically intends to allow each railroad the flexibility to provide training at a level of formality and complexity that is appropriate to its operations and the needs of its employees. Options include, but are not limited to, classroom training, computer-based training, review of written materials, and oral job briefings. Railroads may also combine this training with other training provided to their employees.

Paragraph (c) of this proposed section requires that training be provided to affected employees as soon as practicable, and to new employees within 90 days after they first work a schedule for the railroad that is subject to analysis under this subpart. Paragraph (d) of this proposed section would require refresher training at least every three years, and when significant changes are made to the railroad's fatigue mitigation plan or to the available fatigue mitigation tools applied to an employee's assignment or to assignments at the location where the employee works. Railroads also have the flexibility to select an appropriate method of providing refresher training, which will likely be less detailed, and could also be less formal, than the initial training provided to an employee, depending on the extent of any new information to be presented.

Paragraph (e) of this proposed section would require a railroad to keep records of each employee provided training and to retain these records for three years.

228.413 Compliance Date

This proposed section provides that 180 days from the effective date of the final rule, railroads subject to this subpart will comply with this subpart with respect to their train employees who are engaged in commuter or intercity rail passenger transportation, and shall be exempt from complying with the hours of service requirements currently in effect for them, which are the requirements of 49 U.S.C. 21103 as it was in effect the day before the enactment of the RSIA.

VI. Regulatory Impact and Notices

A. Executive Orders 12866 and 13563 and DOT Regulatory Policies and Procedures

This proposed rule has been evaluated in accordance with existing policies and procedures under not only Executive Orders 12866 and 13563 but also DOT policies and procedures. The economic impacts of the proposed rule are well under $100 million annually relative to the no-action alternative. FRA has prepared and placed in the docket a regulatory impact analysis (RIA) addressing the economic impact of this proposed rule over a 20-year period. This section summarizes the impacts of the rule.

This proposed regulation is intended to promote safe railroad operations by limiting the hours of service for passenger railroad train employees, and ensuring that they receive adequate opportunities for rest in the course of performing their duties. The main goal of this rulemaking is to identify and reduce fatigue for passenger train employees.

FRA is proposing to establish substantive hours of service regulations, including maximum on-duty periods, minimum off-duty periods, and other limitations, for train employees of passenger railroads. The proposed regulations would require that passenger railroads analyze and mitigate the risks for fatigue in the schedules worked by their train employees, and that the railroads submit to FRA the relevant schedules and fatigue mitigation plans for approval. The RSIA established a limit of 276 hours each

calendar month for train employees on service performed for a railroad, and on time spent in or waiting for deadhead transportation to a point of final release; increased the quantity of the statutory minimum off-duty period after being on duty for 12 hours in broken service from 8 hours of rest to 10 hours of rest; prohibited communication with train or signal employees during certain minimum statutory rest periods; and established mandatory time off duty for train employees of 48 hours after initiating an on-duty period on 6 consecutive days, or 72 hours after initiating an on-duty period on 7 consecutive days. In absence of a final rule effective before October 16, 2011, passenger railroad train employees would be subject to the more stringent freight hours of service laws described above. Until then, passenger railroads will continue to operate under the hours of service laws in effect prior to the enactment of the RSIA. Thus, issuance of requirements FRA is proposing would relieve railroads covered by this rule from becoming covered by the more strict statutory hours of service laws governing freight railroads and their train crews.

The RSIA mandated that in issuing regulations FRA ''consider scientific and medical research related to fatigue and fatigue abatement, railroad scheduling and operating practices that improve safety and reduce employee fatigue, a railroad's use of new or novel technology intended to reduce or eliminate human error, the variations in freight and passenger railroad scheduling practices and operating conditions, the variations in duties and operating conditions for employees, a railroad's required or voluntary use of fatigue management plans * * *, and any other relevant factors.'' 49 U.S.C. 21109(c). FRA relied on its RSAC to make recommendations with respect to this rulemaking and this proposed rule reflects the recommendations of this committee.

FRA has analyzed the economic impacts of this proposed rule against a ''no regulatory action'' baseline that reflects what would happen in absence of this rulemaking (*i.e.,* the freight hours of service laws are applied to passenger railroads) as well as a ''status quo'' baseline that reflects present conditions (*i.e.,* primarily, the statutory hours of service provisions (specifically, old section 21103 and, secondarily, the applicable hours of service recordkeeping and reporting regulations) that have and will continue to apply to passenger railroads until either they become subject to either the freight hours of service laws on October 16, 2011 or an FRA-issued hours of service rule prior to that). With respect to the ''no regulatory action'' baseline, the FRA proposal represents a substantially more cost-effective alternative for achieving the goal of identifying and mitigating unacceptable fatigue risk levels and thus ensuring the safety of passenger train operations. Over the 20-year period analyzed, the undiscounted costs associated with the ''no regulatory action'' alternative total $75.5 million compared to $2.1 million for the FRA proposal. Similarly, when discounted at 7 percent, the costs associated with the ''no regulatory action'' alternative total $59.0 million compared to $1.4 million for the FRA proposal and when discounted at 3 percent, the costs associated with the ''no regulatory action'' alternative total $66.8 million compared to $1.7 million for the FRA proposal. The quantified accident reduction benefits achieved under both the ''no regulatory action'' baseline and the proposed rule total $1.4 million (undiscounted), $0.7 million (PV, 7 percent), and $1.0 million (PV, 3 percent). FRA does not expect that the overall number of casualties and property damages prevented will differ under either scenario. Implementation of the proposed rule would yield these benefits at lower cost.

With respect to the ''status-quo'' baseline, the FRA proposal would impose costs that are higher than the quantified safety benefits. Costs compared to the ''status quo'' baseline total $2.1 million (undiscounted), $1.4 million (PV, 7 percent), and $1.7 million (PV, 3 percent). Quantified benefits compared to the ''status quo'' baseline total $1.4 million (undiscounted), $.7 million (PV, 7 percent), and $1.0 million (PV, 3 percent). However, there are additional benefits that have not been quantified, but should be considered when comparing the overall costs and benefits. For instance, safety and health benefits will accrue from the transfer of knowledge to employees, their families, friends and others with whom they may share the fatigue knowledge that they acquire from the required fatigue awareness training programs. This fatigue awareness will result in more optimal decisions regarding rest and sleep, leading to less fatigue and improved safety outside of passenger train operations during the course of daily activities that may include the operation of motor vehicles or other heavy machinery. This fatigue awareness will also result in proper identification and treatment, if necessary, of fatigue symptoms. Separately, accident avoidance will result in fewer unplanned delays to passengers and freight commodities impacted by passenger train accident and incidents that result in blocking one or more tracks for prolonged periods. These costs can be very substantial given the need to investigate accidents and often clear wreckage. Finally, there is the non-quantified benefit of ensuring that passenger railroads do not unknowingly require train employees to work schedules with unacceptable high-fatigue risk levels. It is not unreasonable to expect that the unquantified benefits will raise the benefits to a level quite comparable to the costs.

FRA believes that the unquantified benefits coupled with the quantified safety benefits that would result from its proposal compare very well with the costs associated with meeting the intent of the statutory mandate.

The table below presents the costs associated with both the ''no regulatory action'' alternative and the FRA proposal.

Cost description	No-action alternative			NPRM		
	Undiscounted	PV@7%	PV@3%	Undiscounted	PV@7%	PV@3%
New Engineer Training, Initial (20% New Hires)	$31,237,549	$26,299,825	$28,705,081	0	0	0
New Engineer Training, Refresher (20% New Hires)	4,599,050	2,278,431	3,327,802	0	0	0
New Conductor Training, Initial (20% New Hires)	30,847,974	25,942,971	28,330,908	0	0	0
New Conductor Training, Refresher (20% New Hires)	8,636,745	4,278,146	6,249,071.15	0	0	0

Cost description	No-action alternative			NPRM		
	Undiscounted	PV@7%	PV@3%	Undiscounted	PV@7%	PV@3%
Work Schedule Analysis (No-Reg Action)/Initial Analysis of Work Schedules + Follow-up Analysis and Fatigue Mitigation Plan Review (NPRM)	189,723	177,312	184,198	($126,482 + $240,316) = $366,799	($118,208 + $122,175) = $240,382	($122,798 + $175,894) = $298,692
Biomathematical Model of Fatigue Software	0	0	0	$417,500	$268,723	$337,240
Use of Rest Facilities	0	0	0	$30,988	$28,961	$30,086
Fatigue Training	0	0	0	$1,329,673	$841,748	$1,065,188
TOTAL (rounded)	$75,511,041	$58,976,685	$66,797,059	$2,144,960	$1,379,815	$1,731,206

FRA estimates that the recordkeeping and reporting costs per employee record under the no-action alternative and FRA proposal will be practically the same. Under the "no regulatory action" alternative, costs for recordkeeping and reporting employee hours of service are reflected in the New Engineer and New Conductor training requirements and the Work Schedule Analysis burden. Under the FRA proposal, the costs associated with the recordkeeping and reporting requirements for the substantive hours of service changes are reflected in Fatigue Training as well as the Initial and Follow-up Analysis and Fatigue Mitigation Plan Review.

The estimated benefits of the rule relative to the "status quo" baseline, based on the above calculations of potentially prevented accident damages, injuries, and fatalities, over a 20-year period of analysis are presented below.

INTERCITY PASSENGER, COMMUTER, TOURIST AND EXCURSION RAILROADS (ALL TRACK TYPES)

Accident reduction benefits	VSL = $6 M Undiscounted benefits	VSL = $6 M Discounted PV@ 7%	VSL = $6 M Discounted PV@ 3%
Property Damage	$829,366	$439,316	$616,943
Injuries	120,547	63,854	89,672
Fatalities	429,088	227,288	319,187
TOTAL (rounded)	1,379,001	730,458	1,025,803

FRA does not expect that the overall number of casualties prevented will differ under the FRA proposed rule or the "no regulatory action" baseline in which the freight hours of service law would apply to passenger train crews.

FRA requests comments on all aspects of this analysis.

B. Executive Order 13132

Executive Order 13132, "Federalism" (64 FR 43255 (Aug. 10, 1999)), requires FRA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" are defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Under Executive Order 13132, the agency may not issue a regulation with federalism implications that imposes substantial direct compliance costs and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, the agency consults with State and local governments, or the agency consults with State and local government officials early in the process of developing the regulation. Where a regulation has federalism implications and preempts State law, the agency seeks to consult with State and local officials in the process of developing the regulation.

This NPRM has been analyzed in accordance with the principles and criteria contained in Executive Order 13132. This proposed rule would not have substantial effect on the States or their political subdivisions; it would not impose any compliance costs; and it would not affect the relationships between the Federal government and the States or their political subdivisions, or the distribution of power and responsibilities among the various levels of government. Therefore, the consultation and funding requirements of Executive Order 13132 do not apply. Nevertheless, State and local officials were involved in developing this rule. The RSAC, which was used to assist in the development of this rule, has as permanent members, the AASHTO and the ASRSM.

However, this proposed rule could have preemptive effect by operation of law under a provision of the former Federal Railroad Safety Act of 1970 (FRSA) (49 U.S.C. 20106 (Section 20106)) and the HSL. The FRSA provides that States may not adopt or continue in effect any law, regulation, or order related to railroad safety or security that covers the subject matter of a regulation prescribed or order issued by the Secretary of Transportation (with respect to railroad safety matters) or the Secretary of Homeland Security (with respect to railroad security matters), except when the State law, regulation, or order qualifies under the "essentially local safety or security hazard" exception to Section 20106. Moreover, the HSL have been interpreted by the Supreme Court as totally preempting the field of the hours of labor of railroad employees. *Erie RR. Co.* v. *New York,* 233 U.S. 671 (1914).

C. Executive Order 13175

FRA analyzed this proposed rule in accordance with the principles and criteria contained in Executive Order 13175 ("Consultation and Coordination with Indian Tribal Governments"). Because this rule does not significantly or uniquely affect tribes and does not impose substantial and direct compliance costs on Indian tribal governments, the funding and consultation requirements of Executive Order 13175 do not apply, and a tribal summary impact statement is not required.

D. Regulatory Flexibility Act and Executive Order 13272

To ensure that the potential impact of this rulemaking on small entities is properly considered, FRA developed this proposed rule in accordance with Executive Order 13272 ("Proper Consideration of Small Entities in Agency Rulemaking") and DOT's policies and procedures to promote compliance with the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*).

The Regulatory Flexibility Act requires an agency to review regulations to assess their impact on small entities. An agency must conduct a regulatory flexibility analysis unless it determines and certifies that a rule is not expected to have a significant economic impact on a substantial number of small entities.

As discussed in earlier sections of this preamble, FRA is proposing to establish hours of service regulations, including maximum on-duty periods, minimum off-duty periods, and other limitations, for train employees providing commuter and intercity rail passenger transportation. The proposed regulations would require that commuter and intercity passenger railroads analyze and mitigate the risks for fatigue in the schedules worked by their train employees, and that the railroads submit to FRA for its approval the relevant schedules and fatigue mitigation plans. This rule would also apply to train employees of tourist, scenic, excursion, and historic railroads (tourist and excursion railroads) as well. Issuance of these regulations would relieve railroads covered by this rule from being covered by the more strict hours of service laws governing freight train crews.

This proposed regulation is authorized by Section 108(e) of the RSIA (49 U.S.C. 21109(b)) and is intended to promote safe railroad operations by limiting the hours of service for passenger railroad train employees and ensuring that they receive adequate opportunities for rest in the course of performing their duties. The main goal of this rulemaking is to identify and reduce fatigue for the employees who will be covered by the final rule. As described in Section II of this preamble, FRA has based the proposed regulation on scientific research related to fatigue and fatigue abatement, as applied to railroad scheduling practices and operating conditions for train employees of commuter and intercity passenger railroads. FRA is also proposing conforming changes to existing hours of service recordkeeping requirements.

Federal laws governing railroad employees' hours of service date back to 1907 with the enactment of the Hours of Service Act. Railroads have been subject to the provisions of this Act or successor Federal hours of service laws since it was first enacted. Currently, railroads are subject to the version of 49 U.S.C. 21103 that was in effect the day before the enactment of the RSIA, with respect to their train employees who are engaged in intercity or commuter rail transportation, including tourist and excursion rail operations.

FRA is certifying that this proposed rule will result in "no significant economic impact on a substantial number of small entities." The following section explains the reasons for this certification.

1. Description of Regulated Entities and Impacts

The "universe" of the entities under consideration includes only those small entities that can reasonably be expected to be directly affected by the provisions of this rule. In this case, the "universe" comprises Class III freight railroads that provide train crews for commuter operations and tourist and excursion railroads.

"Small entity" is defined in 5 U.S.C. 601 (Section 601). Section 601(3) defines a "small entity" as having the same meaning as "small business concern" under Section 3 of the Small Business Act. This includes any small business concern that is independently owned and operated, and is not dominant in its field of operation. Section 601(4), likewise includes within the definition of "small entities" not-for-profit enterprises that are independently owned and operated, and are not dominant in their fields of operation. Additionally, Section 601(5) defines as "small entities" governments of cities, counties, towns, townships, villages, school districts, or special districts with populations less than 50,000.

The U.S. Small Business Administration (SBA) stipulates "size standards" for small entities. It provides that the largest a for-profit railroad business firm may be and still classify as a "small entity" is 1,500 employees for "Line-Haul Operating" railroads, and 500 employees for "Short-Line Operating" railroads.[25]

Federal agencies may adopt their own size standards for small entities in consultation with SBA and in conjunction with public comment. Pursuant to the authority provided to it by SBA, FRA has published a final policy that formally establishes small entities as railroads that meet the line haulage revenue requirements of a Class III railroad.[26] Currently, the revenue requirement is $20 million or less in annual operating revenue, adjusted annually for inflation ($32,113,449 for 2008). This threshold is based on the Surface Transportation Board's (STB) threshold of a Class III railroad carrier, which is adjusted by applying the railroad revenue deflator adjustment.[27] FRA is using the STB's threshold in its definition of "small entities" for this rule.

The proposed regulation would apply to railroads with respect to their train employees engaged in commuter or intercity rail passenger transportation as well as train employees of tourist and excursion railroads. Intercity passenger railroads include Amtrak and the Alaska Railroad, both of which employ their own train crews and neither of which is considered a small entity. Amtrak is a Class I railroad, and the Alaska Railroad is a Class II railroad. Amtrak is owned by the U.S. Government, and the Alaska Railroad is owned by the State of Alaska. Neither the U.S. nor the State of Alaska has a population of less than 50,000.

All commuter railroads in operation in the U.S. serve major metropolitan areas with populations higher than 50,000. Although some commuter railroads contract with Amtrak or other entities to operate some or all of their trains, most employ their own train crews.

Train employees of only two small entities that operate trains under contract for commuter railroads would be covered by this rule, and they are not expected to be impacted significantly. Both of the entities are Class III freight railroads with commuter rail train crew schedules that would be considered

[25] "Table of Size Standards," U.S. Small Business Administration, January 31, 1996, 13 CFR part 121. *See also* NAICS Codes 482111 and 482112.

[26] *See* 68 FR 24891 (May 9, 2003); 49 CFR part 209, app. C.

[27] For further information on the calculation of the specific dollar limit, please *see* 49 CFR part 1201.

Type 1 assignments as defined by this proposed rule and thus be determined not to exceed the fatigue threshold, thus exempting the railroads from analyzing those work schedules. Their current train crew assignments would be allowed to continue without change. Although this proposal would impose some additional recordkeeping burden on these entities for tracking days of consecutive service, the increase would be nominal and proportionate to the extent of their passenger train service, which is quite limited. These train crews would also be subject to initial and refresher training no less frequently than every three years. This training would cover the following topics: (1) Physiological and human factors that affect fatigue, as well as strategies to reduce or mitigate the effects of fatigue; (2) opportunities for identification, diagnosis, and treatment of any medical condition that may affect alertness or fatigue, including sleep disorders; (3) alertness strategies, such as policies on napping, to address acute drowsiness and fatigue while an employee is on duty; (4) opportunities to obtain restful sleep at lodging facilities, including employee sleeping quarters provided by the railroad; and (5) the effects of abrupt changes in rest cycles for employees. There is flexibility with respect to how the training is delivered (*e.g.,* computer-based training, job briefings, pamphlets, as well as in class instruction). Such training could be accomplished in about one hour initially and 15 minutes triennially per train employee. Small freight railroads operating commuter trains could recoup any costs associated with this rulemaking from the commuter authorities with which they contract.

The requirements of this rule that would apply to tourist and excursion railroads are those contained in subpart F, Substantive Hours of Service Requirements for Train Employees Engaged in Commuter or Intercity Rail Passenger Transportation, as well as the conforming changes to the recordkeeping requirements in subpart B. FRA regulates approximately 140 tourist and excursion railroads nationwide. Approximately 130 of these railroads have fewer than 15 covered employees and thus qualify for exemption from the limitations that would be imposed under proposed § 228.403. As noted earlier, this particular exemption is substantively identical to the exemption provision of the HSL at 49 U.S.C. 21102(b), which was unchanged by the RSIA. Proposed § 228.403 would provide the same opportunity for a railroad to seek an exemption from the requirements of this subpart as a railroad would have to seek an exemption from the statutory requirements applicable to its other employees. Thus these 130 tourist and excursion railroads would not be impacted any differently by this rulemaking than by the HSL.

About 10 tourist and excursion railroads have more than 15 covered employees, yet by virtue of their train service schedules would generally have only Type 1 assignments, which have been determined not to exceed the fatigue threshold, thus exempting the railroads from analyzing or mitigating Type 2 work schedules. Scheduled assignments that include "Dinner Train" operations may be the only ones impacted by the requirement for analysis or mitigation. Information available regarding train schedules for these railroads indicates that trains do not operate for more than 12 hours on any day with virtually all train service starting at 10 a.m. or afterward. Dinner trains operate until no later than 10 p.m. and are not in operation every day of the week. They generally operate once a week and in no case more than three days a week. Thus the impact of crew assignment limitations would be minimal. Impacted railroads may conduct the analysis in house or contract it out for a nominal fee. Given the similarity of the assignments, the tourist and excursion railroads impacted may decide to address the assignments that include "Dinner Trains" jointly, either under the auspices of the Tourist Railway Association, Inc. or otherwise. The consecutive-day limitations will likely not impact these railroads since they already accommodate time off for their train crews. Given the very limited train service and the need to accommodate time off now, crew schedules should allow for the proposed time off following consecutive days of service requirement to be met. Since "Dinner Trains" are not included in most assignments, the majority of current scheduled train crew assignments would run no later than 6:30 p.m. and thus be considered Type 1 assignments and be unaffected, assuming the consecutive-day limitations do not affect them. Although the modifications to existing recordkeeping requirements proposed would impose some additional net burden on these entities, the increase would be nominal and proportionate to the size of their passenger service, which is quite limited. The training requirements discussed above would also apply to the approximately 10 tourist and excursion railroads and vary in proportion to the size of each operation. Note, however, that the training cost associated with this proposed rule is lower than that associated with complying with the training requirements for the freight hours of service laws.

The limitations on service proposed afford significantly more flexibility to passenger train employees than those imposed by the RSIA on freight train employees. Given that, in absence of a final rule effective by October 16, 2011, passenger train employees would be subject to the more stringent freight hours of service laws (49 U.S.C. 21103), issuance of this proposed rule could only create a cost savings for small entities impacted. In addition, the more stringent requirements proposed for schedules of employees who operate trains during the late night hours, in which the fatigue risk is greatest, would probably not apply to any tourist and excursion railroads because they do not operate during late night hours.

No shippers, contractors, or small governmental jurisdictions would be directly impacted by this proposal.

If FRA receives a specific request for a public hearing, one will be scheduled, and FRA will publish a supplemental notice in the **Federal Register** to inform interested parties of the date, time, and location of any such hearing.

2. Certification

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 605(b), the FRA Administrator certifies that this proposed rule would not have a significant economic impact on a substantial number of small entities. FRA requests comments on both this analysis and this certification.

E. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995, 44 U.S.C. 3501 *et seq.* The sections that contain the current and proposed information collection requirements, and the estimated time to fulfill each requirement are as follows:

49 CFR Section or statutory provision	Respondent universe	Total annual responses	Average time per response	Total annual burden hours
228.11—Hours of Duty Records (Current Requirement).	768 railroads/signal contractors.	27,429,750 records	2 min./5 min./10 min. ...	2,856,125
228.17—Dispatchers Record of Train Movements (Current Requirement).	150 Dispatch Offices ...	200,750 records	3 hours	602,250
228.19—Monthly Reports of Excess Service (Current Requirement But Now includes Limbo time and consecutive days on duty Proposed New/Revised Requirement).	300 railroads	2,670 reports	2 hours	5,340
228.103—Construction of Employee Sleeping Quarters—Petitions to allow construction near work areas (Current Requirement).	50 railroads	1 petition	16 hours	16
228.203—Program Components (Current Requirements)—Electronic Recordkeeping—Modifications for Daylight Savings Time.	9 railroads	5 modifications	120 hours	600
—System Security/Individual User Identification/Program Logic Capabilities/Search Capabilities.	9 railroads	1 program w/security/*etc.*.	720 hours	720
228.205—Access to Electronic Records—(Current Requirement)—System Access Procedures for Inspectors.	768 railroads/signal contractors.	100 electronic records access procedures.	30 minutes	50
228.207—Training in Use of Electronic System—(Current Requirements)—Initial Training.	768 railroads/signal contractors.	47,000 tr. employees ...	1 hour	47,000
—Refresher Training	768 railroads/signal contractors.	2,200 tr. employees	1 hour	2,200
49 U.S.C. 21102(b)—The Federal hours of service laws—Petitions for Exemption from Laws (Current Requirement).	10 railroads	2 petitions	10 hours	20
228.403—Exemption requests from passenger/commuter railroads—(Proposed/New Requirements).	28 railroads	5 exemption requests ..	8 hours	40
—Initial exemption requests from tourist/excursion railroads.	140 railroads	130 exempt requests ...	2 hours	260
—Renewal exemption requests from tourist/excursion railroads.	140 railroads	130 renewal exemption requests.	30 minutes	65 hours
228.407—Analysis of Work Schedules Submissions (Proposed/New Requirements).	168 railroads	28 work schedule analyses.	80 hours	2,240
—Reports to FRA of Work Schedules that Exceed Fatigue Threshold.	168 railroads	20 reports	2 hours	40
—Fatigue Mitigation Plans Submitted to FRA.	168 railroads	15 plans	4 hours	60
—Submission of Work Schedules Using Validation Model At/Exceeding Threshold that can be mitigated by tools.	168 railroads	15 work schedules	4 hours	60
—Submission of Work Schedules Using Validation Model At/Exceeding Threshold that *cannot* be mitigated by tools.	168 railroads	5 work schedules	4 hours	20
—RR Determinations of necessary schedules.	168 railroads	20 decisions	2 hours	40
—RR Declaration that no work schedule needs to be submitted to FRA for exceeding fatigue threshold.	168 railroads	10 written declarations	1 hours	10
—Submission of follow-up analysis by RR due to work schedule change.	168 railroads	28 analyses	4 hours	112
—Updated fatigue mitigation plans	168 railroads	28 plans	4 hours	112
—RR consultations w/employees	168 railroads	40 consults	4 hours	160
—Filed statements w/FRA by employees and employee organizations unable to reach consensus w/RR on work schedules or mitigation tools/RR submissions to FRA.	RR Employees/Employee Organizations.	5 statements	2 hours	10
228.411—Training Programs (Proposed/New Requirements).	168 railroads	29 programs	20 hours	580
—Employee Initial Training	168 railroads	10,000 tr. employees ...	1 hour	10,000
—Initial Training—New Employees	168 railroads	150 trained employees	1 hour	150
—Triennial Refresher Training of Employees.	168 railroads	10,150 tr. employees ...	15 minutes	2,538
—Records of Training	168 railroads	10,150 records	5 minutes	846
Appendix D: Guidance on Fatigue Management Plans—(Proposed/New Requirement).	168 railroads	4 plans	15 hours	60

All estimates include the time for reviewing instructions; searching existing data sources; gathering or maintaining the needed data; and reviewing the information. Pursuant to 44 U.S.C. 3506(c)(2)(B), FRA solicits comments concerning: whether these information collection requirements are necessary for the proper performance of the functions of FRA, including whether the information has practical utility; the accuracy of FRA's estimates of the burden of the information collection requirements; the quality, utility, and clarity of the information to be collected; and whether the burden of collection of information on those who are to respond, including through the use of automated collection techniques or other forms of information technology, may be minimized. For information or a copy of the paperwork package submitted to OMB, contact Mr. Robert Brogan, Information Clearance Officer, at 202–493–6292, or Ms. Kimberly Toone at 202–493–6132.

Organizations and individuals desiring to submit comments on the collection of information requirements should direct them to Mr. Robert Brogan or Ms. Kimberly Toone, Federal Railroad Administration, 1200 New Jersey Avenue, SE., 3rd Floor, Washington, DC 20590. Comments may also be submitted via e-mail to Mr. Brogan or Ms. Toone at the following address: *Robert.Brogan@dot.gov; Kimberly.Toone@dot.gov*.

OMB is required to make a decision concerning the collection of information requirements contained in this proposed rule between 30 and 60 days after publication of this document in the **Federal Register**. Therefore, a comment to OMB is best assured of having its full effect if OMB receives it within 30 days of publication. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

FRA is not authorized to impose a penalty on persons for violating information collection requirements which do not display a current OMB control number, if required. FRA intends to obtain current OMB control numbers for any new information collection requirements resulting from this rulemaking action prior to the effective date of the final rule. The OMB control number, when assigned, will be announced by separate notice in the **Federal Register**.

F. Unfunded Mandates Reform Act

Pursuant to Section 201 of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4, 2 U.S.C. 1531), each Federal agency "shall, unless otherwise prohibited by law, assess the effects of Federal regulatory actions on State, local, and tribal governments, and the private sector (other than to the extent that such regulations incorporate requirements specifically set forth in law)." Section 202 of the Act (2 U.S.C. 1532) further requires that "before promulgating any general notice of proposed rulemaking that is likely to result in the promulgation of any rule that includes any Federal mandate that may result in expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $140,800,000 or more in any 1 year, and before promulgating any final rule for which a general notice of proposed rulemaking was published, the agency shall prepare a written statement" detailing the effect on State, local, and tribal governments and the private sector. The proposed rule will not result in the expenditure, in the aggregate, of $100,000,000 or more (as adjusted annually for inflation) in any one year, and thus preparation of such a statement is not required.

G. Environmental Assessment

The National Environmental Policy Act, 42 U.S.C. 4321–4375, requires that Federal agencies analyze proposed actions to determine whether the action will have a significant impact on the human environment. This proposed rule will not have a significant impact on the human environment.

H. Privacy Act

FRA wishes to inform all potential commenters that anyone is able to search the electronic form of all comments received into any agency docket by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, *etc.*). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477–78).

List of Subjects in 49 CFR Part 228

Administrative practice and procedures, Buildings and facilities, Hazardous materials transportation, Noise control, Penalties, Railroad employees, Railroad safety, Reporting and recordkeeping requirements.

For the reasons set forth in the preamble, FRA proposes to amend part 228 of chapter II, subtitle B, title 49 of the Code of Federal Regulations as follows:

PART 228—[AMENDED]

1. The authority citation for part 228 is revised to read as follows:

Authority: 49 U.S.C. 20103, 20107, 21101–21109; Sec. 108, Div. A, Public Law 110–432, 122 Stat. 4860–4866; 49 U.S.C. 21301, 21303, 21304, 21311; 28 U.S.C. 2461, note; 49 U.S.C. 103; and 49 CFR 1.49.

2. Section 228.1 is amended by removing the word "and" at the end of paragraph (a), removing the period and adding "; and" at the end of paragraph (b), and adding paragraph (c) to read as follows:

§ 228.1 Scope.

* * * * *

(c) Prescribes substantive hours of service requirements for train employees engaged in commuter or intercity rail passenger transportation.

3. Section 228.5 is amended by adding the following definitions in alphabetical order to read as follows:

§ 228.5 Definitions.

* * * * *

Associate Administrator for Railroad Safety/Chief Safety Officer means the Associate Administrator for Railroad Safety/Chief Safety Officer, Office of Railroad Safety, Federal Railroad Administration, 1200 New Jersey Ave., SE., Washington, DC 20590, or any person to whom he or she has delegated authority in the matter concerned.

* * * * *

FRA means the Federal Railroad Administration.

* * * * *

Type 1 assignment means an assignment to be worked by a train employee who is engaged in commuter or intercity rail passenger transportation that requires the employee to report for duty no earlier than 4 a.m. on a calendar day and be released from duty no later than 8 p.m. on the same calendar day, and that complies with the provisions of § 228.405. For the purposes of this subpart, FRA considers a Type 1 assignment to present an acceptable level of risk for fatigue that does not exceed the defined fatigue threshold under a scientifically valid, biomathematical model of human performance and fatigue specified by FRA at § 228.407(c)(1) or approved by FRA at § 228.407(c)(2) .

Type 2 assignment means an assignment to be worked by a train employee who is engaged in commuter or intercity rail passenger transportation that requires the employee to be on duty for any period of time between 8:01 p.m. on a calendar day and 3:59 a.m. on the next calendar day, or that otherwise fails to qualify as a Type 1 assignment.

A Type 2 assignment may be considered a Type 1 assignment if:

(1) It does not exceed the defined fatigue threshold under a scientifically valid biomathematical model of human performance and fatigue specified by FRA at § 228.407(c)(2) or approved by FRA at § 228.407(c)(1);

(2) It complies with the provisions of § 228.405; and

(3) It does not require the employee to be on duty for any period of time between midnight and 4 a.m.

4. Section 228.11 is amended by revising paragraph (c) to read as follows:

§ 228.11 Hours of duty records.

* * * * *

(c) *Exceptions to requirements for train employees.* Paragraphs (b)(13) through (15) of this section do not apply to the hours of duty records of train employees providing commuter rail passenger transportation or intercity rail passenger transportation.

* * * * *

5. Section 228.19 is amended by adding paragraphs (c)(5) through (10) to read as follows:

§ 228.19 Monthly reports of excess service.

* * * * *

(c) * * *

(5) A train employee initiates an on-duty period on more than 6 consecutive calendar days including one or more Type 2 assignments, when the on-duty period on the sixth consecutive day ended at the employee's home terminal.

(6) A train employee initiates an on-duty period on more than 7 consecutive days including one or more Type 2 assignments.

(7) A train employee returns to duty after initiating an on-duty period on 6 or 7 consecutive days including one or more Type 2 assignments, without having had 24 consecutive hours off duty at the employee's home terminal.

(8) A train employee initiates an on-duty period on 14 or more calendar days including only Type 1 assignments without having had at least two calendar days within the 14-day period in which the employee has not initiated an on-duty period, if the on-duty period on the fourteenth consecutive day ended at the employee's home terminal.

(9) A train employee initiates an on-duty period on more than 15 consecutive days including only Type 1 assignments.

(10) A train employee returns to duty after initiating an on-duty period on 14 or 15 consecutive calendar days including only Type 1 assignments, without 2 consecutive calendar days off duty at the employee's home terminal.

* * * * *

6. Part 228 is amended by adding Subpart F to read as follows:

Subpart F—Substantive Hours of Service Requirements for Train Employees Engaged in Commuter or Intercity Rail Passenger Transportation

Sec.

Subpart F—Substantive Hours of Service Requirements for Train Employees Engaged in Commuter or Intercity Rail Passenger Transportation

§ 228.401 Applicability.

The requirements of this subpart apply to railroads and their officers and agents, with respect to their train employees who are engaged in commuter or intercity rail passenger transportation, including train employees who are engaged in tourist, scenic, historic, or excursion rail passenger transportation.

§ 228.403 Nonapplication, exemption, and definitions.

(a) *General.* This subpart does not apply to a situation involving any of the following:

(1) A casualty;

(2) An unavoidable accident;

(3) An act of God; or

(4) A delay resulting from a cause unknown and unforeseeable to a railroad or its officer or agent in charge of the employee when the employee left a terminal.

(b) *Exemption.* The Administrator may exempt a railroad having not more than a total of 15 train employees, signal employees, and dispatching service employees from the limitations imposed by this subpart on the railroad's train employees who are engaged in commuter or intercity rail passenger transportation. The Administrator may allow the exemption from this subpart after a full hearing, for good cause shown, and on deciding that the exemption is in the public interest and will not affect safety adversely. The exemption shall be for a specific period of time and is subject to review at least annually. The exemption may not authorize a railroad to require or allow its train employees to be on duty more than a total of 16 hours in a 24-hour period.

(c) *Definitions.* In this subpart—

Commuter or intercity rail passenger transportation has the meaning assigned by section 24102 of title 49, United States Code, to the terms "commuter rail passenger transportation" or "intercity rail passenger transportation."

Train employee who is engaged in commuter or intercity rail passenger transportation includes a train employee who is engaged in commuter or intercity rail passenger transportation regardless of the nature of the entity by whom the employee is employed and any other train employee who is employed by a commuter railroad or an intercity passenger railroad. The term excludes a train employee of another type of railroad who is engaged in work train service even though that work train service might be related to providing commuter or intercity rail passenger transportation.

§ 228.405 Limitations on duty hours of train employees engaged in commuter or intercity rail passenger transportation.

(a) *General.* Except as provided in paragraph (c) of this section, a railroad and its officers and agents may not require or allow a train employee engaged in commuter or intercity rail passenger transportation to remain or go on duty—

(1) Unless that employee has had at least 8 consecutive hours off duty during the prior 24 hours; or

(2) After that employee has been on duty for 12 consecutive hours, until that employee has had at least 10 consecutive hours off duty; or

(3) After that employee has initiated an on-duty period each day for six consecutive calendar days including one or more Type 2 assignments, unless that employee has had at least 24 consecutive hours off duty at the employee's home terminal during which time the employee is unavailable for any service for any railroad; except that an employee may either deadhead to the point of final release at the employee's home terminal on a seventh consecutive day or initiate an on-duty period on a seventh consecutive calendar day in order to return to the employee's home terminal, and after arrival at the employee's home terminal the employee must have had at least 24 consecutive hours off duty at the employee's home terminal during which time the employee is unavailable for any service

for any railroad before being allowed or required to remain or go on duty; or

(4) After that employee has initiated on-duty periods including only Type 1 assignments in a period of 14 consecutive calendar days, and has not had at least a total of two calendar days in that 14-day period in which the employee has not initiated an on-duty period, until that employee has had at least two consecutive calendar days off duty at the employee's home terminal during which time the employee is unavailable for any service for any railroad; except that an employee may either deadhead to the point of final release at the employee's home terminal on a fifteenth consecutive day or initiate an on-duty period on a fifteenth consecutive calendar day in order to return to the employee's home terminal, and after arrival at the employee's home terminal the employee must have had at least two consecutive calendar days at the employee's home terminal during which the employee does not initiate an on-duty period, and during which time the employee is unavailable for any service for any railroad, before being allowed or required to remain or go on duty. For the purposes of this paragraph (a)(4), a new 14-day period begins each time the employee has accumulated a total of two calendar days in which the employee has not initiated an on-duty period.

(b) *Determining time on duty.* In determining under paragraph (a) of this section the time that a train employee subject to this subpart is on or off duty, the following rules apply:

(1) Time on duty begins when the employee reports for duty and ends when the employee is finally released from duty;

(2) Time the employee is engaged in or connected with the movement of a train is time on duty;

(3) Time spent performing any other service for the railroad during a 24-hour period in which the employee is engaged in or connected with the movement of a train is time on duty;

(4) Time spent in deadhead transportation to a duty assignment is time on duty, but time spent in deadhead transportation from a duty assignment to the place of final release is neither time on duty nor time off duty;

(5) An interim period available for rest at a place other than a designated terminal is time on duty;

(6) An interim period available for less than four hours rest at a designated terminal is time on duty; and

(7) An interim period available for at least four hours rest at a place with suitable facilities for food and lodging is not time on duty when the employee is prevented from getting to the employee's designated terminal by any of the following:

(i) A casualty;

(ii) A track obstruction;

(iii) An act of God; or

(iv) A derailment or major equipment failure resulting from a cause that was unknown and unforeseeable to the railroad or its officer or agent in charge of that employee when that employee left the designated terminal.

(c) *Emergencies.* A train employee subject to this subpart who is on the crew of a wreck or relief train may be allowed to remain or go on duty for not more than four additional hours in any period of 24 consecutive hours when an emergency exists and the work of the crew is related to the emergency. In this paragraph, an emergency ends when the track is cleared and the railroad line is open for traffic.

§ 228.407 Analysis of work schedules; submissions; FRA review and approval of submissions; fatigue mitigation plans.

(a) *Analysis of work schedules.* Each railroad subject to this subpart must perform an analysis of one cycle of the work schedules (the period within which the work schedule repeats) of its train employees engaged in commuter or intercity rail passenger transportation and identify those work schedules intended to be assigned to its train employees, that, if worked by such a train employee, put the train employee at risk for a level of fatigue at which safety may be compromised. A level of fatigue at which safety may be compromised, hereafter called "the fatigue threshold," shall be determined by procedures that use a scientifically valid, biomathematical model of human performance and fatigue that has been approved by the Associate Administrator for Railroad Safety/Chief Safety Officer pursuant to paragraph (c)(1) of this section, or previously accepted pursuant to paragraph (c)(2) of this section. Each work schedule that exceeds the fatigue threshold must be—

(1) Reported to the Associate Administrator for Railroad Safety/Chief Safety Officer as provided in paragraph (b) of this section, no later than the date that is 180 days after the effective date of the final rule;

(2) Either—

(i) Mitigated by action in compliance with the railroad's fatigue mitigation plan that has been approved by the Associate Administrator for Railroad Safety/Chief Safety Officer as specified in paragraph (b) of this section, no later than the date that is 180 days after the effective date of the final rule; or

(ii) Supported by a determination that has been approved by the Associate Administrator for Railroad Safety/Chief Safety Officer as specified in paragraph (b) of this section, that the schedule is operationally necessary, and that the fatigue risk cannot be sufficiently mitigated by the use of fatigue mitigation tools to reduce the risk for fatigue to a level within the fatigue threshold, no later than the date that is 180 days after the effective date of the final rule; or

(iii) Both, no later than the date that is 180 days after the effective date of the final rule; and

(3) Approved by FRA for use in accordance with paragraph (b) of this section.

(b) *Submissions of certain work schedules and any fatigue mitigation plans and determinations of operational necessity or declarations; FRA review and approval.* (1) No later than the date that is 180 days after the effective date of the final rule, the railroad shall submit for approval to the Associate Administrator for Railroad Safety/Chief Safety Officer the work schedules described in paragraphs (b)(1)(i) and (ii) of this section. The railroad shall identify and group the work schedules as follows:

(i) Work schedules that the railroad has found, using a validated model (as specified in paragraph (c)(1) of this section or approved by FRA in accordance with paragraph (c)(2) of this section) to present a risk for a level of fatigue that is at or greater than the fatigue threshold, but that the railroad has determined can be mitigated by the use of fatigue mitigation tools so as to present a risk for a level of fatigue that is less than the fatigue threshold. The fatigue mitigation tools that will be used to mitigate the fatigue risk presented by the schedule must also be submitted.

(ii) Work schedules that the railroad has found, using a validated model (as specified in paragraph (c)(1) of this section or approved by FRA in accordance with paragraph (c)(2) of this section), to present a risk for a level of fatigue that is at or greater than the fatigue threshold, but that the railroad has determined cannot be mitigated so as to present a risk for a level of fatigue that is less than the fatigue threshold by the use of fatigue mitigation tools, and that the railroad has determined are operationally necessary. The basis for the determination must also be submitted.

(2) If a railroad performs the analysis of its schedules required by paragraph (a) of this section, and determines that none of them presents a risk for fatigue that requires it to be submitted to the

Associate Administrator for Railroad Safety/Chief Safety Officer pursuant to this paragraph, that railroad shall, no later than the date that is 180 days after the effective date of the final rule, submit to the Associate Administrator for Railroad Safety/Chief Safety Officer a written declaration, signed by an officer of the railroad, that the railroad has performed the required analysis and determined that it has no schedule that is required to be submitted.

(3) FRA will review submitted work schedules, fatigue mitigation tools, and determinations of operational necessity. If FRA identifies any exceptions to the submitted information, the agency will notify the railroad within 120 days of receipt of the railroad's submission.

(4) FRA will audit railroad work schedules and fatigue mitigation tools every two years to ensure compliance with this section.

(c) *Submission of models for FRA approval; validated models already accepted by FRA.* (1) If a railroad subject to this subpart wishes to use a model of human performance and fatigue, not previously approved, for the purpose of making part or all of the analysis required by paragraph (a) or (d) of this section, the railroad shall submit the model and evidence in support of its scientific validation, for the approval of the Associate Administrator for Railroad Safety/Chief Safety Officer. Decisions of the Associate Administrator for Railroad Safety/Chief Safety Officer regarding the validity of a model are subject to review under § 211.55 of this chapter; or

(2) A railroad may use a model that is already accepted by FRA. FRA has approved the Fatigue Avoidance Scheduling Tool™ (FAST) issued on July 15, 2009, by Fatigue Science, Inc., and Fatigue Audit InterDyne™ (FAID) version 2, issued in September 2007 by InterDynamics Pty Ltd. (Australian Company Number (ACN) 057 037 635) as scientifically valid, biomathematical models of human performance and fatigue for the purpose of making the analysis required by paragraph (a) or (d) of this section.

(d) *Analysis of certain later changes in work schedules.* (1) Additional follow-up analysis must be performed each time that the railroad changes one of its work schedules in a manner—

(i) That would differ from the FRA-approved parameters for hours of duty of any work schedule previously analyzed pursuant to paragraph (a) of this section; or

(ii) That would alter the work schedule to the extent that train employees who work the schedule may be at risk of experiencing a level of fatigue that exceeds the FRA-approved fatigue threshold established by paragraph (a) of this section.

(2) Such additional follow-up analysis must be submitted for FRA approval as provided under paragraph (b) of this section, as soon as practicable, prior to the use of the new schedule for an employee subject to this subpart.

(e) *Fatigue mitigation plans.* A written plan must be developed and adopted by the railroad to mitigate the potential for fatigue for any work schedule identified through the analysis required by § 228.407(a) or (d) as at risk, including potential fatigue caused by unscheduled work assignments. Compliance with the fatigue mitigation plan is mandatory. The railroad shall review and, if necessary, update the plan at least once every two years after adopting the plan.

(f) *Consultation.* (1) Each railroad subject to this subpart shall consult with, employ good faith, and use its best efforts to reach agreement with, all of its directly affected employees, including any nonprofit employee labor organization representing a class or craft of directly affected employees of the railroad, on—

(i) The railroad's review of work schedules found to be at risk for a level of fatigue at which safety may be compromised (as described by paragraph (a) of this section);

(ii) The railroad's selection of appropriate fatigue mitigation tools; and

(iii) All submissions by the railroad to the Associate Administrator for Railroad Safety/Chief Safety Officer for approval that are required by this section.

(2) For purposes of this section, the term "directly affected employee" means an employee to whom one of the work schedules applies or would apply if approved.

(3) If the railroad and its directly affected employees, including any nonprofit employee labor organization representing a class or craft of directly affected employees of the railroad, cannot reach consensus on any area described in paragraph (f)(1) of this section, then directly affected employees and any such organization may file a statement with the Associate Administrator for Railroad Safety/Chief Safety Officer explaining their views on any issue on which consensus was not reached. The Associate Administrator for Railroad Safety/Chief Safety Officer shall consider such views during review and approval of items required by this section.

§ 228.409 Requirements for Railroad-Provided Employee Sleeping Quarters During Interim Releases and Other Periods Available for Rest Within a Duty Tour.

(a) If a railroad subject to this subpart provides sleeping quarters for the use of a train employee subject to this subpart during interim periods of release as a method of mitigating fatigue identified by the analysis of work schedules required by § 228.407(a) and (d), such sleeping quarters must be "clean, safe, and sanitary," and give the employee "an opportunity for rest free from the interruptions caused by noise under the control of the" railroad within the meaning of section 21106(a)(1) of title 49 of the United States Code.

(b) Any sleeping quarters provided by a railroad that are proposed as a fatigue mitigation tool pursuant to § 228.407(b)(1)(i), are subject to the requirements of § 228.407(f).

§ 228.411 Training

(a) *Individuals to be trained.* Each railroad subject to this subpart shall provide training for its employees subject to this subpart, and the immediate supervisors of its employees subject to this subpart.

(b) *Subjects to be covered.* The training shall provide, at a minimum, information on the following subjects that is based on the most current available scientific and medical research literature:

(1) Physiological and human factors that affect fatigue, as well as strategies to reduce or mitigate the effects of fatigue;

(2) Opportunities for identification, diagnosis, and treatment of any medical condition that may affect alertness or fatigue, including sleep disorders;

(3) Alertness strategies, such as policies on napping, to address acute drowsiness and fatigue while an employee is on duty;

(4) Opportunities to obtain restful sleep at lodging facilities, including employee sleeping quarters provided by the railroad; and

(5) The effects of abrupt changes in rest cycles for employees.

(c) *Timing of initial training.* Initial training shall be provided to affected employees as soon as practicable, and to new employees subject to this subpart within 90 days of their first working a schedule subject to analysis under this subpart.

(d) *Timing of refresher training.* (1) At a minimum, refresher training shall be provided every three calendar years.

(2) Additional refresher training shall also be provided when significant changes are made to the railroad's fatigue mitigation plan or to the available fatigue mitigation tools applied to an employee's assignment or assignments at the location where he or she works.

(e) *Records of training.* A railroad shall maintain a record of each

employee provided training in compliance with this section and shall retain these records for three years.

§ 228.413 Compliance date.

(a) *General.* On and after the date that is 180 days after the effective date of the final rule, railroads subject to this subpart shall—

(1) Comply with this subpart with respect to their train employees who are engaged in commuter or intercity rail passenger transportation; and

(2) Be exempt from complying with the provisions of old section 21103 and new section 21103 for such employees.

(b) *Definitions.* In this section—

(1) The term "new section 21103" means section 21103 of title 49, United States Code, as amended by the Rail Safety Improvement Act of 2008 effective July 16, 2009.

(2) The term "old section 21103" means section 21103 of title 49, United States Code, as it was in effect on the day before the enactment of that Act.

7. Part 228 is amended by adding Appendix D to read as follows:

Appendix D: Guidance on Fatigue Management Plans

Railroads subject to subpart F of this part, Substantive Hours of Service Requirements for Train Employees Engaged in Commuter or Intercity Rail Passenger Transportation, may wish to consider adopting a written fatigue management plan that is designed to reduce the fatigue experienced by their train employees subject to that subpart and to reduce the likelihood of accidents, incidents, injuries, and fatalities caused by the fatigue of these employees. If a railroad is required to have a fatigue mitigation plan under § 228.407 (containing the fatigue mitigation tools that the railroad has determined will mitigate the risk posed by a particular work schedule for a level of fatigue at or above the fatigue threshold), then the railroad's fatigue management plan could include the railroad's written fatigue mitigation plan, designated as such to distinguish it from the part of the plan that is optional, or could be a separate document. As provided in § 228.407(a)(2) and (e), compliance with the fatigue mitigation plan itself is mandatory.

A good fatigue management plan contains targeted fatigue countermeasures for the particular railroad. In other words, the plan takes into account varying circumstances of operations by the railroad on different parts of its system, and should prescribe appropriate fatigue countermeasures to address those varying circumstances. In addition, the plan addresses each of the following items, as applicable:

(1) Employee education and training on the physiological and human factors that affect fatigue, as well as strategies to reduce or mitigate the effects of fatigue, based on the most current scientific and medical research and literature;

(2) Opportunities for identification, diagnosis, and treatment of any medical condition that may affect alertness or fatigue, including sleep disorders;

(3) Effects on employee fatigue of an employee's short-term or sustained response to emergency situations, such as derailments and natural disasters, or engagement in other intensive working conditions;

(4) Scheduling practices for employees, including innovative scheduling practices, on-duty call practices, work and rest cycles, increased consecutive days off for employees, changes in shift patterns, appropriate scheduling practices for varying types of work, and other aspects of employee scheduling that would reduce employee fatigue and cumulative sleep loss;

(5) Methods to minimize accidents and incidents that occur as a result of working at times when scientific and medical research has shown that increased fatigue disrupts employees' circadian rhythm;

(6) Alertness strategies, such as policies on napping, to address acute drowsiness and fatigue while an employee is on duty;

(7) Opportunities to obtain restful sleep at lodging facilities, including employee sleeping quarters provided by the railroad;

(8) The increase of the number of consecutive hours of off-duty rest, during which an employee receives no communication from the employing railroad or its managers, supervisors, officers, or agents; and

(9) Avoidance of abrupt changes in rest cycles for employees.

Finally, if a railroad chooses to adopt a fatigue management plan, FRA suggests that the railroad review the plan and update it periodically as the railroad sees fit if changes are warranted.

Issued in Washington, DC, on March 15, 2011.

Karen J. Rae,

Deputy Administrator.

[FR Doc. 2011–6528 Filed 3–16–11; 4:15 pm]

BILLING CODE 4910–06–P