



U.S. Department
of Transportation

**Federal Motor Carrier
Safety Administration**

Administrator

September 1, 2011

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1200 New Jersey Avenue, SE
Washington, DC 20590

Refer to: MC-PRS

The Honorable Deborah A.P. Hersman
Chairman
National Transportation Safety Board
490 L'Enfant Plaza East, SW
Washington, DC 20594

Dear Chairman Hersman:

I am pleased to provide the Federal Motor Carrier Safety Administration's (FMCSA) response to the National Transportation Safety Board's (NTSB) letter dated October 21, 2010, regarding safety recommendations H-10-08 through H-10-11. The Agency acknowledges NTSB's thorough investigation of the June 26, 2009, multi-vehicle crash in Miami, Oklahoma, which resulted in the identification of these specific safety recommendations. The FMCSA shares your commitment to transportation safety and concerns related to driver fatigue and believes that the initiatives outlined in this response address the NTSB's respective safety recommendations.

H-10-08: Create educational materials that provide current information on fatigue and fatigue countermeasures and make the materials available in different formats, including updating and redistributing your truck-driver-focused driver fatigue video; make the video available electronically for quicker dissemination; and implement a plan to regularly update the educational materials and the video with the latest scientific information and to regularly redistribute them.

Since 1999, FMCSA has been involved in the North American Fatigue Management Program (NAFMP), an initiative which aims to develop, implement, evaluate, and finalize a comprehensive, integrated fatigue management program (FMP) for the commercial motor carrier industry, operating under various regulatory jurisdictions of North America. This project is a collaborative, international effort sponsored by FMCSA, Transport Canada, the Alberta Ministry of Transportation, the Alberta Ministry of Employment and Immigration, the Commission de la santé et de la sécurité du travail du Québec, and the Société de l'assurance automobile du Québec. Operational and other support is being provided by the motor carrier industry through the participation of the Canadian Council of Motor Transport Administrators (CCMTA), Alberta Motor Transport Association, the American Transportation Research Institute (ATRI), Québec Trucking Association, the Canadian Trucking Alliance, and Canadian and U.S. volunteer motor carriers. There are four phases to the project, three of which have been completed as follows:

- Phase 1 – Involved the identification of fatigue management requirements and developed a comprehensive approach designed specifically for drivers, dispatchers, and company managers.
- Phase 2 – Involved the development of education and training materials and procedures for assessment of field testing the FMP.

- Phase 3 – Involved the conducting of field operational tests in two stages: protocol development and field testing of the effectiveness of the comprehensive FMP compared to current industry practices.

The project is currently in Phase 4, which involves the development and advancement of recommended practice guidelines, manuals, and other training materials, which in turn will be made available to all commercial motor carriers to implement a comprehensive and effective FMP. A Request for Proposals was issued by CCMTA, as part of the NAFMP Steering Committee, to solicit for Phase 4. The NAFMP Steering Committee selected a contractor for the project. The contract was awarded April 19, 2011, and the period of performance is 18 months.

The overall NAFMP instructional program will be organized as a series of ten modules, each covering required topics, directed toward specific audiences, and available both online and through traditional classroom settings. The curriculum for the training program is listed below. The estimated duration for each module includes time for slide presentation/narration, trainee probe questions, self-tests, and trainee evaluation (at end of module). A companion NAFMP Web site will include information for carriers and drivers, the NAFMP training system (online version of the modules listed below), and a link to the NAFMP Implementation Manual.

- Module 1: NAFMP Introduction and Overview (45 minutes)
- Module 2: Safety Culture and Management Practices (1.5 hours)
- Module 3: Driver Education (3 hours)
- Module 4: Family Education (45 minutes)
- Module 5: Train-the-Trainer for Driver Education and Family Education (4.5 hours)
- Module 6: Shippers and Receivers (30 minutes)
- Module 7: Motor Carrier Management Sleep Disorders Screening & Treatment (1 hour)
- Module 8: Driver Sleep Disorders Screening and Treatment (1 hour)
- Module 9: Driver Scheduling and Tools (1 hour)
- Module 10: Fatigue Monitoring and Management Technologies (1 hour)

For each module, instructional methods and materials will include the following: instructor-led PowerPoint presentations, web-based non-interactive course, and web-based interactive course. The FMCSA recognizes the growth of the world-wide web and the possibilities it affords in providing alternative training and educational opportunities. As a result the Agency proposes using the web-based modules in place of a separate video to offer experiential learning opportunities that will address truck driver fatigue and comply with the intent of the recommendation.

In addition to the NAFMP, the Agency has launched a new initiative to develop a low-cost commercially available system for detecting drowsy driving. The goal of the project is to develop and test a prototype system to unobtrusively detect and alert drowsy, distracted, and aggressive drivers prior to performance degradation. Transecurity, LLC, successfully developed a multi-variable drowsy driver mitigation system (DDMS) concept in Phase I of the project, which combines many indicators of drowsiness and alertness into a composite drowsiness score. Advisory and warning messages are presented to the driver and supplemental notifications to

fleet management are also supported. Phase II of this effort includes development of a work plan for completing the development and commercialization of the system. Tasks include eye and head tracking software development, continued algorithm development to detect behaviors of interest and combine them into a composite drowsiness score, development of an appropriate human machine interface, porting of algorithm and display software to run on Transecurity's DriveVision pro on-board safety system; modifying Transecurity's DriveMetrix software to include the drowsiness data into the immediate supervisor notification, driver risk scoring, and driver coaching functionalities; and testing the system in a sizable field operational test involving several real operating carriers. The impact of the DDMS on fleet management, safety supervisors, and drivers will also be assessed and reported. The contract was awarded in September 2010 and the period of performance is 24 months.

Based on the above, FMCSA respectfully requests that NTSB classify Safety Recommendation H-10-08 as "Open-Acceptable-Alternate Response."

H-10-09: Require all motor carriers to adopt a fatigue management program based on the North American Fatigue Management Program guidelines for the management of fatigue in a motor carrier operating environment.

Although FMCSA acknowledges the NTSB's concerns regarding the need for carriers to adopt FMPs, the Agency believes that non-regulatory alternatives should be explored fully prior to any effort to mandate such programs. As indicated above, FMCSA has been involved in the NAFMP since 1999. The Agency will continue to work with stakeholder groups and the motor carrier industry to promote the voluntary implementation of FMPs based on the standardized FMPs that will be released at the conclusion of the NAFMP's work.

In addition, at FMCSA's May 2007 Motor Carrier Safety Advisory Committee (MCSAC) meeting, the Committee accepted and discussed *Task 07-02: Commercial Motor Vehicle Non-Regulatory Safety Practices*, noting that an important management best safety practice would be to "implement a Fatigue/Alert Management Program for drivers and related staff that interact with drivers or driver performance."¹ The MCSAC identified and recommended this practice as a significant non-regulatory safety practice that could be implemented throughout the motor carrier industry, and in FMCSA programs, but did not recommend requiring all carriers to develop FMPs.

As a follow-up to Task 07-02, FMCSA tasked MCSAC with the development of information, concepts, and ideas on ways fleets can develop a practical FMP, *Task 10-03: Fatigue Management for Commercial Motor Vehicle Operators*. During MCSAC's August-September and December 2010 meetings, the Committee received briefings and presentations from fatigue management experts from Australia, Canada, Mexico, and the United States. At the conclusion of its discussions, MCSAC issued a final report providing a framework for both developing an

¹ Federal Motor Carrier Safety Administration, Motor Carrier Safety Advisory Committee (MCSAC) (2008, June) *Final Report: CMV Non-Regulatory Best Practices (Task 07-02)* Retrieved from Federal Motor Carrier Safety Administration MCSAC Reports online: <http://mcsac.fmcsa.dot.gov/documents/FinalReportTask07-02.pdf>

FMP for carriers and determining the relevant information to include in an FMP. The FMCSA believes MCSAC's work will increase industry knowledge of FMP fundamentals and that carriers, drivers, and other stakeholders can more clearly understand their roles in reducing driver fatigue and, ultimately, in improving roadway safety.²

The FMCSA also believes that the voluntary adoption of standardized FMPs is an appropriate non-regulatory alternative to recommendation H-10-09. The FMCSA will continue to encourage and promote the safety advantages of incorporating an FMP in a motor carrier safety environment and attempt to determine the extent to which motor carriers have implemented FMPs.

Based on the reasons cited above in safety recommendation H-10-08 and the work of the MCSAC, FMCSA respectfully requests that NTSB classify safety recommendation H-10-09 as "Open-Acceptable Response."

H-10-10: Require all heavy commercial vehicles to be equipped with video event recorders that capture data in connection with the driver and the outside environment and roadway in the event of a crash or sudden deceleration event. The device should create recordings that are easily accessible for review when conducting efficiency testing and system wide performance-monitoring programs.

The FMCSA acknowledges NTSB's interest in improving motor carrier safety through the installation of video event recorders in all commercial motor vehicles. In considering the Board's interest, it is important to recognize that such recorders capture only a brief period of time prior to a safety-critical event (e.g., a crash, near crash, unintended lane departure), and would be reviewed only by enforcement personnel or the motor carrier during an enforcement intervention. Additionally, unsafe driving behaviors that occur without a safety-critical event to trigger the video event recorder would not be recorded. For these reasons, the Agency believes its Compliance, Safety, Accountability (CSA) program, launched in December 2010, offers better monitoring of carriers' safety performance.

The CSA's Safety Measurement System (SMS) analyzes all safety-based violations from inspections and crash data to determine a commercial motor carrier's on-road performance. The new safety program allows FMCSA to monitor the safety performance of more carriers and deploy a range of corrective interventions earlier after observing safety performance issues to address a carrier's specific safety problems. The SMS uses seven safety improvement categories called Behavior Analysis and Safety Improvement Categories (BASIC) to examine a carrier's on-road performance and potential crash risk. The BASICs are unsafe driving, fatigued driving (hours-of-service), driver fitness, controlled substances and alcohol, vehicle maintenance, cargo-related, and crash indicators.

² Federal Motor Carrier Safety Administration, Motor Carrier Safety Advisory Committee (MCSAC) (2010, December) *Final Report: Fatigue Management for Commercial Motor Vehicle Operators (Task 10-03)* Retrieved from Federal Motor Carrier Safety Administration MCSAC Reports online: http://mcsac.fmcsa.dot.gov/documents/DEC2010/Final_report_10-03.pdf

By looking at a carrier's safety violations in each SMS BASIC category, FMCSA and State law enforcement agencies will be better equipped to identify carriers with patterns of high-risk behaviors and apply interventions to bring about changes in unsafe practices. Safety interventions include early warning letters, targeted roadside inspections, and focused on-site reviews that concentrate enforcement resources on specific issues identified through the SMS.

As outlined in the Agency's November 2, 2007, Federal Register notice, FMCSA is considering the unsafe driving BASIC as one of two "stand alone" categories (Unsafe Driving and Fatigued Driving) that could result in a carrier being rated "Unfit."³ With the increased focus on drivers' performance, the Agency believes the Unsafe Driving BASIC provides an acceptable alternative to the mandatory use of video event data recorders.

Through the Agency's CSA Web site and the release of the SMS in 2010, FMCSA and State law enforcement agencies, motor carriers, shippers, receivers, and the general public now have access to violation data for each carrier and the scores for the "Unsafe Driving" BASIC. Motor carriers are under pressure to take action to improve their drivers' safety performance which, in turn, will decrease the need for an enforcement intervention.

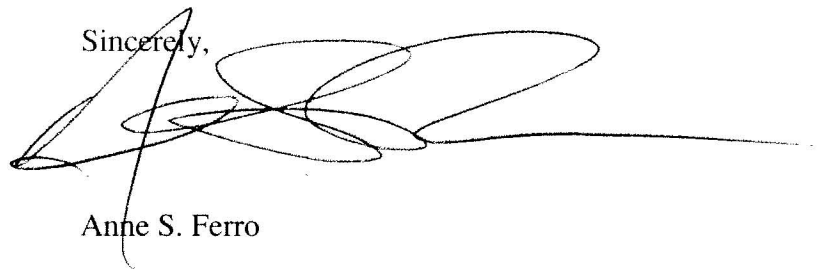
Based on the above, FMCSA respectfully requests that NTSB classify Safety Recommendation H-10-10 as "Closed-Acceptable Alternate Response."

H-10-11: Require motor carriers to review and use video event recorder information in conjunction with other performance data to verify that driver actions are in accordance with company and regulatory rules and procedures essential to safety.

Based on the reasons cited above in safety recommendation H-10-10, FMCSA respectfully requests that NTSB classify safety recommendation H-10-11 as "Closed-Acceptable Alternate Response."

We share the NTSB's goal of improving motor carrier safety in order to make our roads and highways safer for everyone and believe the actions described above are responsive to safety recommendations H-10-08 through H-10-11. If you have any questions or concerns, please contact Dee Williams, Chief, Strategic Planning and Program Evaluation Division, at (202) 493-0192 or by email at dee.williams@dot.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Anne S. Ferro", with a long horizontal line extending to the right.

Anne S. Ferro

³ *Federal Register*, vol. 72, no. 212 (November 2, 2007), p. 62299. <http://www.gpo.gov/fdsys/pkg/FR-2007-11-02/pdf/E7-21671.pdf>



U.S. Department of Transportation Federal Motor Carrier Safety Administration

Drowsy Driver Mitigation System

Office of Analysis, Research and Technology
May 2011

Goal: The objective of this project is to develop and test a prototype system to unobtrusively detect and alert drowsy, distracted, and aggressive drivers prior to performance degradation.

Background: Fatigue is a complex, but very real, interaction of physiological, cognitive, and emotional factors which result in slowed reactions, poor judgment, reduced cognitive processing of information, and an inability to continue performing a task or to carry it out at a high, sustained level of accuracy or safety. Operator fatigue has been recognized as a critical safety issue in all modes of transportation.

Summary: Transecurity successfully developed a multi-variable drowsy driver mitigation system (DDMS) concept in their SBIR Phase I project, which combines many indicators of drowsiness and alertness into a composite drowsiness score. Advisory and warning messages are presented to the driver and supplemental notifications to fleet management are also supported. This Phase II proposal provides a work plan for completing the development and commercialization of the system. Tasks include machine vision eye and head tracking software development, continued algorithm development to detect behaviors of interest and combine them into a composite drowsiness score, development of an appropriate human machine interface, porting of algorithm and display software to run on Transecurity's DriveVision pro on-board safety system, modifying Transecurity's DriveMetrix software to include the drowsiness data into the immediate supervisor notification, driver risk scoring, and driver coaching functionalities, and testing the system in a sizable field operational test involving several real operating carriers. The impact of the DDMS on fleet management, safety supervisors, and drivers will also be assessed and reported.

Outcomes: A low-cost commercially available system for detecting drowsy driving.

Milestones: The Phase 2 SBIR contract was awarded September 2010.

Funding: FY 2010 \$750,000 FMCSA R and T

Status: Transecurity is completing the tasks outlined in the work plan.

Project Team: For more information, contact Terri Hallquist, FMCSA Research Division, at 202-366-1064 or theresa.hallquist@dot.gov.