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must indicate the existence of such a medical variance on the CDLIS driver record and the CDL document, if issued, using the restriction code “V” to indicate there is information about a medical variance on the CDLIS driver record. NOTE: In accordance with the agreement between Canada and the United States (see footnote to §391.41 of this chapter), drivers with a medical variance restriction code on their CDL are restricted from operating a CMV in the other country.

[76 FR 26887, May 9, 2011]

### Subpart G—Required Knowledge and Skills

SOURCE: 53 FR 27654, July 21, 1988, unless otherwise noted.

#### § 383.110 General requirement.

All drivers of CMVs must have the knowledge and skills necessary to operate a CMV safely as contained in this subpart. The specific types of items that a State must include in the knowledge and skills tests that it administers to CDL applicants are included in this subpart.

[76 FR 26888, May 9, 2011]

#### § 383.111 Required knowledge.

(a) All CMV operators must have knowledge of the following 20 general areas:

(1) *Safe operations regulations.* Driver-related elements of the regulations contained in parts 391, 392, 393, 395, 396, and 397 of this subchapter, such as:

(i) Motor vehicle inspection, repair, and maintenance requirements;

(ii) Procedures for safe vehicle operations;

(iii) The effects of fatigue, poor vision, hearing impairment, and general health upon safe commercial motor vehicle operation;

(iv) The types of motor vehicles and cargoes subject to the requirements contained in part 397 of this subchapter; and

(v) The effects of alcohol and drug use upon safe commercial motor vehicle operations.

(2) *Safe vehicle control systems.* The purpose and function of the controls

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and instruments commonly found on CMVs.

(3) *CMV safety control systems.* (i) Proper use of the motor vehicle’s safety system, including lights, horns, side and rear-view mirrors, proper mirror adjustments, fire extinguishers, symptoms of improper operation revealed through instruments, motor vehicle operation characteristics, and diagnosing malfunctions.

(ii) CMV drivers must have knowledge of the correct procedures needed to use these safety systems in an emergency situation, e.g., skids and loss of brakes.

(4) *Basic control.* The proper procedures for performing various basic maneuvers, including:

(i) Starting, warming up, and shutting down the engine;

(ii) Putting the vehicle in motion and stopping;

(iii) Backing in a straight line; and

(iv) Turning the vehicle, e.g., basic rules, off tracking, right/left turns and right curves.

(5) *Shifting.* The basic shifting rules and terms for common transmissions, including:

(i) Key elements of shifting, e.g., controls, when to shift, and double clutching;

(ii) Shift patterns and procedures; and

(iii) Consequences of improper shifting.

(6) *Backing.* The procedures and rules for various backing maneuvers, including:

(i) Backing principles and rules; and

(ii) Basic backing maneuvers, e.g., straight-line backing, and backing on a curved path.

(7) *Visual search.* The importance of proper visual search, and proper visual search methods, including:

(i) Seeing ahead and to the sides;

(ii) Use of mirrors; and

(iii) Seeing to the rear.

(8) *Communication.* The principles and procedures for proper communications and the hazards of failure to signal properly, including:

(i) Signaling intent, e.g., signaling when changing direction in traffic;

(ii) Communicating presence, e.g., using horn or lights to signal presence; and

- (iii) Misuse of communications.
- (9) *Speed management.* The importance of understanding the effects of speed, including:
  - (i) Speed and stopping distance;
  - (ii) Speed and surface conditions;
  - (iii) Speed and the shape of the road;
  - (iv) Speed and visibility; and
  - (v) Speed and traffic flow.
- (10) *Space management.* The procedures and techniques for controlling the space around the vehicle, including:
  - (i) The importance of space management;
  - (ii) Space cushions, e.g., controlling space ahead/to the rear;
  - (iii) Space to the sides; and
  - (iv) Space for traffic gaps.
- (11) *Night operation.* Preparations and procedures for night driving, including:
  - (i) Night driving factors, e.g., driver factors (vision, glare, fatigue, inexperience);
  - (ii) Roadway factors (low illumination, variation in illumination, unfamiliarity with roads, other road users, especially drivers exhibiting erratic or improper driving); and
  - (iii) Vehicle factors (headlights, auxiliary lights, turn signals, windshields and mirrors).
- (12) *Extreme driving conditions.* The basic information on operating in extreme driving conditions and the hazards encountered in such conditions, including:
  - (i) Bad weather, e.g., snow, ice, sleet, high wind;
  - (ii) Hot weather; and
  - (iii) Mountain driving.
- (13) *Hazard perceptions.* The basic information on hazard perception and clues for recognition of hazards, including:
  - (i) Road characteristics; and
  - (ii) Road user activities.
- (14) *Emergency maneuvers.* The basic information concerning when and how to make emergency maneuvers, including:
  - (i) Evasive steering;
  - (ii) Emergency stop;
  - (iii) Off road recovery;
  - (iv) Brake failure; and
  - (v) Blowouts.
- (15) *Skid control and recovery.* The information on the causes and major types of skids, as well as the procedures for recovering from skids.
- (16) *Relationship of cargo to vehicle control.* The principles and procedures for the proper handling of cargo, including:
  - (i) Consequences of improperly secured cargo, drivers' responsibilities, and Federal/State and local regulations;
  - (ii) Principles of weight distribution; and
  - (iii) Principles and methods of cargo securement.
- (17) *Vehicle inspections.* The objectives and proper procedures for performing vehicle safety inspections, as follows:
  - (i) The importance of periodic inspection and repair to vehicle safety.
  - (ii) The effect of undiscovered malfunctions upon safety.
  - (iii) What safety-related parts to look for when inspecting vehicles, e.g., fluid leaks, interference with visibility, bad tires, wheel and rim defects, braking system defects, steering system defects, suspension system defects, exhaust system defects, coupling system defects, and cargo problems.
  - (iv) Pre-trip/enroute/post-trip inspection procedures.
  - (v) Reporting findings.
- (18) *Hazardous materials.* Knowledge of the following:
  - (i) What constitutes hazardous material requiring an endorsement to transport;
  - (ii) Classes of hazardous materials;
  - (iii) Labeling/placarding requirements; and
  - (iv) Need for specialized training as a prerequisite to receiving the endorsement and transporting hazardous cargoes.
- (19) *Mountain driving.* Practices that are important when driving upgrade and downgrade, including:
  - (i) Selecting a safe speed;
  - (ii) Selecting the right gear; and
  - (iii) Proper braking techniques.
- (20) *Fatigue and awareness.* Practices that are important to staying alert and safe while driving, including:
  - (i) Being prepared to drive;
  - (ii) What to do when driving to avoid fatigue;
  - (iii) What to do when sleepy while driving; and

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(iv) What to do when becoming ill while driving.

(b) *Air brakes.* All CMV drivers operating vehicles equipped with air brakes must have knowledge of the following 7 areas:

(1) General air brake system nomenclature;

(2) The dangers of contaminated air supply (dirt, moisture, and oil);

(3) Implications of severed or disconnected air lines between the power unit and the trailer(s);

(4) Implications of low air pressure readings;

(5) Procedures to conduct safe and accurate pre-trip inspections, including knowledge about:

- (i) Automatic fail-safe devices;
- (ii) System monitoring devices; and
- (iii) Low pressure warning alarms.

(6) Procedures for conducting en route and post-trip inspections of air-actuated brake systems, including:

(i) Ability to detect defects that may cause the system to fail;

(ii) Tests that indicate the amount of air loss from the braking system within a specified period, with and without the engine running; and

(iii) Tests that indicate the pressure levels at which the low air pressure warning devices and the tractor protection valve should activate.

(7) General operating practices and procedures, including:

- (i) Proper braking techniques;
- (ii) Antilock brakes;
- (iii) Emergency stops; and
- (iv) Parking brake.

(c) *Combination vehicles.* All CMV drivers operating combination vehicles must have knowledge of the following 3 areas:

(1) Coupling and uncoupling—The procedures for proper coupling and uncoupling a tractor to a semi-trailer;

(2) Vehicle inspection—The objectives and proper procedures that are unique for performing vehicle safety inspections on combination vehicles; and

(3) General operating practices and procedures, including:

- (i) Safely operating combination vehicles; and
- (ii) Air brakes.

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§ 383.113 Required skills.

(a) *Pre-trip vehicle inspection skills.* Applicants for a CDL must possess the following basic pre-trip vehicle inspection skills for the vehicle class that the driver operates or expects to operate:

(1) *All test vehicles.* Applicants must be able to identify each safety-related part on the vehicle and explain what needs to be inspected to ensure a safe operating condition of each part, including:

- (i) Engine compartment;
- (ii) Cab/engine start;
- (iii) Steering;
- (iv) Suspension;
- (v) Brakes;
- (vi) Wheels;
- (vii) Side of vehicle;
- (viii) Rear of vehicle; and

(ix) Special features of tractor trailer, school bus, or coach/transit bus, if this type of vehicle is being used for the test.

(2) *Air brake equipped test vehicles.* Applicants must demonstrate the following skills with respect to inspection and operation of air brakes:

(i) Locate and verbally identify air brake operating controls and monitoring devices;

(ii) Determine the motor vehicle's brake system condition for proper adjustments and that air system connections between motor vehicles have been properly made and secured;

(iii) Inspect the low pressure warning device(s) to ensure that they will activate in emergency situations;

(iv) With the engine running, make sure that the system maintains an adequate supply of compressed air;

(v) Determine that required minimum air pressure build up time is within acceptable limits and that required alarms and emergency devices automatically deactivate at the proper pressure level; and

(vi) Operationally check the brake system for proper performance.

(b) *Basic vehicle control skills.* All applicants for a CDL must possess and demonstrate the following basic motor vehicle control skills for the vehicle class that the driver operates or expects to operate:

(1) Ability to start, warm up, and shut down the engine;