Background

Driver fatigue is a serious issue with respect to the safety of all drivers and passengers on the roads of North America. Historically, commercial carriers, regulators, and CMV drivers have responded to this issue by working/driving within prescribed hours of service (HOS) rules. A recent body of research in fatigue management indicates that other factors are involved in driver fatigue, and that there is no one simple solution available to mitigate commercial driver fatigue and improve safety performance. For the past several years, Canadian and American regulators, carriers, and researchers have worked on the development of a comprehensive approach for managing fatigue in a motor-carrier operating environment.

This work has been led by a steering committee of the North American Fatigue Management Program (NAFMP), a consortium of government and industry agencies with an interest in developing a more effective means of dealing with professional driver fatigue. The NAFMP Steering Committee agreed to develop a comprehensive and effective fatigue management program (FMP) that would enhance a carrier's ability to deal effectively with the challenges of fatigue in a highly competitive, widely dispersed, and rapidly changing industry.

Project Overview

The purpose of this project, funded by the North American Fatigue Management Program (NAFMP), is to design and develop a Fatigue Management Program (FMP) for use with carriers (i.e., trucks and motorcoaches) of all sizes anywhere in North America. Project team members include VTTI; Institute for Behavior Resources, Inc. (IBR); JJ Keller & Associates, Inc. (JJ Keller); Dr. Bill Herbert of Health Science; and Technical Consulting, LLC (HSTC). There will be three primary deliverables in the project, including: (1) FMP training and education modules; (2) an FMP project website; (3) and the FMP Implementation Manual. These three deliverables will address the following:

- Key elements of a comprehensive FMP (including corporate culture, education and training, sleep disorder screening and treatment, scheduling and tools, and fatigue monitoring and management technologies);
- The challenges in reaching firms of all sizes, dispersed throughout the continent;
- The challenges in reaching drivers who are often widely dispersed, to provide training, medical screening, and support;
- The need to involve drivers, as well as all levels of company management and staff, and family members;
- The need to involve shippers to sensitize them to driver fatigue considerations and to better manage their interactions with drivers in this regard;
- The need to integrate appropriate technologies associated with fatigue management;
- The need to monitor compliance with specific medical and technical interventions; and
- The need for performance measures and the infrastructure necessary to evaluate FMP efficacy and effectiveness and adjust as indicated.

Instructional Modules

The development of the FMP instructional materials will be organized as a series of modules, each covering required topics and directed toward specific audiences. Each developed module will consist of various training material (i.e., courseware) elements. Module courseware will be produced in accordance with a common architecture and format. Nevertheless, there will be some variations in the courseware elements among the modules as each module must address
specific needs.

The effort will follow an Instructional Systems Development (ISD) process where all the modules will be created through the following steps: analysis; design; development (encompassing two phases, authorship and production); implementation (Beta-testing); evaluation; and revision. The overall FMP is envisioned to encompass a total of 10 education and training modules that will be deliverable online and/or in-person.

The instructional methods/media and materials in the ten FMP modules will include instructor-led PowerPoint (PPT) presentations, web-based non-interactive courses, and web-based interactive courses. To facilitate implementation of a comprehensive FMP, a manual will be developed by VTTI for use by carrier management, including safety managers, fleet managers, logistics managers, transportation managers, and others responsible for designing and implementing a company's or organization's motor carrier FMP. The manual will be a practical, easy-to-understand reference guide for implementing an FMP.

**Project Tasks**

The project consists of nine tasks conducted over a 16-month period. Each task is described below in more detail.

**TASK 1: Kickoff Meeting**

The FMP team presented a PPT presentation to review the project tasks and timeline with the NAFMP Steering Committee.

**TASK 2: Instructional Design, Work Plan Development, and Institutional Review Board Approval**

The FMP team participated in meetings, webinars, and other planning activities with the NAFMP Steering Committee, other key stakeholders, and project team members to articulate program goals, training challenges, and training delivery requirements in the FMP.

**TASK 3: Specification Document (SD)**

JJ Keller developed an SD which established a common instructional strategy (including media), user interface, features, formats, and production standards for the entire FMP project.

**TASK 4: Instructional Development: Authoring**

The instructional development will consist of two major tasks: (i) Authoring and (ii) Production. The draft instructional module courseware will be created including slide text, graphics or other visuals, slide narrations, supporting guidance (e.g., train-the-trainer), written materials (e.g., manuals), tests, and test criteria. This task will also include Alpha-Testing of each module with the Advisory Board and Canadian focus groups. Task 4 will include draft versions of all instructional module materials, learning activities, and evaluations (both of learning and trainee reactions to training).

Because of their greater mileage exposure and other factors, commercial drivers’ risk of being involved in a drowsiness related crash is far greater than that of non-commercial drivers. *(Wyline, Shultz, Miller, Mitler & Mackie, 1996)*

**TASK 5: Instructional Development: Production**

The module authors will submit the developed education and training modules to JJ Keller to produce a polished and uniform draft of the final instructional modules including slides, professional audio narration, graphics, videos, self-tests, and other instructional features. Both JJ Keller and the authors will review and error-check the completed draft FMP training and education modules for uniform design and format, content accuracy, and interactive features. Following final approval of all training deliverables, JJ Keller will evaluate the effort required to translate and reformat/re-author them to Canadian French. The VTTI team will submit the draft FMP education and training modules to the NAFMP Steering Committee and will prepare an interim report detailing the accomplishments and upcoming tasks in the project.

**TASK 6: Conduct, Evaluate, and Revise Training**

The VTTI team will conduct Beta testing on the draft FMP education and training modules using the Advisory Board and the focus group participants that participated in the Task 4 Alpha test. The VTTI team will compile all evaluation data from the Beta testing with the Advisory Board and Canadian focus groups to identify any specific changes required in the FMP program before it is fully operational and available to the motor carrier industry. A letter report detailing these revisions will be submitted to the NAFMP Steering Committee.

**TASK 7: Draft FMP Implementation Manual and Education and Training Modules**

A draft version of the FMP Implementation Manual and education and training modules will be written and delivered to the NAFMP Steering Committee.

**TASK 8: Final Briefing**

The VTTI team will conduct a final briefing for the NAFMP Steering Committee to discuss the draft technical report and the final FMP.

**TASK 9: Final FMP Implementation Manual and Education and Training Modules**

The draft FMP Implementation Manual and education and training modules will be revised and updated based on the feedback obtained from the NAFMP Steering Committee, and the final FMP will be delivered to the NAFMP Steering Committee. The formatted publication will be submitted to the SMEs/authors for review and approval. The FMP Implementation Manual will be formatted and translated to Canadian French. The manual may be distributed by posting it to a website, or saving it to media, such as a CD.