
COMPREHENSIVE SAFETY ANALYSIS 2010



SAFETY MEASUREMENT SYSTEM (SMS) METHODOLOGY

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Preface

This report documents the Safety Measurement System (SMS) methodology developed to support Comprehensive Safety Analysis 2010 (CSA 2010) Initiative for the Federal Motor Carrier Safety Administration (FMCSA). The SMS is one of the major tools for measuring the safety of individual motor carriers and commercial motor vehicle (CMV) drivers. Such measures help identify and monitor safety problems as part of the CSA 2010 safety improvement process.

Many of the concepts used in developing the SMS originated from the SafeStat measurement system, developed at the U.S. Department of Transportation's John A. Volpe National Transportation Systems Center (the Volpe Center) in Cambridge, MA, under a project plan agreement with FMCSA. SafeStat was designed and tested under the federal/state Performance & Registration Information Systems Management (PRISM) program in the mid 1990s. It has since been implemented nationally to prioritize motor carriers for on-site compliance reviews (CRs), and its results have been made available to the public via the Internet on the Analysis & Information (A&I) website at <http://www.ai.fmcsa.dot.gov>.

The design of the SMS builds on the lessons learned from developing and implementing SafeStat for CR prioritization. The SMS, however, also incorporates new CSA 2010 requirements for identifying specific types of unsafe behaviors exhibited by entities, which will now be addressed by a more specialized set of interventions; the system also expands the use of on-road safety violations. In January 2008, FMCSA started an operational test of CSA 2010 Initiative, which includes using the SMS to identify and monitor unsafe carrier and commercial motor vehicle (CMV) driver behavior. Future SMS development will be part of a continuous improvement process based on results and feedback from this operational test.

The Volpe Center technical project manager for developing the SMS is David Madsen of the System Measurement and Analysis Division of the Center for Safety Management Systems. The analysis leading to the SMS design and methodology was led by Eran Segev, also of the System Measurement and Analysis Division. Further technical support was provided by Lee Biernbaum, Gustaf Lawson, Richard (Kha) Nguyen, Amy Olanyk and Jonathan Pearlman of the Volpe Center.

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Glossary

BASIC	Behavior Analysis and Safety Improvement Categories
CMV	Commercial Motor Vehicle
CR	Compliance Review
CRWR	Compliance Review Work Group
CSA 2010	Comprehensive Safety Analysis 2010
CSMS	Carrier Safety Measurement System
DIR	Driver Information Resource
DSMS	Driver Safety Measurement System
FMCSA	Federal Motor Carrier Safety Administration
FMCSR	Federal Motor Carrier Safety Regulations
HAZMAT	Hazardous Materials
HMR	Hazardous Materials Regulations
HOS	Hours of Service
LTCCS	Large Truck Crash Causation Study
MCMIS	Motor Carrier Management Information System
MCSAP	Motor Carrier Safety Assistance Program
NGA	National Governors Association
NTSB	National Transportation Safety Board
OOS	Out-of-Service
PU	Power Unit
PRISM	Performance and Registration Information Systems Management
SafeStat	Motor Carrier Safety Status Measurement System
SEA	Safety Evaluation Area
SFD	Safety Fitness Determination
SMS	Safety Measurement System
USDOT	US Department of Transportation
VSAS	Violation Severity Assessment Study

1. Introduction

The Federal Motor Carrier Safety Administration (FMCSA) is developing a new operational model through its Comprehensive Safety Analysis 2010 (CSA 2010) initiative. The goal of CSA 2010 is to develop and implement more effective and efficient ways for FMCSA, its state partners, and the trucking industry to reduce commercial motor vehicle (CMV) crashes, fatalities, and injuries. CSA 2010 will help FMCSA and its state partners to impact the safety behavior of more carriers and drivers, use continually improving data to better identify high-risk carriers and drivers, and apply a wider range of interventions to reduce high-risk behavior.¹

As part of this effort, FMCSA has identified the attributes and components of a model for safety oversight that it considers ideal: flexibility, efficiency, effectiveness, innovation, and equitability. The operational model for CSA 2010, shown below, features continuous monitoring and tracking of entities' safety performance. Entities may be either carriers or drivers. All entities found with problematic safety behavior will be subject to the intervention process.

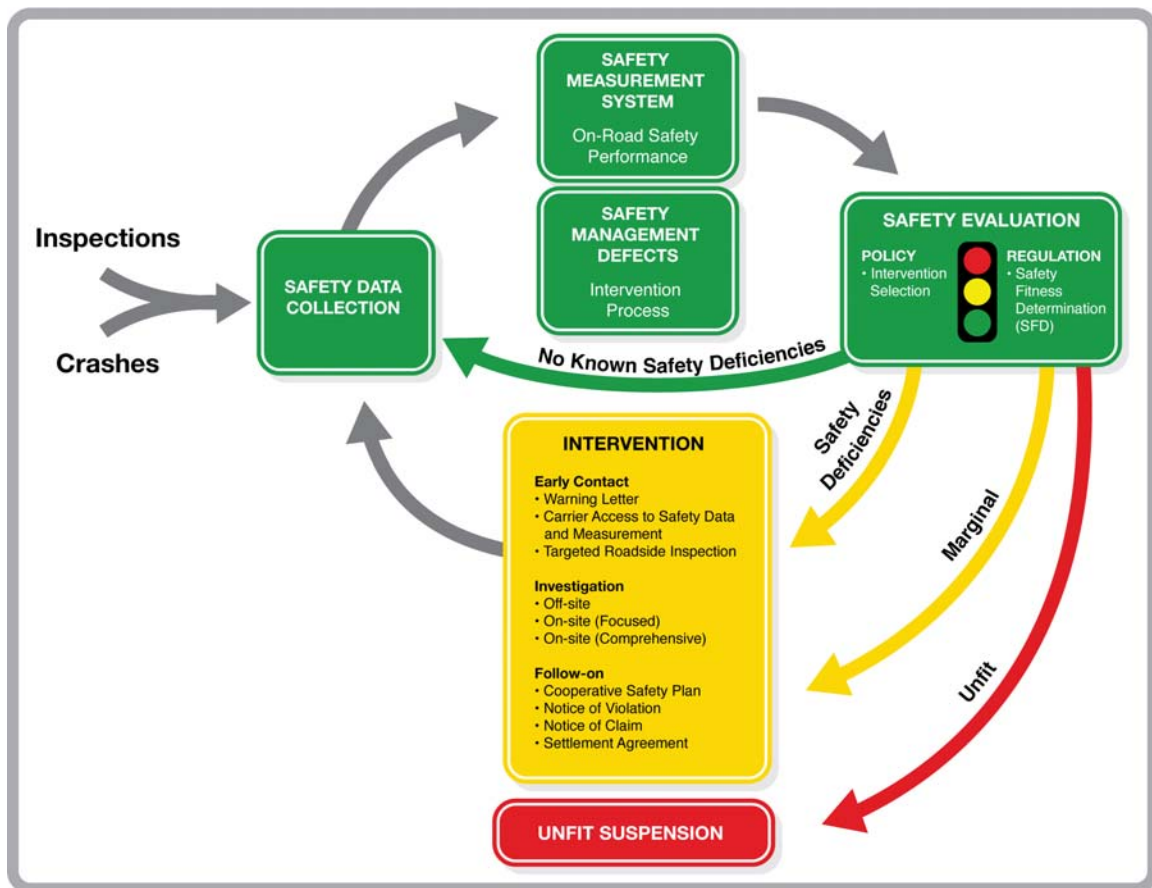


Figure 1-1. CSA 2010 Operational Model

¹ FMCSA CSA2010 website, <http://www.fmcsa.dot.gov/safety-security/safety-initiatives/csa2010/csa2010listening.htm>

The Safety Measurement System

Within the CSA 2010 Operational Model, the Safety Measurement System (SMS) quantifies the on-road safety performance of individual entities to:

- Identify entities for interventions. The SMS will be a key component in determining the inclusion of entities with significant safety problems into the CSA 2010 intervention process.
- Determine the specific safety problems exhibited by an entity. The SMS allows enforcement officers to identify the specific safety problems highlighted by the system and to surgically address them through a tailored set of interventions.
- Monitor safety problems throughout the intervention process. The SMS will continuously monitor on-road performance to assess whether an entity's safety performance has improved enough for it to exit the intervention process, or if further intervention is warranted.
- Support FMCSA's Safety Fitness Determination (SFD). The SMS results will be an important factor in determining the safety fitness of entities. The SMS will identify the entities demonstrating the worst safety performance so they can be considered for an "unfit" safety determination.

In addition to supporting the CSA 2010 operational model, the SMS results can provide other stakeholders with valuable safety information. The SMS results will be easily accessible via the Internet to encourage improvements in motor carrier safety. Findings from the SMS will allow the evaluated entities an assessment of their strengths and weaknesses in various safety areas. Thus, carriers and other firms (e.g. shippers, insurers) involved with the motor carrier industry will be empowered by the SMS to make safety-based business decisions.

2. Design of the SMS

The SMS is a tool for assessing available roadside performance data. These data are used to rank entities' performance relative to their peers in any of six Behavior Analysis and Safety Improvement Categories (BASICs) as well as crash involvement (Crash Indicator). Rankings within these BASICs and the Crash Indicator will be used by law enforcement to select entities for appropriate interventions.

2.1 Description of BASICs and Crash Indicator

The CSA 2010 team developed the BASICs under the premise that CMV crashes can be traced to the behavior of motor carriers and/or drivers. The behavior categories are derived based on information from a number of sources: Large Truck Crash Causation Study (LTCCS);² CSA 2010 Driver History Study; the existing FMCSA regulatory structure; and analysis conducted under FMCSA's Compliance Review Workgroup (CRWG), the predecessor to CSA 2010. The BASICs are defined as follows:

- **Unsafe Driving BASIC**—Operation of CMVs in a dangerous or careless manner. Example violations: speeding, reckless driving, improper lane change, and inattention.
- **Fatigued Driving BASIC**—Operation of CMVs by drivers who are ill, fatigued, or in non-compliance with the hours-of-service (HOS) regulations. This BASIC includes violations of regulations surrounding the complete and accurate recording of log books as they relate to HOS requirements and the management of CMV driver fatigue. Instances related to the Fatigued Driving BASIC are distinguished from incidents where unconsciousness or an inability to react is brought about by the use of alcohol, drugs, or other controlled substances. Example violations: HOS, logbook, and operating a CMV while ill or fatigued.
- **Driver Fitness BASIC**—Operation of CMVs by drivers who are unfit to operate a CMV due to lack of training, experience, or medical qualifications. Example violations: failure to have a valid and appropriate commercial driver's license and being medically unqualified to operate a CMV.
- **Controlled Substances and Alcohol BASIC**—Operation of CMVs by drivers who are impaired due to alcohol, illegal drugs, and misuse of prescription or over-the-counter medications. Example violations: use or possession of controlled substances or alcohol.
- **Vehicle Maintenance BASIC**—CMV failure due to improper or inadequate maintenance. Example violations: brakes, lights, and other mechanical defects, and failure to make required repairs.
- **Improper Loading/Cargo Securement BASIC**—CMV incident resulting from shifting loads, spilled or dropped cargo, and unsafe handling of hazardous

² Daniel Blower and Kenneth L. Campbell, *Large Truck Crash Causation Study Analysis Brief*, February 2005. Available: <http://www.ai.fmcsa.dot.gov/ltccs/>

materials. Example violations: improper load securement, cargo retention, and hazardous material handling.

Additionally, the SMS evaluates an entity's crash history relative to its peers. Crash history is not specifically a behavior. Rather, it is a consequence of a behavior and may indicate a problem with the entity that warrants intervention. The Crash Indicator is defined as follows:

- Crash Indicator—Histories or patterns of high crash involvement, including frequency and severity. It is based on information from state-reported crash reports.

The SMS will initially focus on the two types of entities most likely to impact the BASICs and Crash Indicator: motor carriers and CMV drivers. Therefore, two measurement systems are being designed for CSA 2010:

- Carrier Safety Measurement System (CSMS)
- Driver Safety Measurement Systems (DSMS)

2.2 Data Sources

Both CSMS and DSMS assess an individual entity's performance by BASIC and Crash Indicators calculated from information collected during on-road safety inspections and state-reported CMV crash records. These data are recorded in the Motor Carrier Management Information System (MCMIS). In addition, motor carrier Census data, also recorded in MCMIS, are used for the identification and normalization of safety-event data. Below are more detailed descriptions of each data source:

- Roadside Inspections are examinations conducted by a Motor Carrier Safety Assistance Program (MCSAP) inspector on individual commercial motor vehicles and drivers to determine if they are in compliance with the Federal Motor Carrier Safety Regulations (FMCSRs) and/or Hazardous Materials Regulations (HMRs). Inspection data are taken from MCMIS.
- Violations are recorded during inspections and are entered into the MCMIS database. Serious violations result in driver or vehicle out-of-service (OOS) orders. These OOS violations must be corrected before the affected driver or vehicle is allowed to return to service.³
- State-Reported Commercial Vehicle Crash Data are taken from MCMIS and provide information on crashes as reported by state and local police officials. The reporting of these crashes follows National Governors Association (NGA) standards.
- Motor Carrier Census Data are first collected when a carrier obtains a USDOT number. This information is recorded in MCMIS by FMCSA and is updated during compliance reviews (CRs), during commercial vehicle registration in states

³ Only pre-existing violations from post-crash inspections are used in the SMS. Violations recorded in MCMIS as being attributed to the crash are not used.

participating in Performance and Registration Information Systems Management (PRISM) Program, and upon request by the motor carrier. Census data are used by the CSMS for identification and normalization of safety-related data. Examples of Census data include number of power units, physical location, current status, and type of cargo.

2.3 Carrier BASICs Rankings in SMS

Four principal steps are used to assess an entity's performance in each BASIC and the Crash Indicator. First, relevant inspection, violation, and crash data obtained from MCMIS are attributed to an entity to create a safety event history for the entity. Each entity's violations are classified into a BASIC and are then time weighted, severity weighted, and normalized to form a quantifiable measure for an entity in each BASIC. Based on a comparison of each entity's BASIC measure to those of its peers, a rank and percentile are assigned. These steps are illustrated in Figure 2-1. The SMS applies similar steps to crash data to calculate carrier Crash Indicator percentiles.

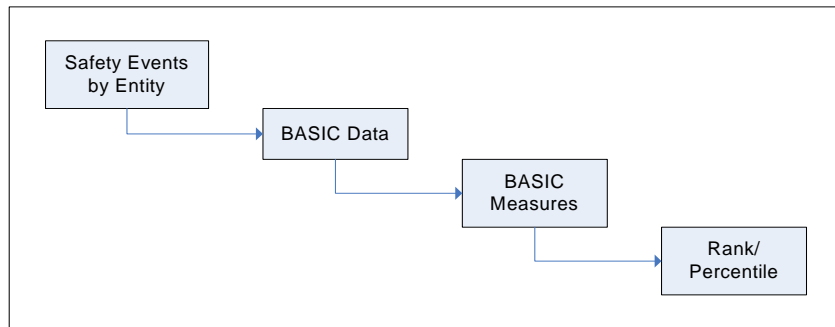


Figure 2-1. BASICs Ranking Process

2.4 SMS Design Features

The conversion of an entity's safety data into a BASIC measure, rank, and percentile involves the application of several SMS design features as discussed below.

2.4.1 Violation Severity

Applicable safety-based violations of the FMCSRs and HMRs associated with each BASIC are assigned severity weights that reflect their association with crash occurrence and crash consequences. The stronger the relationship between a violation and crash risk, the higher its assigned weight. These weights are based on a number of studies that quantify the associations between violation and crash risk, as well as on recent input from enforcement subject matter experts. A separate weighting parameter identifies violations that place a driver or vehicle OOS so that additional weight can be applied to these violations.

2.4.2 Crash Severity

Crashes are assigned severity weights according to their impact. Greater weight is attributed to crashes involving injuries or fatalities, as well as to crashes involving the release of hazardous materials.

2.4.3 Time Weights

All safety events are assigned a time weight. The time weight of an event decreases with time, resulting in more recent events having a greater impact on an entity's BASIC and Crash Indicator measures than events from the more distant past. Beyond a prescribed cutoff date, discussed in more detail below for driver and carrier measures, older events are assumed irrelevant and no longer used.

2.4.4 Normalization

When appropriate, BASIC and Crash Indicator measures are normalized to reflect differences in exposure among entities. The normalization approach varies depending on what is being measured.

With driver-related BASICs, the SMS normalizes for the number of driver inspections, while with vehicle-related BASICs, vehicle inspections are used. Fatigued Driving and Driver Fitness measures are normalized by the number of driver inspections, while Vehicle Maintenance and Improper Loading/Cargo Securement measures are normalized by the number of vehicle inspections.

While violations of the above BASICs are discovered during an inspection, a distinction is made for behaviors that may trigger an inspection. For this reason, the CSMS normalizes the Unsafe Driving, Controlled Substances and Alcohol, and Crash Indicator measures by carrier size (i.e., average number of power units (PU)), instead of number of inspections.

2.4.5 Peer Groups

To further account for the differences among carriers or drivers, the CSMS places carriers in peer groups with similar exposure. This tiered approach accounts for the inherent greater variability in rates based on small samples or limited levels of exposure and the stronger level of confidence in measures based on larger levels of exposure. The peer grouping also allows the CSMS to handle the widely diverse motor carrier population, while ensuring that similarly situated carriers are treated with the same standards.

2.4.6 Data Sufficiency

The SMS employs data sufficiency standards to ensure that there are enough inspections or crashes to produce meaningful measures of safety. In instances where the safety performance of an entity can potentially lead to incursion of CSA 2010 interventions or detrimental SFD outcome, additional data sufficiency tests are employed. These tests ensure a "critical mass" of poor performance data or a pattern of violations before adverse action is taken upon an entity.

2.4.7 Percentile Rank

The SMS uses the measures to assign a percentile ranking for all entities within each BASIC and the Crash Indicator. Each measure is a quantifiable determination of safety behavior. Percentile ranking allows the safety behavior of an entity to be compared with the safety behavior of its peers. Within each peer group, a percentile is computed on a 0–100 scale for each entity that receives a non-zero measure, with 100 indicating the worst performance.

Entities with percentiles above a certain threshold and meeting minimum data sufficiency requirements in a BASIC or Crash Indicator can be deemed poor safety performers. These entities will be identified for CSA 2010's Intervention process.

2.5 Differences Between SafeStat and the SMS

The SMS offers several improvements over FMCSA's existing carrier measurement system, SafeStat. Some of the key differences are listed below.

The SMS is organized by specific behaviors while SafeStat is organized into four general Safety Evaluations Areas (SEAs).

SafeStat assesses carriers in four Safety Evaluation Areas (SEAs)—Accident, Driver, Vehicle, and Safety Management—while the SMS measures each entity in six behavioral categories (i.e., the BASICs) and the Crash Indicator. The specific behavioral metrics in the SMS provide a more detailed level of measurement that can be used to describe, evaluate, and address entity safety. For example, SafeStat indicates that an entity has general driver issues according to its Driver SEA value, while the SMS provides information on the specific driver behavior (i.e., Drug/Alcohol, Fatigued Driving, Unsafe Driving, and Driver Fitness) that needs modification and/or attention. The more specific organization of the SMS's BASICs often allows the discovery of serious safety problems that go undetected under SafeStat's more generalized SEA structure. This is particularly important for BASICs related to driver behavior, given that recent research such as the LTCCS has highlighted driver behavior as increasingly important in crash occurrence.

The SMS identifies specific safety problems so that CSA 2010 interventions can address them in a surgical manner; the SafeStat score is based on grouping safety problems together to identify carriers for a one-size-fits-all CR.

Through the measurement of an entity's safety performance by behavior, and the targeting of an intervention to the entity's specific behavior, the CSA 2010 operational model provides an integrated approach to measuring and improving CMV safety. The alignment of both the SMS and intervention selection through BASICs and the Crash Indicator allows FMCSA to identify both the entity for intervention as well as the specific safety problem that should be surgically addressed. This approach will lead to more efficient and effective use of enforcement resources toward improving motor carrier safety.

The SMS uses all safety-based inspection violations while SafeStat uses only OOS violations and selected moving violations from inspections.

The inclusion of all safety-based inspection violations in the SMS fully leverages the results of the roadside inspection program (3.3 million inspections annually) to provide a more comprehensive evaluation of an entity's on-road safety performance.

The SMS utilizes risk-based violation weightings while SafeStat does not.

Although the SMS utilizes all safety-based inspection violations in the SMS, it is recognized that not all violations pose the same crash risk. Therefore, violations in the SMS are weighted, to the extent possible, according to the probability that the violation may cause, contribute to, or exacerbate the outcome of CMV crash. Violations shown to have a larger impact on crash risk will have a stronger detrimental impact on an entity's BASIC measure. The risk-based weighting of violations will provide a risk-based assessment of an entity's performance in each BASIC.

The SMS feeds the Safety Fitness Determination (SFD) of an entity while SafeStat has no impact on an entity's safety rating.

Currently SafeStat prioritizes carriers for CRs. Based strictly on the results of the CR, FMCSA provides a SFD in the form of a safety rating to a carrier. Under CSA 2010, FMCSA will consider the results of the SMS along with the results of interventions in generating a carrier's SFD. With this approach all violations can be considered when determining safety fitness, not just more severe ones from CRs as is now done with SFD. CSMS results can impact the SFD in two ways. First, poor CSMS results can trigger further examination through the CSA 2010 Intervention Process. Major violations found during the Intervention Process can adversely impact a carrier's SFD. Secondly, the SFD can be calculated solely on the basis of on-road performance by comparing a carrier's absolute BASIC measures, not relative percentiles, to a pre-set BASIC measurement standard. Adverse SFD can occur when a carrier's measures do not meet or exceed the standard. This new SFD procedure places strong emphasis on carrier on-road performance in determining overall carrier safety fitness. This approach addresses a long-standing recommendation by the National Transportation Safety Board (NTSB) that a carrier's poor on-road performance alone should have a detrimental impact on its SFD.

The SMS assesses individual drivers and carriers while SafeStat assesses only carriers.

Currently, most of the focus of FMCSA safety programs and enforcement has been on motor carriers. In the future, the DSMS will allow FMCSA to identify unsafe drivers for interventions based on their inspection and crash history across all employers (former and current). Given the often transient nature of driver employment, the DSMS will be a valuable tool for FMCSA to address driver-specific problems that cannot be easily handled at the motor carrier level. The DSMS may eventually be a valuable tool for motor carriers to monitor their own drivers and assess prospective hires. These efforts will encourage safe and compliant behavior among CMV drivers and will enable carriers to consider drivers' safety histories when making hiring decisions.

3. CSMS Methodology

The following sections describe the algorithms used in the CSMS methodology and the computational logic used to calculate the measurement and percentile of each BASIC and the Crash Indicator for individual motor carriers. The BASICs that are evaluated in a very similar manner have been grouped together as shown below.

- Unsafe Driving BASIC and Controlled Substances and Alcohol BASIC
- Fatigued Driving BASIC and Driver Fitness BASIC
- Vehicle Maintenance BASIC and Improper Loading/Cargo Securement BASIC
- Crash Indicator

3.1 Unsafe Driving BASIC and Controlled Substances and Alcohol BASIC Assessment

This section describes the measurement of the Unsafe Driving BASIC and the Controlled Substances and Alcohol BASIC. The definition of each BASIC is as follows:

- Unsafe Driving BASIC—Operation of CMVs in a dangerous or careless manner. Example violations: speeding, reckless driving, improper lane change, and inattention. For a complete list of roadside inspection violations used in the SMS see Appendix A.
- Controlled Substances and Alcohol BASIC—Operation of CMVs by drivers cited in roadside inspections for impairment due to alcohol, illegal drugs, and misuse of prescription or over-the-counter medications. Example violations: use or possession of controlled substances or alcohol. For a complete list of roadside inspection violations used in the SMS see Appendix A.

The CSMS assesses both the Unsafe Driving BASIC and Controlled Substances and Alcohol BASIC by using relevant violations of FMCSRs recorded during roadside inspections and reported in MCMIS. Individual carriers' BASIC measures also incorporate carrier size. These measures are used to generate percentile ranks that reflect each carrier's driver safety posture relative to its peers.

3.1.1 Calculation of BASIC Measure

The BASIC measures for the Unsafe Driving and Controlled Substances and Alcohol BASICs were calculated as the sum of severity and time weighted applicable violations divided by carrier average power units, as follows:

$$\text{BASIC Measure} = \frac{\text{Total of time and severity weighted applicable violations}}{\text{Average measure of carrier power units}}$$

Equation 3-1

Where:

Applicable Violation is defined as any violation recorded in any level roadside inspection that matches the FMCSR and HMR cites listed for Unsafe Driving (Table 1 in Appendix A) and Controlled Substances and Alcohol (Table 2 in Appendix A) during the past 24 months. In cases of multiple counts of the same violation, the CSMS only uses each violation cite once per inspection.

A Severity Weight from 1 (less severe) to 10 (most severe) is assigned to each applicable violation. See the Unsafe Driving Table (Table 1 in Appendix A) and the Controlled Substance and Alcohol Table (Table 2 in Appendix A) for the corresponding severity weights of each violation cite. The severity weighting of each violation cite accounts for the level of crash risk relative to the other violation cites used in the BASIC measurement. The sum of all violation severity weights from any one inspection is capped at a maximum of 30.

A Time Weight of 1, 2 or 3 is assigned to each applicable violation based on how long ago a violation on the inspection was recorded. Violations recorded in the past 6 months receive a time weight of 3. Violations recorded between 6 and 12 months ago receive a time weight of 2. All violations recorded earlier (older than 12 months but within the past 24 months) receive a time weight of 1. This time weighting places more emphasis on recent violations relative to older violations.

Time and Severity Weighted Violation is a violation's severity weight multiplied by its time weight.

Average Power Units (PUs) is used to account for each carrier's level of exposure when calculating the BASIC measure. The BASIC violations are normalized by the number of owned, term-leased, and trip-leased power units (trucks, tractors, hazardous-material tank trucks, motor coaches, and school buses) contained in the Census data. The primary sources of power unit information in the Census are Forms MCS-150 and MCS-151. Carriers are required to update their MCS-150 information biennially. The average PUs for each carrier is calculated using (i) the carrier's current number of PUs, (ii) the number of PUs the carrier had in the middle of the first time period (i.e. 18 months ago), and (iii) the number of PUs the carrier had in the middle of the second time period (i.e. 6 months ago). The average PU calculation is shown below:

$$PU(average) = \frac{PU(current) + PU(6Months) + PU(18Months)}{3}$$

Equation 3-2

3.1.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the CSMS applies data sufficiency standards and peer grouping to assign a percentile rank to carriers which then can potentially receive a CSA 2010 intervention or detrimental SFD. The calculation is as follows:

- A. Determine the total number of inspections with at least one BASIC violation. For the Unsafe Driving BASIC, remove carriers with less than three such inspections. For the Controlled Substances and Alcohol BASIC, remove carriers with no BASIC violations. For the remaining carriers, place each carrier into one of five groups based on its average PU size:

Peer Group Category	Average Number of Power Units (PU)
1	$0 < PU \leq 5$
2	$5 < PU \leq 15$
3	$15 < PU \leq 50$
4	$50 < PU \leq 500$
5	$500 < PU$

Table 3-1. Peer Group Categories for Unsafe Driving and Controlled Substances and Alcohol BASICs

- B. Within each group, rank all the carriers' BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest BASIC measure) to 100 (representing the highest BASIC measure). Eliminate carriers whose violations in the BASIC are all older than twelve months. Then, assign the percentile values to the remaining carriers.

3.2 Fatigued Driving BASIC and Driver Fitness BASIC Assessment

This section describes the measurement of the Fatigued Driving BASIC and the Driver Fitness BASIC. The definition of each BASIC is as follows:

- **Fatigued Driving BASIC**—Operation of CMVs by drivers ill, fatigued, or in non-compliance with the hours-of-service (HOS) regulations. This BASIC includes violations of regulations surrounding the complete and accurate recording of logbooks as they relate to HOS requirements and the management of CMV driver fatigue. Instances related to the Fatigued Driving BASIC are distinguished from incidents where unconsciousness or an inability to react is brought about by the use of alcohol, drugs, or other controlled substances. Example violations include: HOS, logbook, and operating a CMV while ill or fatigued. For a complete list of roadside inspection violations used in the SMS see Appendix A.
- **Driver Fitness BASIC**—Operation of CMVs by drivers who are unfit to operate a CMV due to lack of training, experience, or medical qualifications. Example violations: failure to have a valid and appropriate commercial driver's license and being medically unqualified to operate a CMV. For a complete list of roadside inspection violations used in the SMS see Appendix A.

The CSMS assesses both the Fatigued Driving BASIC and Driver Fitness BASIC using relevant violations recorded during roadside inspections to calculate a measure of each

BASIC for individual motor carriers. These measures are used to generate percentile ranks that reflect each carrier's driver safety posture relative to its peers.

3.2.1 Calculation of BASIC Measure

The equation used for calculating the BASIC measure for Fatigued Driving and Driver Fitness is as follows:

$$BASIC\ Measure = \frac{Total\ of\ time\ and\ severity\ weighted\ applicable\ violations}{Number\ of\ time\ weighted\ relevant\ inspections}$$

Equation 3-3

Where:

Applicable Violation is defined as any violation recorded in any level roadside inspection that matches the FMCSR and HMR cites listed for Fatigued Driving (Table 3 in Appendix A) and Driver Fitness (Table 4 in Appendix A) during the past 24 months. In cases of multiple counts of the same violation, the CSMS only uses each violation cite once per inspection.

A Relevant Inspection is any Driver Inspection (Level 1, 2, 3 or 6) or any other inspection resulting in applicable BASIC violation.

A Severity Weight is assigned to each applicable violation, with a value dependent on two parts: (i) the level of crash risk relative to the other violation cites used in the BASIC measurement, and (ii) whether or not the violation resulted in an OOS condition. The level of crash risk is assigned to each applicable violation ranging from 1 (less severe) to 10 (most severe); see the Fatigued Driving Table (Table 3 in Appendix A) and the Driver Fitness Table (Table 4 in Appendix A) for the corresponding severity weights of each violation cite. An OOS weight of 2 is then added to the level of crash risk for OOS violations. In cases of multiple counts of the same violation, if any of the counts of the violation are OOS the OOS weight of 2 applies. The sum of all violation severity weights from any one inspection is capped at a maximum of 30.

A Time Weight of 1, 2 or 3 is assigned to each applicable violation and each relevant inspection based on its age. Violations recorded in the past 6 months receive a time weight of 3. Violations recorded between 6 and 12 months ago receive a time weight of 2. All violations recorded earlier (older than 12 months but within the past 24 months) receive a time weight of 1. Using the exact same time weight scheme, time weights are assigned to each relevant inspection, including relevant "clean" inspections, which had no applicable violations. This time weighting places more emphasis on results of recent inspections relative to older inspections.

Time and Severity Weighted Violation is a violation's severity weight multiplied by its time weight.

3.2.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the CSMS applies data sufficiency standards and peer grouping to assign a percentile rank to carriers which then can potentially receive a CSA 2010 intervention or detrimental SFD. The calculation is as follows:

- A. Determine the total number of relevant inspections and number of inspections with at least one BASIC violation. For the Fatigued Driving BASIC, remove carriers with (1) less than three relevant driver inspections or (2) no inspections resulting in at least one BASIC violation. For the Driver Fitness BASIC, remove carriers with (1) less than five relevant driver inspections or (2) no inspections resulting in at least one BASIC violation. For the remaining carriers, place each carrier into one of five groups based on the number of relevant inspections:

Peer Group Category	Number of Relevant Inspections
1	3-10 (Fatigue); 5-10 (Fitness)
2	11-20
3	21-100
4	101-500
5	501+

Table 3-2. Peer Group Categories for Fatigued Driving and Driver Fitness BASICS

- B. Within each group, rank all the carriers' BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest BASIC measure) to 100 (representing the highest BASIC measure). Eliminate carriers that meet the following criteria: (i) no violation was recorded in the BASIC during the previous twelve months, and (ii) no violation in the BASIC was recorded during the latest relevant inspection. For remaining carriers with three or more relevant inspections resulting in a Fatigued Driving BASIC violation, assign the percentile values to each carrier. For the remaining carriers with five or more relevant inspections resulting in a Driver Fitness violation, assign the percentile values to each carrier.

3.3 Vehicle Maintenance BASIC and Improper Loading/Cargo Securement BASIC Assessment

This section describes the measurement of the Vehicle Maintenance BASIC and the Improper Loading/Cargo Securement BASIC. The definition of each BASIC is as follows:

- Vehicle Maintenance BASIC—CMV failure due to improper or inadequate maintenance. Example violations: brakes, lights, and other mechanical defects,

and failure to make required repairs. For a complete list of roadside inspection violations used in the SMS see Appendix A.

- Improper Loading/Cargo Securement BASIC—CMV incident resulting from shifting loads, spilled or dropped cargo, and unsafe handling of hazardous materials. Example violations: improper load securement, cargo retention, and hazardous material handling. For a complete list of roadside inspection violations used in the SMS see Appendix A.

The CSMS assesses both the Vehicle Maintenance BASIC and the Improper Loading/Cargo Securement BASIC using relevant violations recorded during roadside inspections to calculate a measure of each BASIC for individual motor carriers. These measures are used to generate percentile ranks that reflect each carrier's safety posture relative to its peers.

3.3.1 Calculation of BASIC Measure

The equation used for calculating the BASIC measure for Vehicle Maintenance as well as Improper Loading/Cargo Securement is as follows:

$$BASIC\ Measure = \frac{Total\ of\ time\ and\ severity\ weighted\ applicable\ violations}{Number\ of\ time\ weighted\ relevant\ inspections}$$

Equation 3-4

Where:

Applicable Violation is defined as any violation recorded in any level roadside inspection that matches the FMCSR and HMR cites listed for Vehicle Maintenance (Table 5, Appendix A) and Improper Loading/Cargo Securement (Table 6 in Appendix A) during the past 24 months. In cases of multiple counts of the same violation, the CSMS only uses each violation cite once per inspection.

A Relevant Inspection is any Vehicle Inspection (Level 1, 2, 5 or 6) or any other inspection resulting in applicable BASIC violation.

A Severity Weight is assigned to each applicable violation with a value dependent on two parts: (i) the level of crash risk relative to the other violation cites used in the BASIC measurement, and (ii) whether or not the violation resulted in an OOS condition. The level of crash risk is assigned to each applicable violation ranging from 1 (less severe) to 10 (most severe); see the Vehicle Maintenance Table (Table 5 in Appendix A) and the Improper Loading/Cargo Securement (Table 6 in Appendix A) for the corresponding severity weights of each violation cite. An OOS weight of 2 is then added to the level of crash risk for OOS violations. In cases of multiple counts of the same violation, if any of the counts of the violation are OOS the OOS weight of 2 applies. The sum of all violation severity weights from any one inspection is capped at a maximum of 30.

A Time Weight of 1, 2 or 3 is assigned to each applicable violation and each relevant inspection based on its age. Violations recorded in the past 6 months

receive a time weight of 3. Violations recorded between 6 and 12 months ago receive a time weight of 2. All violations recorded earlier (older than 12 months but within the past 24 months) receive a time weight of 1. Using the exact same time weight scheme, time weights are assigned to each relevant inspection, including relevant “clean” inspections, which had no applicable violations. This time weighting places more emphasis on results of recent inspections relative to older inspections.

Time and Severity Weighted Violation is a violation’s severity weight multiplied by its time weight.

3.3.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the CSMS applies data sufficiency standards and peer grouping to assign a percentile rank to carriers which then can potentially receive a CSA 2010 intervention or detrimental SFD. The calculation is as follows:

- A. Determine the total number of relevant vehicle inspections and the number of inspections with at least one BASIC violation. Remove carriers with (1) less than five relevant inspections or (2) no inspections resulting in at least one BASIC violation. For the remaining carriers, place each carrier into one of five groups based on the number of relevant inspections:

Peer Group Category	Number of Relevant Inspections
1	5-10
2	11-20
3	21-100
4	101-500
5	501+

Table 3-3. Peer Group Categories for Vehicle Maintenance and Improper Loading/Cargo Securement BASICS

- B. Within each group, rank all the carriers’ BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest BASIC measure) to 100 (representing the highest BASIC measure). Eliminate carriers that meet the following criteria: (i) no violation was recorded in the BASIC during the previous twelve months, and (ii) no violation in the BASIC was recorded during the latest relevant inspection. For the remaining carriers with five or more relevant inspections resulting in a BASIC violation, assign the percentiles to each carrier.

3.4 Crash Indicator Assessment

This section describes the measurement of the Crash Indicator. The definition of the Crash Indicator is as follows:

Crash Indicator—Histories or patterns of high crash involvement, including frequency and severity, based on information from state-reported crash reports.

Although the BASICS are used to measure an entity’s behaviors, the crash history utilized by the Crash Indicator is not specifically a behavior; instead, it is the consequence of behavior and may indicate a problem with the entity that warrants intervention.

The CSMS assesses the Crash Indicator using relevant state-reported crash data and the size of the carrier to evaluate an entity’s crash history relative to its peers and to calculate a measure of the indicator for individual motor carriers. This measure is used to generate percentile ranks that reflect each carrier’s crash posture relative to its peers.

3.4.1 Calculation of Crash Indicator Measure

The equation used for calculating the Crash Indicator measure is as follows:

$$\text{Crash Indicator Measure} = \frac{\text{Total of time and severity weighted applicable crashes}}{\text{Average measure of carrier power units}}$$

Equation 3-5

Where:

Applicable Crash is a state-reported crash that meets the reportable crash standard during the past 24 months. A reportable crash involves ones or more vehicles being towed from the scene, injuries or fatalities.

Crash Severity Weight places more weight on crashes with more severe consequences. For example, a crash involving an injury or fatality is weighted more heavily than a crash where only a tow-away occurred. A hazmat release also increases the weighting of a crash, as shown in Table 3-4.

Crash Type	Crash Severity Weight
Involves tow-away but no injury or fatality	1
Involves injury or fatality	2
Involves a hazmat release	Crash Severity Weight (from above) + 1

Table 3-4. Crash Severity Weights for Crash Indicator

A Time Weight of 1, 2 or 3 is assigned to each applicable crash based on the time elapsed since it occurred. Crashes that occurred in the past 6 months receive a time weight of 3. Crashes that occurred between 6 and 12 months prior to the measurement date receive a time weight of 2. All crashes that happened later (older than 12 months but within the past 24 months) receive a time weight of 1. This time weighting places more emphasis on recent crashes relative to older crashes.

Time and Severity Weighted Crash is a crash's severity weight multiplied by its time weight.

Average Power Units (PUs) is used to account for a carrier's level of exposure when calculating the Crash Indicator measure. The number of CMVs involved in applicable crashes is normalized by the number of owned, term-leased, and trip-leased power units (trucks, tractors, hazardous-material tank trucks, motor coaches, and school buses) contained in the Census data. The primary sources of power unit information in the Census are Forms MCS-150 and MCS-151. Carriers are required to update their MCS-150 information biennially. Carrier average PUs are calculated by using the current number of PUs and the number of PUs a carrier had in the middle of each of the two time periods:

$$PU(average) = \frac{PU(current) + PU(6Months) + PU(18Months)}{3}$$

Equation 3-6

3.4.2 Calculation of Crash Indicator Percentile Rank

Based on the Crash Indicator measures, the CSMS applies data sufficiency standards and peer grouping to assign a percentile rank to carriers that can potentially receive a CSA 2010 intervention. The calculation is as follows:

- A. For carriers with two or more applicable crashes, place each carrier into one of five groups based on its average PU size:

Peer Group Category	Average Number of Power Units (PU)
1	0 < PU <= 5
2	5 < PU <= 15
3	15 < PU <= 50
4	50 < PU <= 500
5	500 < PU

Table 3-5. Peer Group Categories for Crash Indicator

- B. Within each group, rank all the carriers' Crash Indicator measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest indicator measure) to 100 (representing the highest indicator measure). Eliminate carriers that did not have a crash recorded in the previous twelve months. Then, assign the percentile values to all remaining carriers.

4. DSMS Methodology

The following sections describe the algorithms used in the DSMS methodology and the computational logic used to calculate the driver measures and percentiles for each BASIC and the Crash Indicator for individual CMV drivers. BASICs that are evaluated similarly are described together.

- Unsafe Driving BASIC and Controlled Substances and Alcohol BASIC
- Fatigued Driving BASIC and Driver Fitness BASIC
- Vehicle Maintenance BASIC and Improper Loading/Cargo Securement BASIC
- Crash Indicator

4.1 Unsafe Driving BASIC and Controlled Substances and Alcohol BASIC Assessment

This section describes the measurement of the Unsafe Driving BASIC and the Controlled Substances and Alcohol BASIC. The definition of each BASIC is as follows:

- Unsafe Driving BASIC - Operation of CMVs in a dangerous or careless manner. Example violations: speeding, reckless driving, improper lane change, and inattention.
- Controlled Substances and Alcohol BASIC - Operation of CMVs by drivers who are impaired due to alcohol, illegal drugs, and misuse of prescription or over-the-counter medications. Example violations: use or possession of controlled substances or alcohol.

The DSMS assesses both the Unsafe Driving BASIC and Controlled Substances and Alcohol BASIC by using relevant violations recorded during roadside inspections to calculate a measure in each BASIC for individual drivers. These measures are used to generate percentile ranks that reflect drivers' safety postures relative to their peers.

4.1.1 Calculation of BASIC Measure

The BASIC measures for the Unsafe Driving and Controlled Substances and Alcohol BASICs are calculated as the sum of severity and time weighted applicable violations as follows:

BASIC Measure = Total of time and severity weighted applicable violations

Equation 4-1

Where:

Applicable Violation is defined as any violation recorded in any level roadside inspection that matches the FMCSR and HMR cites listed for Unsafe Driving (Table 1 in Appendix A) and Controlled Substances and Alcohol (Table 2 in Appendix A) during the past 36 months, and for which the CMV driver can be held responsible ('Driver Responsible' column in Table 1 and 2). In cases of

multiple counts of the same violation, the DSMS only uses each violation cite once per inspection.

A Severity Weight from 1 (less severe) to 10 (most severe) is assigned to each applicable violation. See the Unsafe Driving Table (Table 1 in Appendix A) and the Controlled Substance and Alcohol Table (Table 2 in Appendix A) for the corresponding severity weights of each violation cite. The severity weighting of each violation cite accounts for the level of crash risk relative to the other violation cites used in the BASIC measurement. The sum of all violation severity weights from any one inspection is capped at a maximum of 30.

A Time Weight of 1, 2 or 3 is assigned to each applicable violation based on how long ago a violation on the inspection was recorded. Violations recorded in the past 12 months receive a time weight of 3. Violations recorded between 12 and 24 months ago receive a time weight of 2. All violations recorded earlier (older than 24 months but within the past 36 months) receive a time weight of 1. This time weighting places more emphasis on recent violations relative to older violations.

Time and Severity Weighted Violation is a violation's severity weight multiplied by its time weight.

4.1.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the DSMS applies data sufficiency standards to assign a percentile rank to drivers that can then potentially be subjected to a CSA 2010 intervention. The calculation is as follows:

- A. Determine the total number of inspections with at least one BASIC violation. Remove drivers with no BASIC violations.

- B. Rank all the drivers' BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest BASIC measure) to 100 (representing the highest BASIC measure). Then, assign the percentile values for that BASIC to each driver.

4.2 Fatigued Driving BASIC and Driver Fitness BASIC Assessment

This section describes the measurement of the Fatigued Driving BASIC and the Driver Fitness BASIC. The definition of each BASIC is as follows:

- Fatigued Driving BASIC - Operation of CMVs by drivers ill, fatigued, or in non-compliance with the hours-of-service (HOS) regulations. This BASIC includes violations of regulations surrounding the complete and accurate recording of logbooks as they relate to HOS requirements and the management of CMV driver fatigue. Instances related to the Fatigued Driving BASIC are distinguished from incidents where unconsciousness or an inability to react is brought about by the

use of alcohol, drugs, or other controlled substances. Example violations include: HOS, logbook, and operating a CMV while ill or fatigued.

- Driver Fitness BASIC - Operation of CMVs by drivers who are unfit to operate a CMV due to lack of training, experience, or medical qualifications. Example violations: failure to have a valid and appropriate commercial driver's license and being medically unqualified to operate a CMV.

The DSMS assesses both the Fatigued Driving BASIC and Driver Fitness BASIC using relevant violations recorded during roadside inspections to calculate a measure in each BASIC for individual drivers. These measures are used to generate percentile ranks that reflect drivers' safety postures relative to their peers.

4.2.1 Calculation of BASIC Measure

The equation used for calculating the BASIC measure for Fatigued Driving and Driver Fitness is as follows:

$$\text{BASIC Measure} = \frac{\text{Total of time and severity weighted applicable violations}}{\text{Number of time weighted relevant inspections}}$$

Equation 4-2

Where:

Applicable Violation is defined as any violation recorded in any level roadside inspection that matches the FMCSR and HMR cites listed for Fatigued Driving (Table 3 in Appendix A) and Driver Fitness (Table 4 in Appendix A) during the past 36 months, and for which the CMV driver can be held responsible ('Driver Responsible' column in Table 3 and 4). In cases of multiple counts of the same violation, the DSMS only uses each violation cite once per inspection.

A Relevant Inspection is any Driver Inspection (Level 1, 2, 3 or 6) or any other inspection resulting in applicable BASIC violation.

A Severity Weight is assigned to each applicable violation, with a value dependent on two parts: (i) the level of crash risk relative to the other violation cites used in the BASIC measurement, and (ii) whether or not the violation resulted in an OOS condition. The level of crash risk is assigned to each applicable violation ranging from 1 (less severe) to 10 (most severe); see the Fatigued Driving Table (Table 3 in Appendix A) and the Driver Fitness Table (Table 4 in Appendix A) for the corresponding severity weights of each violation cite. An OOS weight of 2 is then added to the level of crash risk for OOS violations. In cases of multiple counts of the same violation, if any of the counts of the violation are OOS the OOS weight of 2 applies. The sum of all violation severity weights from any one inspection is capped at a maximum of 30.

A Time Weight of 1, 2 or 3 is assigned to each applicable violation and each relevant inspection based on its age. Violations recorded in the past 12 months receive a time weight of 3. Violations recorded between 12 and 24 months ago receive a time weight of 2. All violations recorded earlier (older than 24 months but within the past 36 months) receive a time weight of 1. Using the exact same

time weight scheme, time weights are assigned to each relevant inspection, including relevant “clean” inspections, which had no applicable violations. This time weighting places more emphasis on results of recent inspections relative to older inspections.

Time and Severity Weighted Violation is a violation’s severity weight multiplied by its time weight.

4.2.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the DSMS applies data sufficiency standards to assign a percentile rank to drivers that can then potentially be subjected to a CSA 2010 intervention. The calculation is as follows:

- A. Determine the total number of relevant inspections and number of inspections with at least one BASIC violation. Remove drivers with (1) less than three relevant inspections or (2) no inspections resulting in at least one BASIC violation. For the remaining drivers, place each driver into one of three groups based on the number of relevant inspections:

Peer Group Category	Number of Relevant Inspections
1	3
2	4-6
3	7+

Table 4-1. Peer Group Categories for Fatigued Driving and Driver Fitness BASICs

- B. Within each group, rank all the drivers’ BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest BASIC measure) to 100 (representing the highest BASIC measure).

4.3 Vehicle Maintenance BASIC and Improper Loading/Cargo Securement BASIC Assessment

This section describes the measurement of the Vehicle Maintenance BASIC and the Improper Loading/Cargo Securement BASIC. The definition of each BASIC is as follows:

- Vehicle Maintenance BASIC – Operating a CMV while failing to conduct proper and adequate maintenance. Example violations: brakes, lights, and other mechanical defects, and failure to make required repairs that would be found in a pre-trip inspection.
- Improper Loading/Cargo Securement BASIC – Operating a CMV while failing to adequately prevent shifting loads, spilled or dropped cargo, and unsafe handling of hazardous materials. Example violations: improper load securement, cargo retention, and hazardous material handling.

The DSMS assesses both the Vehicle Maintenance BASIC and the Improper Loading/Cargo Securement BASIC using relevant violations recorded during roadside inspections to calculate a measure in each BASIC for individual drivers. These measures are used to generate percentile ranks that reflect drivers' safety postures relative to their peers.

4.3.1 Calculation of BASIC Measure

The equation used for calculating the BASIC measure for Vehicle Maintenance as well as Improper Loading/Cargo Securement is as follows:

$$\text{BASIC Measure} = \frac{\text{Total of time and severity weighted applicable violations}}{\text{Number of time weighted relevant inspections}}$$

Equation 4-3

Where:

Applicable Violation is as any violation recorded in any level roadside inspection that matches the FMCSR and HMR cites listed for Vehicle Maintenance (Table 5, Appendix A) and Improper Loading/Cargo Securement (Table 6 in Appendix A) during the past 36 months, and for which the CMV driver can be held responsible ('Driver Responsible' column in Table 5 and 6). In cases of multiple counts of the same violation, the DSMS only uses each violation cite once per inspection.

A Relevant Inspection is any Vehicle Inspection (Level 1, 2 or 6) or any other inspection resulting in applicable BASIC violation.

A Severity Weight is assigned to each applicable violation with a value dependent on two parts: (i) the level of crash risk relative to the other violation cites used in the BASIC measurement, and (ii) whether or not the violation resulted in an OOS condition. The level of crash risk is assigned to each applicable violation ranging from 1 (less severe) to 10 (most severe); see the Vehicle Maintenance Table (Table 5 in Appendix A) and the Improper Loading/Cargo Securement (Table 6 in Appendix A) for the corresponding severity weights of each violation cite. An OOS weight of 2 is then added to the level of crash risk for OOS violations. In cases of multiple counts of the same violation, if any of the counts of the violation are OOS the OOS weight of 2 applies. The sum of all violation severity weights from any one inspection is capped at a maximum of 30.

A Time Weight of 1, 2 or 3 is assigned to each applicable violation and each relevant inspection based on its age. Violations recorded in the past 12 months receive a time weight of 3. Violations recorded between 12 and 24 months ago receive a time weight of 2. All violations recorded earlier (older than 24 months but within the past 36 months) receive a time weight of 1. Using the exact same time weight scheme, time weights are assigned to each relevant inspection, including relevant "clean" inspections, which had no applicable violations. This time weighting places more emphasis on results of recent inspections relative to older inspections.

Time and Severity Weighted Violation is a violation's severity weight multiplied by its time weight.

4.3.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the DSMS applies data sufficiency standards to assign a percentile rank to drivers that can then potentially be subjected to a CSA 2010 intervention. The calculation is as follows:

- A. Determine the total number of relevant vehicle inspections and the number of inspections with at least one BASIC violation. Remove drivers with (1) less than three relevant inspections or (2) no inspections resulting in at least one BASIC violation. For the remaining drivers, place each driver into one of three groups based on the number of relevant inspections:

Peer Group Category	Number of Relevant Inspections
1	3
2	4-6
3	7+

Table 4-2. Peer Group Categories for Vehicle Maintenance and Improper Loading/Cargo Securement BASICs

- B. Within each group, rank all the drivers' BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest BASIC measure) to 100 (representing the highest BASIC measure).

4.4 Crash Indicator Assessment

This section describes the measurement of the Crash Indicator. The definition of the Crash Indicator is as follows:

- **Crash Indicator**—Histories or patterns of high crash involvement, including frequency and severity, based on information from state-reported crash reports.

Although the BASICs are used to measure an entity's behaviors, the crash history utilized by the Crash Indicator is not specifically a behavior; rather, it is the consequence of behavior and may indicate a problem with the entity that warrants intervention.

The DSMS assesses the Crash Indicator using relevant state-reported crash data to calculate a measure of the indicator for individual drivers. This measure is used to generate percentile ranks that reflect drivers' crash postures relative to their peers.

4.4.1 Calculation of Crash Indicator Measure

The equation used for calculating the Crash Indicator measure is as follows:

Crash Indicator Measure = Total of time and severity weighted applicable crashes

Where:

Applicable Crash is based on crash reports provided by the states for each crash that meets the reportable crash standard during the past 36 months. A reportable crash involves a vehicle being towed from the scene, or an injury or fatality.

Crash Severity Weight places more weight on crashes with more severe consequences. For example, a crash involving an injury or fatality is weighted more heavily than a crash where only a tow-away occurred. A hazmat release also increases the weighting of a crash, as shown in Table 4-3.

Crash Type	Crash Severity Weight
Involves tow-away but no injury or fatality	1
Involves injury or fatality	2
Involves a hazmat release	Crash Severity Weight (from above) + 1

Table 4-3. Crash Severity Weights for Crash Indicator

A Time Weight of 1, 2 or 3 is assigned to each applicable crash based on the time elapsed since it occurred. Crashes that occurred in the past 12 months receive a time weight of 3. Crashes that occurred between 12 and 24 months ago receive a time weight of 2. All crashes that happened later (older than 24 months but within the past 36 months) receive a time weight of 1. This time weighting places more emphasis on recent crashes relative to older crashes.

Time and Severity Weighted Crash is a crash's severity weight multiplied by its time weight.

4.4.2 Calculation of Crash Indicator Percentile Rank

Based on the Crash Indicator measures, the DSMS applies data sufficiency standards and assigns a percentile rank to drivers who then can potentially receive a CSA 2010 intervention. The calculation is as follows:

- A. Identify drivers with at least one applicable crash.
- B. Rank all the drivers' Crash Indicator measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest indicator measure) to 100 (representing the highest indicator measure). Then, assign the percentile values to each driver.

5. Sample SMS Output

As part of the SMS development process, a web-based interface was developed to display preliminary/prototype results. The website provides a query capability allowing a user to search an entity of interest or identify the worst performing entities in each BASIC and Crash Indicator. Also available is a drill-down capability, which displays all the BASIC and Crash Indicator results of an individual entity and the safety events used in determining the BASIC percentile.

Figure 5-1 is a screenshot of the CSMS carrier measurement summary page for an actual carrier with the identifying fields obscured. This summary page provides carrier identification information (e.g., name, USDOT number), current safety information (e.g., safety rating, SafeStat results, inspection, and crash activity), and SMS BASIC and Crash Indicator information (e.g., measure, rank, and percentile). The BASIC percentiles above the CSA 2010 intervention thresholds are highlighted in yellow to indicate potential problem areas. Percentiles of 97 and higher in the Unsafe Driving, Fatigued Driving, Driver Fitness, Vehicle Maintenance and Improper Loading/Cargo Securement BASICs are highlighted in red.

Note that the carrier in Figure 5-1 is at 99.9% in the Unsafe Driving BASIC and at 98.6% in the Driver Fitness BASIC. These BASIC percentiles mean that this carrier has demonstrated worse safety performance than 99.9% and 98.6%, respectively, of the other carriers evaluated in these BASICs. Under the current SafeStat/CR process, this carrier, as a Category E carrier, is not a high priority to receive a CR and has not yet received a CR or safety rating. Under the CSA 2010 operational model, this carrier will be slated for CSA 2010 interventions and potentially be given a detrimental SFD.

Figure 5-2 is a screenshot of the DSMS driver measurement summary page for an actual driver with the identifying fields obscured. This summary page provides driver identification information, a summary of carriers for which the driver has been operating, current safety activity (inspection and crash activity), and SMS BASIC and Crash Indicator information (e.g., measure, rank and percentile).

The driver in Figure 5-2 provides an example of a safety problem that is not easily addressed by a carrier-based safety program. The driver has operated for five motor carriers in the past three years. FMCSA attention on the carrier in this instance may not be the most effective approach to increasing safety, because the driver may continue the pattern of poor performance while operating for a new carrier. In the same way, carrier termination of the driver's employment may not fully address the safety problem because the driver may continue the pattern of poor performance while operating for a new carrier. CSA 2010 will tackle these behavior problems by applying driver-specific interventions to poor safety performers to change this behavior.

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Comprehensive Safety Information (CSI)

Federal Motor Carrier Safety Administration

Overview
Carrier Measurement
Driver Measurement
Intervention Management
Guidance

SEARCH | **SUMMARY** | UNSAFE | FATIGUE | FITNESS | DRUG/ALCOHOL | VEHICLE | CARGO | CRASH | HISTORY | DRIVERS

Home > Carrier Measurement > Summary Logout

Using August 22, 2008 snapshot
[How do I correct my data?](#)
[Measurement Profile](#)
[Methodology](#)

[Print](#)

Carrier Measurement: Summary

CARRIER INFORMATION

DOT #: _____	Carrier Operation: _____
Carrier Legal Name: _____	Carrier DBA Name: _____
Carrier Address: _____	Mailing Address: _____
Telephone/Fax: _____	Email: _____
Number of Power Units: 23	Number of Drivers: 23
HM Carrier: No	Passenger Carrier: No
HHG Carrier: No	New Entrant Carrier: Yes

FMCSA Review Date: _____	FMCSA Review Type: _____
Safety Rating: _____	Date of Last MCS-150 Update: 03/04/2008
SafeStat Category: E	HM 70 SafeStat Category: E
Accident SEA: 45.69	Vehicle SEA: 17.43
Driver SEA: 99.92	Safety Management SEA: _____

CSA 2010 INTERVENTION ACTIVITY

No intervention activity

CRASH ACTIVITY (within 2 years)

# of Crashes: 3	# of Crashes with Injuries or Fatalities: 1
# of Towaways: 3	# of HM Releases: 0

INSPECTION ACTIVITY (within 2 years)

Driver Inspections: 101	VH Inspections: 67	HM Inspections: 0
-------------------------	--------------------	-------------------

CARRIER SAFETY MEASUREMENT

	BASIC	Measure	Percentile *	# inspections resulting in violation of BASIC
1	Unsafe Driving	13.84	98.6	30
2	Fatigued Driving	3.18	90.5	41
3	Driver Fitness	3.73	99.9	56
4	Controlled Substances and Alcohol	N/A	Insufficient	0
5	Vehicle Maintenance	4.66	43.1	55
6	Improper Loading/Cargo Securement	1.30	50.7	11
INDICATOR				# crashes
7	Crash Indicator	0.42	64.3	3

* The percentile is shaded in yellow when the [intervention threshold](#) is exceeded, red when the percentile is greater than or equal to 97% (except for Controlled Substances and Alcohol and Crash Indicator), otherwise there is no shading.

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Figure 5-1. CSMS Screenshot

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Comprehensive Safety Information (CSI)

Federal Motor Carrier Safety Administration

Overview
Carrier Measurement
Driver Measurement
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SEARCH
SUMMARY
UNSAFE
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FITNESS
DRUG/ALCOHOL
VEHICLE
CARGO
CRASH
HISTORY

Home > Driver Measurement > Summary Logout

Using August 22, 2008 snapshot
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Driver Measurement: Summary Print

DRIVER INFORMATION

Last Name:		First Name:	
License Number:		License State:	
Driver DOB:			

OPERATION HISTORY

Date of Most Recent Activities	DOT#	Carrier Name
6/19/2008		
3/28/2008		
7/26/2007		
1/10/2007		
2/1/2006		

CRASH ACTIVITY (within 3 years)

# of Crashes:	4	# of Crashes with Injuries or Fatalities:	0
# of Towaways:	0	# of HM Releases:	0

INSPECTION ACTIVITY (within 3 years)

Driver Inspections:	10	VH Inspections:	4	HM Inspections:	0
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DRIVER SAFETY MEASUREMENT

#	BASIC	Measure	Percentile *	# inspections resulting in violation of BASIC
1	Unsafe Driving	77.00	99.9	7
2	Fatigued Driving	3.08	71.6	4
3	Driver Fitness	0.00	0.0	0
4	Controlled Substances and Alcohol	0.00	0.0	0
5	Vehicle Maintenance	13.22	91.8	4
6	Improper Loading/Cargo Securement	4.22	75.3	1
INDICATOR				# crashes
7	Crash Indicator	9.00	99.2	4

* The percentile is shaded in yellow when the [intervention threshold](#) is greater than or equal to 90%, otherwise there is no shading.

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 Federal Motor Carrier Safety Administration
 1200 New Jersey Avenue SE., Washington, DC 20590 • 1-800-832-5660 • TTY: 1-800-877-8339

Figure 5-2. DSMS Screenshot

6. SMS Report – Summary/Next Steps

This report documents Version 1.2 of the SMS methodology. The present methodology is part of a continuous improvement process in support of CSA 2010 and the implementation of the new FMCSA Operational Model. The current version of the methodology constitutes an update of the previous release, Version 1.1, based on feedback gathered during the CSA 2010 Operation Model Test. Future improvements to the SMS will be based on feedback from stakeholders such as enforcement personnel, industry and the public, as well as on additional findings from the Operation Model Test. In addition, as new data sources become available, these may be incorporated into the SMS methodology. Finally, the SMS will be enhanced periodically as future research reveals new and useful knowledge about crash causation and the relationship between crash risk and regulatory compliance.

Appendix A

Violation Severity by BASIC

Overview

The tables in this appendix contain a breakdown of all FMCSRs and HMRs that can lead to roadside violations, with each table representing a unique BASIC. A severity weight is assigned to each regulation, reflecting its relevance to crash risk. Within each BASIC, the regulations are grouped based on their nature so that like violations can be assigned similar severity weights. Severity weights, discussed in more detail below, are not comparable across the BASICs.

Interpretation of the Severity Weights

The violation severity weights in the tables that follow have been converted into a scale from 1 to 10, where 1 represents the lowest crash risk and 10 represents the highest crash risk relative to the other violations in the BASIC. Because the weights reflect the relative importance of each violation within each particular BASIC, they cannot be compared meaningfully across the various BASICs. In other words, a ‘5’ in one BASIC is not equivalent to a ‘5’ in another BASIC, but it does represent the midpoint between a crash risk of 1 and 10 within the same BASIC. The “Violation Group” column in each table identifies the group to which each violation has been assigned.

Derivation of the Severity Weights

The severity weights for each violation were derived through the following six-step process:

1. **BASIC Mapping** – All roadside safety-related violations were mapped to an appropriate BASIC so the severity weight analysis could be conducted on each individual BASIC.
2. **Violation Grouping** – All violation cites in each BASIC were placed into groups of like violations based on the judgment of enforcement subject matter experts. These groups, listed in the “Violation Group” column in each table, make it possible to incorporate otherwise rarely cited violations into the robust statistical analysis used to derive the severity weights. The violation grouping also ensured that similar types of violations received the same severity weight.
3. **Crash Occurrence Analysis** – Statistical analysis was performed to quantify the extent of the relationship between violation rates in each violation group within a BASIC and crash involvement. A driver approach was used in this analysis due to strong demonstrable relationships between driver crashes and violations documented in prior research at the Volpe Center, conducted in support of

- FMCSA's Compliance Review Work Group, the predecessor to the CSA 2010 Initiative. The earlier research provided the basis for developing a Driver Information Resource (DIR) that uses individual crash and inspection reports from all states in order to construct multi-year driver safety histories on individual drivers. Multivariate negative binomial regression models were used to quantify the strength of relationships between driver violations rates in individual violation groups and crash involvement.
4. **Crash Consequences Analysis** – This analysis incorporates crash consequences attributable to the violation groups based on findings from the Violation Severity Assessment Study (VSAS).⁴ The VSAS quantifies the crash risk associated with individual FMCSR and HMR violations in terms of comparable dollar values representing the increased social cost attributable to the presence of a violation. Together, the regression analysis (Step 3) and VSAS findings make it possible to address total crash risk in terms of both crash occurrence and crash consequence.
 5. **Subject Matter Expert Review** – Enforcement subject matter experts reviewed the results derived purely from the statistical approaches described in Steps 3 and 4. Modifications were made to the severity weights based on input from the subject matter experts. This approach helps compensate for the limitations of the statistical analysis such as lack of statistical significance of rarely cited violations.
 6. **CSMS Effectiveness Test** – Various severity weighting schemes developed in Steps 1 through 5 were applied to the CSMS to provide an empirical evaluation of the weighting schemes. The empirical evaluation, or “CSMS Effectiveness Test,” was modeled after the SafeStat Effectiveness Test.⁵ The CSMS effectiveness study was accomplished by: (1) performing a simulated CSMS run that calculates carrier percentile ranks for each BASIC using historical data; (2) observing each carrier's crash involvement over the immediate 18 months after the simulated CSMS timeframe, and (3) observing the relationship between the percentile ranks in each BASIC and the subsequent post-CSMS carrier crash rates. The CSMS Effectiveness Test provides an environment to evaluate various severity weight schemes in terms of their impact in identifying high-risk carriers. It also provides a means of testing other weight schemes, such as the OOS weight, to help optimize the effectiveness of the CSMS.

This six-step process made it possible to develop a conceptual framework for the CSMS in the form of violation groupings and associated severity weights, based on both empirical analysis and valuable accumulated knowledge from field experts. The data-driven component of the process, in particular, differentiates the CSMS from SafeStat and addresses some of the recent criticisms of the SafeStat algorithm.

⁴ *Violations Severity Assessment Study Final Report* (October 2007). Prepared for FMCSA by John A. Volpe National Transportation Systems Center.

⁵ *SafeStat Motor Carrier Safety Status Measurement System Methodology: Version 8.6* (January 2004). Prepared for FMCSA by John A. Volpe National Transportation Systems Center. Chapter 7: SafeStat Evaluation.

Table 1. Unsafe Driving ⁶				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
177.800(d)	Unnecessary delay in HM transportation to destination	HM Related	1	Y
392.2	Failure to obey traffic control device (§ 392.2C*)	Careless Driving	5	Y
392.2	Following too close (§ 392.2FC*)	Careless Driving	5	Y
392.2	Improper lane change (§ 392.2LC*)	Careless Driving	5	Y
392.2	Improper passing (§ 392.2P*)	Careless Driving	5	Y
392.2	Reckless driving (§ 392.2R*)	Reckless Driving	10	Y
392.2	Speeding (§ 392.2S*)	Speeding Related	5	Y
392.2	Improper turns (§ 392.2T*)	Careless Driving	5	Y
392.2	Failure to yield right of way (§ 392.2Y*)	Careless Driving	5	Y
392.6	Scheduling run to necessitate speeding	Speeding Related	5	N
392.10(a)(1)	Failing to stop at railroad crossing—bus	Careless Driving	5	Y
392.10(a)(2)	Failing to stop at railroad crossing—chlorine	Careless Driving	5	Y
392.10(a)(3)	Failing to stop at railroad crossing—placard	Careless Driving	5	Y
392.10(a)(4)	Failing to stop at railroad crossing—HM cargo	Careless Driving	5	Y
392.14	Failed to use caution for hazardous condition	Careless Driving	5	Y
392.16	Failing to use seat belt while operating CMV	Other Driver Violations	1	Y

⁶ Violation severity weights reflect the relative importance of each violation within each BASIC. These weights *cannot* be compared or added meaningfully across the BASICs.

Table 1. Unsafe Driving ⁶				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
392.22(a)	Failing to use hazard warning flashers	Other Driver Violations	1	Y
392.60	Unauthorized Passenger on board CMV	Other Driver Violations	1	N
392.60(a)	Unauthorized passenger on board CMV	Other Driver Violations	1	Y
392.62	Unsafe bus operations	Other Driver Violations	1	Y
392.62(a)	Bus—Standees forward of the standee line	Other Driver Violations	1	Y
392.71(a)	Using or equipping a CMV with radar detector	Speeding Related	5	Y
397.3	State/local laws ordinances regulations	HM Related	1	Y
397.7(a)(1)	Parking vehicle with explosives less than 5 feet from traveled highway.	HM Related	1	Y
397.7(a)(2)	Parking vehicle with explosive on private property without permission	HM Related	1	Y
397.7(a)(3)	Parking a vehicle with explosive less than 300 feet from prohibited area	HM Related	1	Y
397.13	Smoking within 25 feet of HM vehicle	HM Related	1	Y
397.13(a)	Smoking/lighting smoking materials less than 25 feet from HM vehicle	HM Related	1	Y
397.13(b)	Smoking less than 25 feet from empty cargo tank used for flammables	HM Related	1	Y
397.15(a)	Fueling HM vehicle with engine operating	HM Related	1	Y
397.15(b)	Fueling HM vehicle without person in control of fueling process	HM Related	1	Y
397.67(b)	Operating HM vehicle through prohibited area	HM Related	1	N
398.4	Driving of vehicle—migrant workers	Other Driver Violations	1	Y

Table 2. Controlled Substances/Alcohol ⁷				
Section	Violation Description	Violation Group Description	Violation Severity Weight	Driver Responsible (Y/N)
392.5(c)(2)	Violating OOS order pursuant to 392.5(a)/(b)	Alcohol Jumping OOS	10	Y
392.4(a)	Driver uses or is in possession of drugs	Drugs	10	Y
392.5(a)	Possession/use/under influence alcohol-4hrs prior to duty	Alcohol	5	Y

⁷ Violation severity weights reflect the relative importance of each violation within each BASIC. These weights *cannot* be compared or added meaningfully across the BASICs.

Table 3. Fatigued Driving ⁸				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight ⁹	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
392.2	State/Local Hours of Service (HOS) (§ 392.2H*)	Hours	7	Y
392.3	Operating a CMV while ill/fatigued	Jumping OOS/Driving Fatigued	10	Y
395.1(h)(1)	15, 20, 70/80 HOS violations (Alaska-Property)	Hours	7	Y
395.1(h)(2)	15, 20, 70/80 HOS violations (Alaska-Passenger)	Hours	7	Y
395.1(h)(3)	Adverse driving conditions violations (Alaska)	Hours	7	Y
395.1(o)	16- hour rule violation (Property)	Hours	7	Y
395.3(a)(1)	Requiring or permitting driver to driver more than 11 hours	Hours	7	Y
395.3(a)(2)	Requiring or permitting driver to driver after 14 hours on duty	Hours	7	Y
395.3(b)	60/70- hour rule violation	Hours	7	Y
395.3(c)	34- hour restart violation (Property)	Hours	7	Y
395.5(a)(1)	10- hour rule violation (Passenger)	Hours	7	Y
395.5(a)(2)	15- hour rule violation (Passenger)	Hours	7	Y
395.5(b)	60/70- hour rule violation (Passenger)	Hours	7	Y
395.8	Log violation (general/form and manner)	Other Log/Form & Manner	2	Y
395.8(a)	No drivers record of duty status	Incomplete/ Wrong Log	5	Y

⁸ Violation severity weights reflect the relative importance of each violation within each BASIC. These weights *cannot* be compared or added meaningfully across the BASICs.

⁹ In cases where a violation results in an out-of-service order as defined in 49 CFR 390.5, an additional weight of 2 is added to arrive at a total severity weight for the violation.

Table 3. Fatigued Driving⁸

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight⁹	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
395.8(a)(1)	Log violation (general/form and manner)	Other Log/Form & Manner	2	Y
395.8(a)(2)	Failure to comply with hours of service recording requirements	Incomplete/ Wrong Log	5	Y
395.8(c)	Failing to require driver to prepare record of duty status in form and manner prescribed	Other Log/Form & Manner	2	Y
395.8(d)(1)	Failing to require driver to prepare record of duty status in form and manner prescribed	Other Log/Form & Manner	2	Y
395.8(d)(2)	Failure to meet requirement for recording daily miles traveled	Other Log/Form & Manner	2	Y
395.8(d)(4)	Failure to list carrier name in duty status records	Other Log/Form & Manner	2	Y
395.8(d)(5)	Failure to include driver signature or certification in duty status records	Other Log/Form & Manner	2	Y
395.8(d)(6)	Failure to list starting time in duty status records	Other Log/Form & Manner	2	Y
395.8(d)(7)	Failure to list main office address in duty status records	Other Log/Form & Manner	2	Y
395.8(d)(8)	Failure to include remarks in duty status records	Other Log/Form & Manner	2	Y
395.8(d)(9)	Failure to list co-driver name in duty status records	Other Log/Form & Manner	2	Y
395.8(d)(10)	Failure to include total hours in duty status records	Other Log/Form & Manner	2	Y
395.8(d)(11)	Failure to include shipping document numbers in duty status records	Other Log/Form & Manner	2	Y

Table 3. Fatigued Driving⁸

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight⁹	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
395.8(e)	False report of drivers record of duty status	False Log	7	Y
395.8(f)(1)	Drivers record of duty status not current	Incomplete/ Wrong Log	5	Y
395.8(f)(2)	For duty status records made by drivers, failure to be legible and in the driver's own handwriting	Other Log/Form & Manner	2	Y
395.8(f)(3)	Failure to include start date for the beginning of 24-hour period in duty status records	Other Log/Form & Manner	2	Y
395.8(f)(4)	Failure to include total mileage driven during the 24-hour period in duty status records	Other Log/Form & Manner	2	Y
395.8(f)(5)	Failure to include CMV identification number assigned by the motor carrier in duty status records	Other Log/Form & Manner	2	Y
395.8(f)(6)	Failure to list motor carrier name in driver's duty status records	Other Log/Form & Manner	2	Y
395.8(f)(7)	Failure to include driver signature or certification in duty status records	Other Log/Form & Manner	2	Y
395.8(f)(9)	Failure to list main office address in duty status records	Other Log/Form & Manner	2	Y
395.8(f)(10)	Failure to record days off duty in driver activities report	Incomplete/ Wrong Log	5	Y
395.8(f)(11)	Failing to require driver to prepare record of duty status in form and manner prescribed	Other Log/Form & Manner	2	Y
395.8(f)(12)	Failure to include shipping document numbers and commodity list in duty status records	Other Log/Form & Manner	2	Y
395.8(g)	Failure to incorporate appropriate graph grid in duty status records	Other Log/Form & Manner	2	Y

Table 3. Fatigued Driving⁸

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight⁹	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
395.8(h)(1)	Failure to appropriately indicate off-duty time in graph grid for in duty status records	Other Log/Form & Manner	2	Y
395.8(h)(2)	Failure to appropriately indicate sleeper berth time in graph grid for in duty status records	Other Log/Form & Manner	2	Y
395.8(h)(4)	Failure to appropriately indicate non-driving on-duty time in graph grid for in duty status records	Other Log/Form & Manner	2	Y
395.8(h)(5)	Failure to appropriately indicate location and remarks for changes in duty status	Other Log/Form & Manner	2	Y
395.8(i)	Failing to submit record of duty status within 13 days	Incomplete/ Wrong Log	5	Y
395.8(j)(2)	Failing to obtain on-duty statement for preceding 7 days	Other Log/Form & Manner	2	N
395.8(k)(1)	Retention of driver's record of duty status	Incomplete/ Wrong Log	5	N
395.8(k)(2)	Driver failing to retain previous 7 days' logs	Incomplete/ Wrong Log	5	Y
395.13(d)	Driving after being declared out-of-service	Jumping OOS/Driving Fatigued	10	Y
395.13(d)(1)	Driving after being declared out-of-service	Jumping OOS/Driving Fatigued	10	Y
395.13(d)(2)	Driving after being declared out-of-service	Jumping OOS/Driving Fatigued	10	Y
395.13(d)(3)	Driving after being declared out-of-service	Jumping OOS/Driving Fatigued	10	Y
395.15(a)(1)	Any violation of 395.15 (on-board recording devices)	EOBR Related	1	Y
395.15(b)	Onboard recording device information requirements not met	EOBR Related	1	Y

Table 3. Fatigued Driving⁸				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight⁹	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
395.15(b)(5)	Onboard recording device information requirements not met	EOBR Related	1	Y
395.15(c)	Onboard recording device improper form and manner	EOBR Related	1	Y
395.15(d)(1)	Any violation of 395.15 (on-board recording devices)	EOBR Related	1	Y
395.15(f)	Onboard recording device failure and driver failure to reconstruct duty status	EOBR Related	1	Y
395.15(g)	On-board recording device information not available	EOBR Related	1	Y
395.15(h)(3)	Any violation of 395.15 (on-board recording devices)	EOBR Related	1	Y
395.15(i)(5)	Onboard recording device does not display required information.	EOBR Related	1	N
398.6	Violation of hours of service regulations—migrant workers	Hours	7	Y

Table 4. Driver Fitness ¹⁰				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight ¹¹	Driver Responsible (Y/N)
172.704(c)(1)	Failing to train HM employees as required	Endorsements and Vehicle Group	3	Y
177.800(b)	Responsibility for compliance with HM regulations	Endorsements and Vehicle Group	3	N
177.816	Driver training requirements	Endorsements and Vehicle Group	3	N
383.21	Operating a CMV with more than one driver's license	Multiple License	10	Y
383.21(a)	Operating a CMV with more than one driver's license†	Multiple License	10	Y
383.23(a)(2)	Operating a CMV without a CDL	Endorsements and Vehicle Group	3	Y
383.23(c)	Operating on learner's permit without CDL holder	Endorsements and Vehicle Group	3	Y
383.23(c)(1)	Operating on learner's permit without CDL holder	Endorsements and Vehicle Group	3	Y
383.23(c)(2)	Operating on learner's permit without valid driver's license	Endorsements and Vehicle Group	3	Y
383.31(a)	Failure to notify licensing jurisdiction of traffic law conviction	Driver Qualification	6	Y
383.31(b)	Failing to notify carrier of conviction within 30 days	Driver Qualification	6	Y

¹⁰ Violation severity weights reflect the relative importance of each violation within each BASIC. These weights *cannot* be compared or added meaningfully across the BASICS.

¹¹ In cases where a violation results in an out-of-service order as defined in 49 CFR 390.5, an additional weight of 2 is added to arrive at a total severity weight for the violation.

† Citations marked with † are being phased out based on regulatory changes, and are intended for removal from the SMS at a later time.

Table 4. Driver Fitness¹⁰				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹¹	Driver Responsible (Y/N)
383.37(a)	Allowing driver to operate with suspended/revoked/etc. CDL	Driver Qualification	6	N
383.37(b)	Allowing driver with more than one CDL to drive a CMV	Multiple License	10	N
383.37(c)	Allowing driver to operate during driver, vehicle, or motor carrier Out-Of-Service (OOS) order	Fitness/ Jumping OOS	10	N
383.51(a)	Driving a CMV (CDL) while disqualified	Driver Qualification	6	Y
383.71(b)	Driving a CMV without transferring valid motor vehicle operator's license/permit	Driver Qualification	6	Y
383.91(a)	Operating a CMV with improper CDL group	Endorsements and Vehicle Group	3	Y
383.91(a)(1)	Operating a combination vehicle without required license endorsement	Endorsements and Vehicle Group	3	Y
383.93(a)	Operating a CMV without required license endorsement	Endorsements and Vehicle Group	3	Y
383.93(b)(1)	No double/triple trailer endorsement on CDL	Endorsements and Vehicle Group	3	Y
383.93(b)(2)	No passenger vehicle endorsement on CDL	Endorsements and Vehicle Group	3	Y
383.93(b)(3)	No tank vehicle endorsement on CDL	Endorsements and Vehicle Group	3	Y
383.93(b)(4)	No hazardous materials endorsement on CDL	Endorsements and Vehicle Group	3	Y
383.95(a)	Violating airbrake restriction	Endorsements and Vehicle Group	3	Y
386.72(b)	Failing to comply with Imminent Hazard OOS Order.	Fitness/ Jumping OOS	10	Y

Table 4. Driver Fitness ¹⁰				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight ¹¹	Driver Responsible (Y/N)
386.72(b)(2)	Failing to comply with an operations out-of-service order	Fitness/ Jumping OOS	10	Y
391.11	Driver qualification	Driver Qualification	6	Y
391.11(a)	Using an unqualified driver	Driver Qualification	6	Y
391.11(b)(1)	Interstate driver under 21 years of age	Driver Qualification	6	Y
391.11(b)(2)	Non-English speaking driver	Driver Qualification	6	Y
391.11(b)(3)	Driver lacking training/experience	Driver Qualification	6	Y
391.11(b)(4)	Driver lacking physical qualification(s)	Physical	2	Y
391.11(b)(5)	Driver lacking valid license for type vehicle being operated	Endorsements & Vehicle Group	3	Y
391.11(b)(6)	Driver has not prepared current list of violations or certificate required by § 391.27	Physical	2	Y
391.11(b)(7)	Driver disqualified from operating CMV	Endorsements & Vehicle Group	3	Y
391.11(b)(8)	No road test/certificate/class license	Driver Qualification	6	Y
391.15	Driver disqualified	Driver Qualification	6	Y
391.15(a)	Driving a CMV while disqualified	Driver Qualification	6	Y
391.41	No medical certificate	Medical Certificate	1	Y
391.41(a)	No medical certificate in driver's possession	Medical Certificate	1	Y
391.41(b)(3)	No medical certificate	Medical Certificate	1	Y
391.41(b)(6)	No medical certificate	Medical Certificate	1	Y

Table 4. Driver Fitness¹⁰				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹¹	Driver Responsible (Y/N)
391.41(b)(10)	No medical certificate	Medical Certificate	1	Y
391.41(b)(11)	No medical certificate	Medical Certificate	1	Y
391.45	False entry on medical examiner's certificate	Medical Certificate	1	Y
391.45(a)	Using a driver not medically examined and certified	Medical Certificate	1	Y
391.45(b)	Expired medical examiner's certificate	Medical Certificate	1	Y
391.45(b)(1)	Using a driver not medically reexamined each 24 months	Medical Certificate	1	Y
391.45(c)	Driver not medically reexamined after mental injury/impairment	Medical Certificate	1	Y
391.49(j)	No valid medical waiver in driver's possession	Medical Certificate	1	Y
398.3(b)	Driver not physically qualified	Physical	2	Y
398.3(b)(8)	No doctor's certificate in possession	Medical Certificate	1	Y

Table 5. Vehicle Maintenance ¹²				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight ¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
365.511	Fail to display current CVSA Decal: Permanent Authority	Inspection Reports	4	N
374.313(a)	Failure to maintain a reasonable temperature	Cab, Body, Frame	2	Y
374.313(b)	Bus — Failure to maintain restroom	Cab, Body, Frame	2	Y
374.313(c)	Bus — Not maintained in clean working order	Cab, Body, Frame	2	Y
385.103(c)	Fail to display current CVSA decal— Provisional Authority	Inspection Reports	4	N
392.7	No pre-trip inspection	Inspection Reports	4	Y
392.8	Failing to inspect/use emergency equipment	Emergency Equipment	2	Y
392.22(b)	Failing/improper placement of warning devices	Cab, Body, Frame	2	Y
392.33	Operating CMV with lamps/reflectors obscured	Lighting	6	Y
393.9(a)	Inoperative head lamps (§ 393.9H*)	Lighting	6	Y
393.9(a)	Inoperative turn signal (§ 393.9TS*)	Lighting	6	Y
393.9(a)	Inoperative tail lamp (§ 393.9T*)	Lighting	6	Y
393.9(a)	Inoperative required lamp (§ 393.9*)	Clearance Identification Lamps/Other	2	Y

¹² Violation severity weights reflect the relative importance of each violation within each BASIC. These weights *cannot* be compared or added meaningfully across the BASICS.

¹³ In cases where a violation results in an out-of-service order as defined in 49 CFR 390.5, an additional weight of 2 is added to arrive at a total severity weight for the violation.

† Citations marked with † are being phased out based on regulatory changes, and are intended for removal from the SMS at a later time.

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.11	No/defective lighting devices/reflective devices/projected	Lighting	6	Y
393.11(b)	No retroreflective sheeting/reflex reflectors manufactured on or after 12/1/1993, No reflective material on rear or side	Reflective Sheeting	3	Y
393.11(b)	Side retroreflective sheeting/reflex reflectors manufactured on or after 12/1/1993 (does not meet 50% as required) § 393.11(b)(1)*	Reflective Sheeting	3	Y
393.11(b)	Lower retroreflective sheeting/reflex reflectors manufactured on or after 12/1/1993 § 393.11(b)(2)*	Reflective Sheeting	3	Y
393.11(b)	Upper retroreflective sheeting/reflex reflectors manufactured on or after 12/1/1993 § 393.11(b)(3)*	Reflective Sheeting	3	Y
393.11(c)	Truck Tractor Lower mud flap retroreflective sheeting/reflex reflectors manufactured on or after 7/1/1997 § 393.11(c)(1)*	Reflective Sheeting	3	Y
393.11(c)	Truck Tractor Upper body corners retroreflective sheeting/reflex reflectors manufactured on or after 7/1/1997 § 393.11(c)(2)*	Reflective Sheeting	3	Y
393.11	Lower retroreflective sheeting/reflex reflectors manufactured on or after 12/1/1993 (§ 393.11LR*)	Reflective Sheeting	3	Y
393.11	No retroreflective sheeting/reflex reflectors manufactured on or after 12/1/1993 (§ 393.11N*)	Reflective Sheeting	3	Y
393.11	Retroreflective not affixed as required Trailer manufactured on or after 12/1/1993 (§ 393.11RT*)	Reflective Sheeting	3	Y

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.11	Side retroreflective sheeting/reflex reflectors manufactured on or after 12/1/1993 (§ 393.11S*)	Reflective Sheeting	3	Y
393.11	Truck Tractor manufactured on or after 7/1/1997 with no retro reflective sheeting or reflex reflectors on mud flaps (§ 393.11TL*)	Reflective Sheeting	3	Y
393.11	Truck Tractor no retroreflective sheeting/reflex reflectors manufactured on or after 7/1/1997 (§ 393.11TT*)	Reflective Sheeting	3	Y
393.11	Truck Tractor upper body corners retroreflective sheeting/reflex manufactured on or after 7/1/1997 (§ 393.11TU*)	Reflective Sheeting	3	Y
393.11	Upper reflex reflectors retroreflective sheeting/reflex reflectors manufactured on or after 12/1/1993 (§ 393.11UR*)	Reflective Sheeting	3	Y
393.13(a)	Retroreflective tape not affixed; Trailer manufactured before 12/1/1993	Reflective Sheeting	3	Y
393.13(b)	No retroreflective sheeting/reflex reflectors manufactured on or after 12/1/1993	Reflective Sheeting	3	Y
393.13(c)(1)	Side retroreflective sheeting/reflex reflectors manufactured on or before 12/1/1993	Reflective Sheeting	3	Y
393.13(c)(2)	Lower retroreflective sheeting/reflex reflectors manufactured on or before 12/1/1993	Reflective Sheeting	3	Y
393.13(c)(3)	Upper retroreflective sheeting/reflex reflectors manufactured on or before 12/1/1993	Reflective Sheeting	3	Y

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.13(d)(1)	Side retroreflective sheeting/reflex reflectors manufactured on or after 11/1/1993	Reflective Sheeting	3	Y
393.13(d)(2)	Lower rear retroreflective sheeting/reflex reflectors manufactured on or after 11/1/1993	Reflective Sheeting	3	Y
393.13(d)(3)	Upper rear retroreflective sheeting/reflex reflectors manufactured on or after 11/1/1993	Reflective Sheeting	3	Y
393.17	No/defective lamp/reflector-towaway operation	Lighting	6	Y
393.17(a)	No/defective lamps-towing unit-towaway operation	Lighting	6	Y
393.17(b)	No/defective towaway lamps on rear unit	Lighting	6	Y
393.19	Inoperative/defective hazard warning lamp	Lighting	6	Y
393.23	Required lamp not powered by vehicle electricity	Clearance Identification Lamps/Other	2	Y
393.24(a)	Non-compliance with headlamp requirements	Lighting	6	Y
393.24(b)	Non-compliant fog/driving lamps	Lighting	6	Y
393.24(c)	Improper headlamp mounting	Lighting	6	N
393.24(d)	Improper head / auxiliary / fog lamp aiming	Lighting	6	N
393.25(a)	Improper lamp mounting	Lighting	6	N
393.25(b)	Lamps are not visible as required	Lighting	6	Y
393.25(e)	Lamp not steady burning	Lighting	6	Y
393.25(f)	Stop lamp violations	Lighting	6	Y
393.26	Requirements for reflectors	Lighting	6	Y

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.28	Improper or no wiring protection as required	Other Vehicle Defect	3	Y
393.30	Improper battery installation	Other Vehicle Defect	3	Y
393.40	Inadequate brake system on a CMV	Brakes, All Others	4	Y
393.40(a)	Inadequate brake system	Brakes, All Others	4	Y
393.41	No or defective parking brake system on CMV	Brakes, All Others	4	Y
393.41(a)	Inadequate brake system	Brakes, All Others	4	Y
393.42	No brakes as required	Brakes, All Others	4	Y
393.42(a)	No brakes on all wheels as required	Brakes, All Others	4	Y
393.43	No/improper breakaway or emergency braking	Brakes, All Others	4	Y
393.43(a)	No/improper tractor protection valve	Brakes, All Others	4	Y
393.43(b)	Towing vehicle unable to actuate trailer brakes with reduced air	Brakes, All Others	4	Y
393.43(d)	No or defective automatic trailer brake	Brakes, All Others	4	Y
393.44	No/defective bus front brake line protection	Brakes, All Others	4	Y
393.45	Brake tubing and hose adequacy	Brakes, All Others	4	N
393.45(a)	Failing to secure brake hose/tubing against mechanical damage (§ 393.45(a)(4)*)	Brakes, All Others	4	N
393.45(a)	Emergency gladhand has audible air leak (§ 393.45(a)(5)*)	Brakes, All Others	4	N

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.45(b)(2)	Brake hose/tubing chaffing and/or kinking	Brakes, All Others	4	Y
393.45(b)(3)	Brake hose/tubing contacting exhaust system	Brakes, All Others	4	N
393.45(d)	Brake connections with leaks/constrictions	Brakes, All Others	4	N
393.47	Inadequate/contaminated brake linings	Brakes, All Others	4	Y
393.47(a)	Inadequate brakes for safe stopping	Brakes, All Others	4	Y
393.47(b)	Mismatched brake chambers on same axle	Brakes, All Others	4	Y
393.47(c)	Mismatched slack adjuster effective length	Brakes, All Others	4	Y
393.47(d)	Insufficient brake linings	Brakes, All Others	4	Y
393.47(e)	Clamp/Roto-Chamber type brake(s) out of adjustment	Brakes Out of Adjustment	4	Y
393.47(f)	Wedge type brake(s) out of adjustment	Brakes Out of Adjustment	4	Y
393.47(g)	Insufficient drum/rotor thickness	Brakes, All Others	4	Y
393.48(a)	Inoperative/defective brakes	Brakes, All Others	4	Y
393.48(b)	Defective brake limiting device (§ 393.48(b)(1)*)	Brakes, All Others	4	Y
393.50	Inadequate reservoir for air/vacuum brakes	Brakes, All Others	4	N
393.50(a)	Failing to have sufficient air/vacuum reserve	Brakes, All Others	4	N
393.50(b)	Failing to equip vehicle—prevent reservoir air/vacuum leak	Brakes, All Others	4	N
393.50(c)	No means to ensure operable check valve	Brakes, All Others	4	N

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.50(d)	No or defective air reservoir drain valve	Brakes, All Others	4	Y
393.51	No or defective brake warning device	Brakes, All Others	4	Y
393.51(a)	Failing to equip brake system with warning device or gauge	Brakes, All Others	4	Y
393.51(c)	Failing to equip brake system with warning device or gauge	Brakes, All Others	4	Y
393.52(a)(1)	Insufficient braking force as percent of GVW or GCW	Brakes, All Others	4	Y
393.53(a)	Automatic brake adjuster CMV manufactured on or after 10/20/1993— hydraulic brake	Brakes, All Others	4	Y
393.53(b)	Automatic brake adjuster CMV manufactured on or after 10/20/1994— air brake	Brakes, All Others	4	Y
393.53(c)	Brake adjustment indicator CMV manufactured on or after 10/20/1994— external automatic adjustment	Brakes, All Others	4	Y
393.55(a)	ABS— all CMVs manufactured on or after 2/1/1999 with hydraulic brakes	Brakes, All Others	4	N
393.55(b)	ABS— malfunction indicators for hydraulic brake system	Brakes, All Others	4	N
393.55(c)(1)	ABS— all tractors manufactured on or after 2/1/1997 air brake system	Brakes, All Others	4	N
393.55(c)(2)	ABS— all other CMVs manufactured on or after 2/1/1998 air brake system	Brakes, All Others	4	N
393.55(d)(1)	ABS— malfunctioning circuit/signal manufactured on or after 2/1/1997, single-unit CMV manufactured on or after 2/1/1998	Brakes, All Others	4	N

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.55(d)(2)	ABS— malfunctioning indicator to cab of towing CMV manufactured on or after 2/1/2001	Brakes, All Others	4	N
393.55(d)(3)	ABS— malfunctioning indicator connection from towed CMV manufactured on or after 2/1/2001	Brakes, All Others	4	N
393.55(e)	ABS— malfunctioning lamps towed CMV manufactured on or after 2/1/1998, manufactured before 2/1/2009	Brakes, All Others	4	Y
393.60	Windshield condition	Windshield/ Glass/ Makings	1	Y
393.60(b)	Windshields required	Windshield/ Glass/ Makings	1	Y
393.60(c)	Damaged or discolored windshield	Windshield/ Glass/ Makings	1	Y
393.60(d)	Glazing permits less than 70 percent of light	Windshield/ Glass/ Makings	1	Y
393.61	Inadequate or missing truck side windows	Windshield/ Glass/ Makings	1	Y
393.61	Inadequate or missing truck side windows (§ 393.61(a)*)	Windshield/ Glass/ Makings	1	Y
393.61	Buses-window escape inoperative/obstructed (§ 393.61(b)*) †	Windshield/ Glass/ Makings	1	Y
393.61	Emergency exit window handle broken (§ 393.61(b)(2)*) †	Windshield/ Glass/ Makings	1	Y
393.61	Buses-push out window requirements violation (§ 393.61(c)*) †	Windshield/ Glass/ Makings	1	Y

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.62(a)	No or defective bus emergency exits, manufactured on or after 9/1/1994	Windshield/ Glass/ Makings	1	Y
393.62(b)	No or defective bus emergency exits, manufactured on or after 9/1/1973 but before 9/1/1994	Windshield/ Glass/ Makings	1	Y
393.62(c)	No or defective bus emergency exit windows, manufactured before 9/1/1973	Windshield/ Glass/ Makings	1	Y
393.62(d)	No / defective Safety glass/push-out window	Windshield/ Glass/ Makings	1	Y
393.62(e)	No or inadequate bus emergency exit marking	Windshield/ Glass/ Makings	1	Y
393.65	Fuel system requirements	Fuel Systems	1	N
393.65(b)	Improper location of fuel system	Fuel Systems	1	Y
393.65(c)	Improper securement of fuel tank	Fuel Systems	1	Y
393.65(f)	Improper fuel line protection	Fuel Systems	1	Y
393.67	Fuel tank requirement violations	Fuel Systems	1	N
393.67(c)(7)	Fuel tank fill pipe cap missing	Fuel Systems	1	Y
393.67(c)(8)	Improper fuel tank safety vent	Fuel Systems	1	N
393.67(d)	Failing to equip vehicle with fuel tank free of leaks	Fuel Systems	1	Y
393.68	Compressed Natural Gas (CNG) Fuel Container does not conform to regulations	Other Vehicle Defect	3	Y
393.70	Fifth wheel	Coupling Devices	3	N
393.70(a)	Defective coupling device—improper tracking	Coupling Devices	3	N
393.70(b)	Defective/improper fifth wheel assemblies	Coupling Devices	3	Y

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.70(b)(2)	Defective fifth wheel locking mechanism	Coupling Devices	3	Y
393.70(c)	Defective coupling devices for full trailer	Coupling Devices	3	Y
393.70(d)	No/improper safety chains/cables for full trailer	Coupling Devices	3	Y
393.70(d)(8)	Improper safety chain attachment	Coupling Devices	3	Y
393.71	Improper coupling driveaway/towaway operation	Coupling Devices	3	Y
393.71(g)	Prohibited towing connection / device	Coupling Devices	3	Y
393.71(h)	Towbar requirement violations	Coupling Devices	3	Y
393.71(h)(10)	No/improper safety chains/cables for towbar	Coupling Devices	3	Y
393.75	Tires/tubes (general)	Tires	8	Y
393.75(a)	Flat tire or fabric exposed	Tires	8	Y
393.75(a)(1)	Tire—ply or belt material exposed	Tires	8	Y
393.75(a)(2)	Tire—tread and/or sidewall separation	Tires	8	Y
393.75(a)(3)	Tire—flat and/or audible air leak	Tires	8	Y
393.75(a)(4)	Tire—cut exposing ply and/or belt material	Tires	8	Y
393.75(b)	Tire—front tread depth less than 4/32 of inch	Tires	8	Y
393.75(c)	Tire—other tread depth less than 2/32 of inch	Tires	8	Y
393.75(d)	Tire-bus regrooved/recap on front wheel	Tires	8	Y
393.75(e)	Tire—regrooved on front of truck/truck-tractor	Tire vs. Load	3	Y

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.75(f)	Tire—load weight rating/under inflated	Tire vs. Load	3	Y
393.75(f)	Weight carried exceeds tire load limit (§ 393.75(f)(1)*) †	Tire vs. Load	3	Y
393.75(f)	Tire under-inflated (§ 393.75(f)(2)*) †	Tire vs. Load	3	Y
393.75(h)	Tire under-inflated	Tire vs. Load	3	Y
393.76	Sleeper berth requirement violations	Other Vehicle Defect	3	Y
393.76(b)(1)	Sleeper berth requirement violations	Cab, Body, Frame	2	Y
393.76(b)(2)	Sleeper berth requirement violations	Cab, Body, Frame	2	Y
393.76(h)	Using a sleeper berth that is not equipped with occupant restraint	Cab, Body, Frame	2	Y
393.77	Defective and/or prohibited heaters	Other Vehicle Defect	3	Y
393.77(b)(5)	Tampering with bus heater	Cab, Body, Frame	2	Y
393.77(b)(11)	Bus heater fuel tank location	Fuel Systems	1	Y
393.78	Windshield wipers inoperative/defective	Windshield/ Glass/ Makings	1	Y
393.78(a)	Failing to equip vehicle with two operative windshield wipers	Windshield/ Glass/ Makings	1	Y
393.79	Defroster/ Defogger inoperative	Windshield/ Glass/ Makings	1	Y
393.80	No or defective rear-vision mirror	Other Vehicle Defect	3	Y
393.80(a)	Failing to equip vehicle with two rear vision mirrors	Other Vehicle Defect	3	Y
393.81	Horn inoperative	Other Vehicle Defect	3	Y

Table 5. Vehicle Maintenance¹²				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.82	Speedometer inoperative / inadequate	Other Vehicle Defect	3	Y
393.83(a)	Exhaust system location	Exhaust Discharge	1	Y
393.83(b)	Exhaust discharge fuel tank/filler tube	Exhaust Discharge	1	Y
393.83(c)	Improper exhaust—bus (gasoline)	Exhaust Discharge	1	Y
393.83(d)	Improper exhaust—bus (diesel)	Exhaust Discharge	1	Y
393.83(d)(1)	Non-gas-powered bus exhaust discharging greater than 15 inches forward of rear	Exhaust Discharge	1	Y
393.83(e)	Improper exhaust discharge (not rear of cab)	Exhaust Discharge	1	Y
393.83(f)	Improper exhaust system repair (patch/wrap)	Exhaust Discharge	1	Y
393.83(g)	Exhaust leak under truck cab and/or sleeper	Exhaust Discharge	1	Y
393.83(h)	Exhaust system not securely fastened	Exhaust Discharge	1	Y
393.84	Inadequate floor condition	Cab, Body, Frame	2	Y
393.86	No or improper rearend protection	Cab, Body, Frame	2	Y
393.86(a)(1)	Rear impact guards—all trailers/semitrailers manufactured on or after 1/26/98	Cab, Body, Frame	2	N
393.86(a)(2)	Impact guard width— all trailers/semitrailers manufactured on or after 1/26/98	Cab, Body, Frame	2	N
393.86(a)(3)	Impact guard height— all trailers/semitrailers manufactured on or after 1/26/98	Cab, Body, Frame	2	N

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.86(a)(4)	Impact guard rear— all trailers/semitrailers manufactured on or after 1/26/98	Cab, Body, Frame	2	N
393.86(a)(5)	Cross-sectional vertical height— all trailers/semitrailers manufactured on or after 1/26/98	Cab, Body, Frame	2	N
393.86(b)(1)	Rear Impact Guards— motor vehicle manufactured on or after 12/31/52, see exceptions	Cab, Body, Frame	2	Y
393.88	Improperly located television receiver	Cab, Body, Frame	2	Y
393.89	Bus driveshaft not properly protected	Cab, Body, Frame	2	Y
393.90	Bus—no or obscure standee line	Cab, Body, Frame	2	Y
393.91	Bus—improper aisle seats	Cab, Body, Frame	2	Y
393.93	Vehicle equipped seat belts	Cab, Body, Frame	2	Y
393.93(a)	Bus—not equipped with seat belt	Cab, Body, Frame	2	Y
393.93(a)(3)	Seats not secured in conformance with FMVSS	Cab, Body, Frame	2	N
393.93(b)	Truck not equipped with seat belt	Cab, Body, Frame	2	Y
393.95(a)	No/discharged/unsecured fire extinguisher	Emergency Equipment	2	Y
393.95(a)(1)(i)	No/discharged/unsecured fire extinguisher	Emergency Equipment	2	Y
393.95(a)(1)(ii)	No/discharged/unsecured fire extinguisher	Emergency Equipment	2	Y
393.95(b)	No spare fuses as required	Emergency Equipment	2	Y
393.95(b)	No spare fuses as required (§ 393.95(c)*)	Emergency Equipment	2	Y

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.95(f)	No / insufficient warning devices	Emergency Equipment	2	Y
393.95(f)(2)	Emergency warning devices not as required	Emergency Equipment	2	Y
393.95(g)	HM—restricted emergency warning device	Emergency Equipment	2	Y
393.201(a)	Frame cracked / loose / sagging / broken	Cab, Body, Frame	2	Y
393.201(b)	Bolts securing cab broken/loose/missing	Cab, Body, Frame	2	N
393.201(c)	Frame rail flange improperly bent/cut/notched	Cab, Body, Frame	2	N
393.201(d)	Frame accessories improperly attached	Cab, Body, Frame	2	N
393.201(e)	Prohibited holes drilled in frame rail flange	Cab, Body, Frame	2	N
393.203	Cab/body parts requirements violations	Cab, Body, Frame	2	Y
393.203(a)	Cab door missing/broken	Cab, Body, Frame	2	Y
393.203(b)	Cab/body improperly secured to frame	Cab, Body, Frame	2	Y
393.203(c)	Hood not securely fastened	Cab, Body, Frame	2	Y
393.203(d)	Cab seats not securely mounted	Cab, Body, Frame	2	Y
393.203(e)	Cab front bumper missing/ unsecured/ protrude	Cab, Body, Frame	2	Y
393.205	Wheel violations (general)	Wheels, Studs, Clamps, Etc.	2	Y
393.205(a)	Wheel/rim cracked or broken	Wheels, Studs, Clamps, Etc.	2	Y

Table 5. Vehicle Maintenance¹²				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.205(b)	Stud/bolt holes elongated on wheels	Wheels, Studs, Clamps, Etc.	2	Y
393.205(c)	Wheel fasteners loose and/or missing	Wheels, Studs, Clamps, Etc.	2	Y
393.207	All suspension violations	Suspension	7	Y
393.207(a)	Axle positioning parts defective/missing	Suspension	7	Y
393.207(b)	Adjustable axle locking pin missing/disengaged	Suspension	7	Y
393.207(c)	Leaf spring assembly defective/missing	Suspension	7	Y
393.207(d)	Coil spring cracked and/or broken	Suspension	7	Y
393.207(e)	Torsion bar cracked and/or broken	Suspension	7	Y
393.207(f)	Air suspension pressure loss	Suspension	7	Y
393.207(g)	No/defective air suspension exhaust control	Suspension	7	N
393.209	All steering violations	Steering Mechanism	6	Y
393.209(a)	Steering wheel not secured/broken	Steering Mechanism	6	Y
393.209(b)	Excessive steering wheel lash	Steering Mechanism	6	Y
393.209(c)	Loose steering column	Steering Mechanism	6	Y
393.209(d)	Steering system components worn/welded/missing	Steering Mechanism	6	Y
393.209(e)	Power steering violations	Steering Mechanism	6	Y
396.1	Must have knowledge of and comply with regulations	Inspection Reports	4	Y

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
396.3(a)	Inspection, repair, and maintenance	Other Vehicle Defect	3	N
396.3(a)(1)	Inspection/repair and maintenance parts and accessories	Wheels, Studs, Clamps, Etc.	2	Y
396.3(a)(2)	Failing to inspect pushout windows every 90 days	Windshield /Glass /Markings	1	N
396.3	Brakes (general) (§ 396.3A1B*)	Brakes, All Others	4	Y
396.3	Brake out of adjustment (§ 396.3A1BA*)	Brakes Out of Adjustment	4	N
396.3	Brake-air compressor violation (§ 396.3A1BC*)	Brakes, All Others	4	N
396.3	Brake-defective brake drum (§ 396.3A1BD*)	Brakes, All Others	4	N
396.3	Brake-reserve system pressure loss (§ 396.3A1BL*)	Brakes, All Others	4	N
396.3	Tires (general) (§ 396.3A1T*)	Tires	8	Y
396.5	Excessive oil leaks†	Other Vehicle Defect	3	N
396.5(a)	Failing to ensure that vehicle is properly lubricated	Other Vehicle Defect	3	N
396.5(b)	Oil and/or grease leak	Other Vehicle Defect	3	N
396.7	Unsafe operations forbidden	Other Vehicle Defect	3	Y
396.9(b)	Prescribed inspection report	Inspection Reports	4	N
396.9(c)	Operating an Out-Of-Service (OOS) vehicle	Vehicle Jumping OOS	10	Y
396.9(c)(2)	Operating an OOS vehicle	Vehicle Jumping OOS	10	Y
396.9(d)(2)	Failure to correct defects noted on inspection report	Inspection Reports	4	N

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
396.9(d)(3)	Failure to return inspection report within 15 days	Inspection Reports	4	N
396.11	Driver vehicle inspection report	Inspection Reports	4	Y
396.11(a)	Failing to require driver to prepare vehicle inspection report	Inspection Reports	4	Y
396.11(b)	Failing to ensure inspection report is complete and accurate	Inspection Reports	4	Y
396.11(c)	Failing to correct safety defects reported by driver	Inspection Reports	4	N
396.11(c)(1)	Failing to certify that repairs were made or were not necessary	Inspection Reports	4	N
396.11(c)(2)	Failing to retain vehicle inspection reports for at least 3 months	Inspection Reports	4	N
396.13(a)	Driver inspection	Inspection Reports	4	Y
396.13(b)	Driver inspection	Inspection Reports	4	Y
396.13(c)	No reviewing driver's signature on Driver Vehicle Inspection Report (DVIR)	Inspection Reports	4	Y
396.17(a)	Using a CMV not periodically inspected	Inspection Reports	4	N
396.17(b)	Using a CMV not periodically inspected	Inspection Reports	4	N
396.17(c)	Operating a CMV without periodic inspection	Inspection Reports	4	N
396.17(c)(1)	Operating a CMV without periodic inspection	Inspection Reports	4	N
396.17(c)(2)(ii)	Operating a CMV without periodic inspection	Inspection Reports	4	N
396.17(c)(2)(iv)	Operating a CMV without periodic inspection	Inspection Reports	4	N

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
396.17(d)	Operating a CMV without periodic inspection	Inspection Reports	4	N
396.17(f)	Operating a CMV without periodic inspection	Inspection Reports	4	N
396.17(g)	Failing to repair parts not meeting inspection standards	Other Vehicle Defect	3	N
396.21	Periodic inspection	Inspection Reports	4	N
396.21(a)(1)	Failing to prepare inspection report in correct form and manner	Inspection Reports	4	N
396.21(a)(3)	Failing to prepare inspection report in correct form and manner	Inspection Reports	4	N
396.21(a)(4)	Failing to prepare inspection report in correct form and manner	Inspection Reports	4	N
396.21(a)(5)	Failing to prepare inspection report in correct form and manner	Inspection Reports	4	N
396.21(a)(6)	Failing to prepare inspection report in correct form and manner	Inspection Reports	4	N
396.21(b)(1)	Failing to retain periodic inspection report for 14 months	Inspection Reports	4	N
396.23(b)(1)	Failure to comply with mandatory State inspection program	Inspection Reports	4	N
396.25(a)	Failing to ensure all maintenance on a CMV meets minimum standards	Brakes, All Others	4	N
398.5	Parts/access—migrant workers	Other Vehicle Defect	3	Y
398.7	Inspect/maintain motor vehicle—migrant workers	Inspection Reports	4	N
399.207	Vehicle access requirements violations	Cab, Body, Frame	2	N

Table 5. Vehicle Maintenance¹²

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹³	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
399.211	Inadequate maintenance of driver access	Cab, Body, Frame	2	N

Table 6. Improper Loading/Cargo Securement ¹⁴				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight ¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
171.2	HM (general requirements)	HM Other	1	Y
171.2(a)	Failure to comply with HM regulations	HM Other	1	Y
171.2(b)	Failure to comply with the requirements for HM transportation (including labeling and handling)	HM Other	1	Y
171.2(c)	Representing a package./container for HM not meeting specs	Markings	1	N
171.2(d)	Accepting HM without registering with PHMSA	Documentation	1	Y
171.2(e)	Failing to perform a function covered by an exemption	Documentation	1	N
171.2(f)	Transporting HM not in accordance with this part	Fraudulent Behavior	1	Y
171.2(g)	Cargo tank does not comply with HM Regulations	Fraudulent Behavior	1	N
171.2(h)(2)	Representing a packaging under a false exemption	Fraudulent Behavior	1	N
171.2(k)	Representing vehicle with HM, none present	Fraudulent Behavior	1	Y
171.3(a)	Transporting hazardous waste not properly prepared for shipment	Cargo Protection	1	N
171.3(b)(1)	Vehicle, no hazardous waste marking	Markings	1	N
171.3(b)(2)	Improper/no hazardous waste manifest	Documentation	1	Y

¹⁴ Violation severity weights reflect the relative importance of each violation within each BASIC. These weights *cannot* be compared or added meaningfully across the BASICS.

¹⁵ In cases where a violation results in an out-of-service order as defined in 49 CFR 390.5, an additional weight of 2 is added to arrive at a total severity weight for the violation.

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
172.205(e)(2)	Hazardous waste manifest not carried on vehicle	Documentation	1	Y
172.205(e)(3)	Failing to provide hazardous waste manifest to designated facility	Documentation	1	Y
172.205(h)	Hazardous waste manifest not as required	Documentation	1	Y
172.300	Marking requirement (general)	Markings	1	N
172.300(b)	Carrier failed to mark package	Markings	1	N
172.301(a)(1)	No proper shipping name and/or ID# marking on non-bulk	Markings	1	N
172.301(a)(3)	No ID number on side/ends of non-bulk package — large quantity of single HM	Markings	1	N
172.301(b)	No technical name on non-bulk	Documentation	1	N
172.301(c)	No special permit number on non-bulk package	Documentation	1	N
172.301(d)	No consignee/consignor on non-bulk	Documentation	1	N
172.302	Marking requirements bulk packaging	Markings	1	N
172.302(a)	No ID number (portable and cargo tank)	Markings	1	Y
172.302(b)	Bulk package marking incorrect size	Markings	1	N
172.302(c)	No special permit number on bulk package	Documentation	1	N
172.303(a)	Prohibited HM marking on package	Markings	1	N
172.304(a)(1)	Package marking not durable, English, or print	Markings	1	N
172.304(a)(2)	Marking not on sharply contrasting color	Markings	1	N
172.304(a)(3)	Marking obscured by label or attachments	Markings	1	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
172.304(a)(4)	Marking not away from other marking	Markings	1	N
172.310(a)	No gross weight on radioactive materials package greater than 50 KG	Markings	1	N
172.310(b)	Radioactive materials package not marked "Type A or B"	Markings	1	N
172.310(c)	Type B, B(U), B(M) package not marked with /radiation symbol	Markings	1	N
172.312(a)	No package orientation arrows	Cargo Protection	1	N
172.312(a)(1)	Non-bulk package liquid HM—closures up	Markings	1	N
172.312(a)(2)	No package orientation arrows	Cargo Protection	1	N
172.312(b)	Prohibited use of orientation arrows	Cargo Protection	1	N
172.313(a)	No "inhalation hazard" on package	Markings	1	N
172.313(b)	No "poison" on non-bulk plastic package	Markings	1	N
172.316(a)	"Other regulated material" non-bulk package not marked	Markings	1	N
172.320(a)	Class 1 package not marked with ex-number	Markings	1	N
172.322(b)	No marine pollutant marking on bulk packaging	Markings	1	N
172.324	Non-bulk hazardous substance not marked	Markings	1	N
172.324(a)	Hazardous substance—no constituent name	Markings	1	N
172.324(b)	Hazardous substance —no required marking	Markings	1	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
172.325	No "HOT" marking for bulk elevated temperature	Markings	1	N
172.325(a)	Elevated temperature not marked "Hot"	Markings	1	N
172.325(b)	Improperly marked molten aluminum/sulphur	Markings	1	N
172.326	Portable tank marking	Markings	1	N
172.326(b)	No portable tank owner or lessee marking	Markings	1	N
172.326(c)(1)	No ID number marking on vehicle carrying portable tank	Markings	1	N
172.326(c)(2)	Shipper failed to provide ID number to carrier	Markings	1	N
172.328	No ID number displayed on cargo tank	Markings	1	N
172.328(a)	Shipper failed to provide or affix ID number for cargo tank	Markings	1	N
172.328(a)(1)	Failing to provide ID number on placard or orange panel	Markings	1	N
172.328(b)	Cargo tank not marked for class 2	Markings	1	N
172.328(c)	No quenched and tempered steel (QT)/other than quenched and tempered steel (NQT) marked on cargo tank (MC 330/331)	Markings	1	N
172.328(d)	Fail to mark manual remote shutoff device	Markings	1	N
172.330(a)(2)	Tank car tank (non cylinder) not marked as required	Markings	1	N
172.330(b)	Motor vehicle with tank not marked	Markings	1	N
172.332	ID number marking for (b) panel (c) placards	Markings	1	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
172.332(a)	Required ID markings displayed	Markings	1	N
172.334	Prohibited ID number marking	Markings	1	N
172.334(a)	ID # displayed on Class 7/Class 1/Dangerous or Subsidiary placard	Markings	1	N
172.334(b)(1)	Displaying wrong ID number on package, container, vehicle	Markings	1	N
172.334(d)	ID number on van with mixed HM load	Markings	1	N
172.334(f)	Failing to display orange ID number panel near required placard	Markings	1	N
172.334(g)	Prohibited ID number marking	Markings	1	N
172.336(b)	ID numbers not properly displayed	Markings	1	N
172.336(c)(1)	Failing to display ID numbers on compartment cargo tank in sequence	Markings	1	N
172.338	Carrier failed to replace missing ID number	Markings	1	N
172.400(a)	Package/containment not labeled as required	Markings	1	Y
172.400(a)(1)	No HM label on non-bulk package	Markings	1	N
172.400(a)(2)	No HM label on other bulk package	Markings	1	N
172.400(a)(3)	No HM label on portable tank	Markings	1	N
172.400(a)(4)	No HM label on specification 106/110 multi-unit tank car	Markings	1	N
172.400(a)(5)	No HM label on overpack, freight container, or unit load device	Markings	1	N
172.401	Prohibited labeling	Markings	1	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
172.401(a)(1)	Affixing label to a non-HM package or container	Markings	1	N
172.401(b)	Marking confused as HM label	Markings	1	N
172.402(a)	No label for subsidiary hazard	Markings	1	N
172.402(a)(1)	HM labeling	Markings	1	N
172.402(b)	Display of class number on label	Markings	1	N
172.402(c)	No "Cargo Aircraft Only" label	Markings	1	N
172.402(d)	Subsidiary labeling for radioactive materials	Markings	1	N
172.402(e)	Subsidiary labeling for class 1(explosive) materials	Markings	1	N
172.403(a)	Radioactive material label requirement	Markings	1	N
172.403(b)	Highest category label required	Markings	1	N
172.403(e)	Additional warning labels	Markings	1	N
172.403(f)	Radioactive material package— 2 labels on opposite sides	Markings	1	N
172.403(g)	Failed to label radioactive material properly	Markings	1	N
172.403(g)(2)	Class 7 label – no activity/activity not in SI units	Markings	1	N
172.404(a)	Mixed package not properly labeled	Markings	1	N
172.404(b)	Failed to properly label consolidated package	Markings	1	N
172.406	Label placement	Markings	1	N
172.406(a)(1)	Label placement not as required	Markings	1	N
172.406(a)(1)(i)	Improper label placement	Markings	1	N
172.406(c)	Multiple label placement not as required	Markings	1	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
172.406(d)	Label not on contrasting background or no border	Markings	1	N
172.406(e)	Failed to display duplicate label as required	Markings	1	N
172.406(e)(4)	Duplicate labeling	Markings	1	N
172.406(f)	Label obscured by marking or attachment	Markings	1	N
172.504(a)	Vehicle not placarded as required	Markings	1	Y
172.506(a)(1)	Placards not affixed to vehicle	Markings	1	Y
172.516(a)	Placard not visible from direction it faces	Markings	1	Y
172.516(c)(1)	Placard not securely affixed or attached	Markings	1	Y
172.516(c)(2)	Placard not clear of appurtenance	Markings	1	Y
172.516(c)(3)	Placard not clear of tire dirt	Markings	1	Y
172.516(c)(4)	Placard improper location	Markings	1	Y
172.516(c)(5)	Placard not reading horizontally	Markings	1	Y
172.516(c)(6)	Placard damaged, deteriorated, or obscured	Markings	1	Y
172.516(c)(7)	Placard not on contrasting background or border	Markings	1	Y
172.516(d)	Placard holder obscures placard	Markings	1	N
172.519(a)(1)	Placard not weatherproof	Markings	1	N
172.519(b)(4)	Placard with non-spec placard	Markings	1	N
172.519(d)	Placard with non-spec placard	Markings	1	N
172.600(c)	Emergency Response (ER) information not available	Documentation	1	Y
172.600(c)(1)	No immediately available emergency response information	Documentation	1	Y

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
172.600(c)(2)	No emergency response information available to government agent	Documentation	1	Y
172.602(a)	Emergency response information missing	Documentation	1	Y
172.602(b)	Form and manner of emergency response information	Documentation	1	Y
172.602(b)(1)	Failing to have all required emergency response information in English	Documentation	1	Y
172.602(b)(2)	No emergency response information available away from HM package	Documentation	1	Y
172.602(c)(1)	Maintenance/accessibility of emergency response information	Documentation	1	Y
173.22a(a)	Transporting HM in exempt packages without holding exemption	HM Other	1	N
173.22a(b)	Transporting HM in exempt packages without holding exemption	Documentation	1	Y
173.24(b)(1)	Release of HM from package	Cargo Protection	1	Y
173.25(c)	Transporting poison w/ edible, no overpack	Markings	1	Y
173.29(a)	Empty package improper transportation	Cargo Protection	1	N
173.30	Loading/ unloading transport vehicles	Cargo Protection	1	Y
173.32(a)	IM portable tank periodic testing	Package Integrity	2	N
173.32(g)(1)	IM101/102 outlet closures	Package Integrity	2	N
173.32(g)(2)	IM101/102 outlet closures	Package Integrity	2	N

Table 6. Improper Loading/Cargo Securement¹⁴				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
173.32(h)(3)	IM101/102 bottom outlets prohibited	Package Integrity	2	N
173.33	Cargo tanks (general)	Cargo Protection	1	Y
173.33(a)	Cargo tank general requirements	Cargo Protection	1	Y
173.33(a)(2)	Two or more HM in a cargo tank resulting in an unsafe condition	Cargo Protection	1	Y
173.33(a)(3)	Specification cargo tank with past due retest/re-inspection date	Cargo Protection	1	Y
173.33(b)	Cargo tank loading requirements	Cargo Protection	1	Y
173.33(b)(1)	HM in cargo tank which had dangerous reaction with cargo tank	Cargo Protection	1	Y
173.33(b)(2)(iv)	HM in cargo tank which may corrode or react with tank material	Cargo Protection	1	Y
173.33(b)(2)(v)	HM in cargo tank prohibited by 173.21 or 173.24	Cargo Protection	1	Y
173.33(c)(2)	Cargo tank not marked with design or maximum allowable working pressure (MAWP)	Cargo Protection	1	N
173.33(e)	Transporting prohibited liquids in cargo tank piping	Cargo Protection	1	N
173.33(g)	No remote self-closing valve on 338 discharge opening	Cargo Protection	1	Y
173.35(a)	Intermediate bulk container requirements	Package Integrity	2	Y
173.35(f)(2)	Intermediate bulk container (IBC) not secured to or within vehicle	Load Securement	10	Y
173.54	Forbidden explosives, offering or transporting	Fire Hazard	2	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
173.315(j)(3)	Residential gas tank not secure in transport	Fire Hazard	2	Y
173.315(j)(4)	Liquefied Petroleum Gas (LPG) storage tank overfilled for transport	Fire Hazard	2	N
173.315(j)(5)	Gas tank	Fire Hazard	2	N
173.315(n)(3)	No off-truck remote to close internal stop valve on cargo tank truck	Fire Hazard	2	Y
173.421(a)	Transporting limited quantity—radioactive material exceeds 0.5 millirem/hour	Cargo Protection	1	N
173.427(a)(6)	Exclusive use low specific activity (LSA) radioactive material not marked "Radioactive-LSA"	Markings	1	Y
173.427(a)(6)(iv)	No instructions for exclusive use packaging—low specific activity (§ 173.427(a)(iv)*)	Cargo Protection	1	Y
173.427(a)(6)(vi)	Exclusive use low specific activity (LSA) radioactive material not marked "Radioactive-LSA" (§ 173.427(a)(vi)*)	Markings	1	Y
173.427(b)(5)	Bulk liquid low specific activity radioactive material in no-specification cargo tank	Cargo Protection	1	Y
173.427(d)	Not packaged in accordance with 10 CFR, part 71	Cargo Protection	1	Y
173.441(a)	Exceeding radiation level limitations allowed for transport	Cargo Protection	1	N
173.448	General radioactive material transport requirements	HM Other	1	Y
173.448(a)	Radioactive material package not secured/shifting	Load Securement	10	Y

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
173.448(c)	Transporting package w/radioactive label w/passengers	Other Cargo	7	Y
173.448(g)	Radioactive material overpack consolidation required	Cargo Protection	1	Y
177.801	Accepting/transporting HM not prepared properly	HM Other	1	Y
177.802	Failing to allow inspection of HM shipment	HM Other	1	Y
177.817	Shipping papers required	Documentation	1	Y
177.817(a)	No shipping papers (carrier)	Documentation	1	Y
177.817(b)	Shipper certification missing (when required)	Documentation	1	N
177.817(e)	Shipping paper accessibility	Documentation	1	Y
177.817(e)(1)	Shipping paper accessibility	Documentation	1	Y
177.817(f)	Transporter fails to produce shipping paper in timely manner	Documentation	1	Y
177.823	No placards	Markings	1	Y
177.823(a)	No placards/markings when required	Markings	1	N
177.834	Load secure block/brace	Load Securement	10	Y
177.834(a)	Package not secure in vehicle	Load Securement	10	Y
177.834(c)	Smoking while loading or unloading	Fire Hazard	2	Y
177.834(e)	Parking brake not set while loading/unloading	Other Cargo	7	Y
177.834(f)	Using a tool likely to cause damage to the closure of any package or container	Load Securement	10	Y
177.834(h)	Tampering with hazmat while in transit	Cargo Protection	1	Y

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
177.834(i)	Attendance of cargo tank—(load or unload)	Cargo Protection	1	Y
177.834(i)(2)	Attendance of cargo tank—(load or unload)	Cargo Protection	1	Y
177.834(j)	Manholes and valves not closed or leak free	Cargo Protection	1	Y
177.834(j)(1)	Transporting HM in cargo tank with open covers	Cargo Protection	1	Y
177.834(j)(2)	Transporting Class 3 material in cargo tank w/o without manholes closed and secured	Cargo Protection	1	Y
177.834(l)(1)	Prohibited cargo heaters-class 1	Cargo Protection	1	Y
177.834(l)(2)	Prohibited cargo heaters-class 3 or division 2.1	Cargo Protection	1	Y
177.834(m)(1)	Securing specification 106a or 110a tanks	Cargo Protection	1	N
177.834(n)	Improper loading—specification 56, 57, IM101 and IM102	Fire Hazard	2	N
177.835	Improper transport of explosives (class 1)	Fire Hazard	2	Y
177.835(a)	Loading/Unloading Class 1 with engine running	Fire Hazard	2	Y
177.835(b)	Loading/Unloading Class 1 explosive in unsafe manner	Fire Hazard	2	Y
177.835(c)	Transporting Class 1 in combination vehicles	Fire Hazard	2	N
177.835(e)	Transporting class 1 explosive in vehicle with sharp projections	Fire Hazard	2	N
177.835(f)	Transporting Division 1.1-1.3 (explosive) with floor unlined or not tight	Fire Hazard	2	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
177.835(g)	Transporting detonator or primer with division 1.1 - 1.4, blast agent, detonator cord	Fire Hazard	2	N
177.835(h)	Transporting. Class 1 explosive in vehicle not covered or tailgate open	Fire Hazard	2	Y
177.835(i)	Improper transport of explosives (class 1)	Fire Hazard	2	Y
177.835(j)	Transfer of Class 1 materials en route	Fire Hazard	2	Y
177.837	Improper transporting of class 3	Fire Hazard	2	Y
177.837(a)	Failing to stop engine to load/unload class 3	Fire Hazard	2	Y
177.837(c)	Cargo tank improper bonding/grounding	Cargo Protection	1	N
177.837(d)	Combustible liquid unloading violation	Cargo Protection	1	N
177.838	Improper transport of class 4, 5 or division 4.2	Fire Hazard	2	Y
177.839	Improper transporting of class 8	Cargo Protection	1	Y
177.839(b)	Class 8 (corrosive) improper loading violation	Cargo Protection	1	Y
177.840	Improper transport of class 2	Fire Hazard	2	Y
177.840(a)(1)	Cylinder securement in upright position (4L)	Cargo Protection	1	Y
177.840(g)	Discharge valve not closed in transit class 2	Cargo Protection	1	Y
177.840(l)	No written emergency discharge procedures — compressed gas	Documentation	1	Y
177.840(m)	Unloading liquefied compressed gas with bad piping	Cargo Protection	1	Y

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
177.840(n)	Not promptly shutting down after unintentional release	Fire Hazard	2	Y
177.840(o)	Fail to test off-truck remote shutoff device	Cargo Protection	1	Y
177.840(p)	Not attending cargo tank unloading liquefied petroleum gas/ammonia — metered service	Cargo Protection	1	Y
177.840(q)	Not attending cargo tank unloading liquefied petroleum gas/ammonia — metered service	Cargo Protection	1	Y
177.840(s)	Fail to possess remote shutoff when unloading	Cargo Protection	1	Y
177.840(t)	Not in arms reach of means to close valve unloading cargo tank without emergency equipment.	Cargo Protection	1	Y
177.841	Improper transport of division 6.1 or 2.3	HM Other	1	Y
177.841(e)	Poison label loaded with foodstuffs	HM Other	1	Y
177.842(a)	Total transport index exceeds 50— non-exclusive use	HM Other	1	N
177.842(b)	Distance from package to person—radioactive material	HM Other	1	N
177.842(d)	Blocking and bracing of radioactive material packages	HM Other	1	Y
177.843(a)	Failing to survey radioactive material vehicle after each use	HM Other	1	N
177.843(b)	Violation of "radioactive material only" vehicle marking	Markings	1	N
177.848(d)	Prohibited load/transport/storage combination	Fire Hazard	2	N
177.848(e)(3)	Prohibited loading combination	Fire Hazard	2	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
177.848(f)	Class 1 load separation or segregation	HM Other	1	N
177.854(d)(2)	Damaged container not repaired as required	Cargo Protection	1	N
177.870(c)	Transporting class 1 explosive in passenger space of vehicle	Other Cargo	7	Y
178.2(a)(2)	Improper packaging	Package Integrity	2	N
178.2(c)	Package notification	Package Integrity	2	N
178.3(a)(4)	Improper size letters on markings	Package Integrity	2	N
178.245-4	DOT51 integrity and securement	Package Integrity	2	N
178.245-5	DOT51 valve protection	Package Integrity	2	N
178.245-6	DOT51 ID plate	Package Integrity	2	N
178.245-6(a)	DOT51 name plate markings	Package Integrity	2	N
178.245-6(b)	Tank outlets not marked	Package Integrity	2	N
178.251	General design/construction DOT 56 (§178.252) DOT 57 (§178.253)	Package Integrity	2	N
178.251-4	DOT 56/57 integrity and securement	Package Integrity	2	N
178.251-7	DOT 56/57 ID plate	Package Integrity	2	N
178.251-7(b)	DOT 56/57 spec markings	Package Integrity	2	N
178.253-2	DOT 57 manhole	Package Integrity	2	N
178.253-3	DOT 57 valve protection	Package Integrity	2	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
178.255-1	DOT 60 manhole	Package Integrity	2	N
178.255-4	DOT 60 manhole	Package Integrity	2	N
178.255-7	DOT 60 valve protection	Package Integrity	2	N
178.255-14	DOT 60 ID plate	Package Integrity	2	N
178.270-1	IM101/102 general design	Package Integrity	2	N
178.270-11(d)(1)	IM101/102 pressure relief	Package Integrity	2	N
178.270-13	IM101/102 testing	Package Integrity	2	N
178.270-14	IM101/102 spec plate	Package Integrity	2	N
178.270-4	Structural integrity	Package Integrity	2	N
178.270-6	IM 101/102 frames	Package Integrity	2	N
178.270-8	IM101/102 valve protection	Package Integrity	2	N
178.270-9	IM101/102 manholes	Package Integrity	2	N
178.336-10	Protecting of fittings MC330	Package Integrity	2	N
178.336-13	Anchoring of tank MC330	Package Integrity	2	N
178.336-17	Metal ID plate marking MC330	Package Integrity	2	N
178.336-17(a)	Certification plate MC330	Package Integrity	2	N
178.336-9(a)	Safety relief devices MC330	Package Integrity	2	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
178.336-9(c)	Marking of inlets/outlets MC330	Package Integrity	2	N
178.337-1(d)	Reflective design	Package Integrity	2	N
178.337-8(a)	Outlets general requirements MC331	Package Integrity	2	N
178.337-8(a)(2)	Outlets MC331	Package Integrity	2	N
178.337-8(a)(3)	Internal or back flow valve MC331	Package Integrity	2	N
178.337-8(a)(4)	Outlets MC331	Package Integrity	2	N
178.337-8(a)(4)(i)	Remote closure device greater than 3500 gallons MC331	Package Integrity	2	Y
178.337-8(a)(4)(ii)	Remote closure device less than 3500 gallons MC331	Package Integrity	2	Y
178.337-9	Pressure relief devices MC331	Package Integrity	2	N
178.337-9(c)	Marking inlets/outlets MC331	Package Integrity	2	N
178.337-10(a)	Protection of fittings MC331	Package Integrity	2	N
178.337-10(c)	Rear end protection MC331	Package Integrity	2	N
178.337-10(d)	Rear end protection MC331	Package Integrity	2	N
178.337-11(a)	Emergency discharge control equipment (§ 173.315(n)*)	Package Integrity	2	N
178.337-11(b)	Shut off valves MC331	Package Integrity	2	Y
178.337-13	MC331 supports and anchoring	Package Integrity	2	N
178.337-17	Metal ID plate missing MC331	Package Integrity	2	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
178.337-17(a)	Metal ID plate missing MC331	Package Integrity	2	N
178.337-18(b)	Outlets MC331	Package Integrity	2	N
178.338-6	Manhole MC338	Package Integrity	2	N
178.338-8	Pressure relief devices MC338	Package Integrity	2	N
178.338-10(a)	Protection of fittings MC338	Package Integrity	2	N
178.338-10(c)	Rear end protection MC338	Package Integrity	2	N
178.338-10(d)	Ground clearance MC338	Package Integrity	2	N
178.338-11(b)	Manual shutoff valve MC338	Package Integrity	2	Y
178.338-11(c)	Internal valve MC338	Package Integrity	2	N
178.338-11(c)(1)	Remote control greater than 3500 gallons MC338	Package Integrity	2	Y
178.338-11(c)(2)	Remote control less than 3500 gallons MC338	Package Integrity	2	Y
178.338-11(c)(2)(i)	Remote control greater than 3500 gallons MC338	Package Integrity	2	Y
178.338-11(c)(2)(ii)	Remote control less than 3500 gallons MC338	Package Integrity	2	Y
178.338-12	Shear section MC338	Package Integrity	2	N
178.338-13	Supports and anchoring MC338	Package Integrity	2	N
178.338-18(a)	Name plate/Specification plate missing MC338	Package Integrity	2	N
178.338-18(b)	Specification plate missing MC338	Package Integrity	2	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
178.340-10(b)	MC306/307/312 metal certification plate missing	Package Integrity	2	N
178.340-6	MC306/307/312 supports and anchoring	Package Integrity	2	N
178.340-7(a)	MC306/307/312 ring stiffeners	Package Integrity	2	N
178.340-7(c)	MC306/307/312 double bulkhead drain	Package Integrity	2	N
178.340-7(d)(2)	MC306/307/312 ring stiffener drain hole	Package Integrity	2	N
178.340-8(a)	MC306/307/312 appurtenances attachment	Package Integrity	2	N
178.340-8(b)	MC306/307/312 rearend protection	Package Integrity	2	N
178.340-8(c)	MC306/307/312 overturn protection	Package Integrity	2	N
178.340-8(d)	MC306/307/312 piping protection	Package Integrity	2	N
178.340-8(d)(1)	MC306/307/312 piping protection	Package Integrity	2	N
178.340-8(d)(2)	MC306/307/312 minimum road clearance	Package Integrity	2	N
178.341-3(a)	MC306 no manhole closure	Package Integrity	2	N
178.341-4	MC306 venting	Package Integrity	2	N
178.341-4(d)(1)	MC306 inadequate emergency venting	Package Integrity	2	N
178.341-4(d)(2)	MC306 pressure activated vents	Package Integrity	2	N
178.341-4(d)(3)	MC306 no fusible venting	Package Integrity	2	N
178.341-5	MC306 internal valves	Package Integrity	2	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
178.341-5(a)	MC306 internal valves	Package Integrity	2	N
178.341-5(a)(1)	MC306 heat actuated safety	Package Integrity	2	N
178.341-5(a)(2)	MC306 remote control shutoff	Package Integrity	2	Y
178.341-8(d)	MC306 protection shear	Package Integrity	2	N
178.342-3	MC307 manhole closure	Package Integrity	2	Y
178.342-4	MC307 venting	Package Integrity	2	N
178.342-4(b)	Inadequate venting capacity	Package Integrity	2	N
178.342-5(a)	MC307 internal valve	Package Integrity	2	N
178.342-5(a)(1)	MC307 heat actuated safety	Package Integrity	2	N
178.342-5(a)(2)	MC307 remote control shutoff	Package Integrity	2	Y
178.343-3	Manhole closure MC312	Package Integrity	2	N
178.343-4	Venting MC312 (show calculations)	Package Integrity	2	N
178.343-5(a)	MC312 top outlet and valve	Package Integrity	2	N
178.343-5(b)(1)	MC312 bottom valve/piping protection	Package Integrity	2	N
178.345-1(i)(2)	DOT 406, 407, 412 double bulkhead drain	Package Integrity	2	N
178.345-5(a)	DOT406/407/412 manhole if required	Package Integrity	2	N
178.345-5(d)	DOT406/407/412 manhole securement	Package Integrity	2	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
178.345-5(e)	DOT406/407/412 manhole marking	Package Integrity	2	N
178.345-6	DOT406/407/412 supports and anchoring	Package Integrity	2	N
178.345-7(d)(4)	DOT406/407/412 ring stiffener drain	Package Integrity	2	N
178.345-7(d)(5)	DOT406, 407, 412 ring stiffener types	Package Integrity	2	N
178.345-8(a)	DOT406/407/412 accident protection	Package Integrity	2	N
178.345-8(a)(5)	DOT406/407/412 minimum road clearance	Package Integrity	2	N
178.345-8(b)	DOT406/407/412 bottom damage protection	Package Integrity	2	N
178.345-8(c)	DOT406/407/412 rollover damage protection	Package Integrity	2	N
178.345-8(d)	DOT406/407/412 rear end protection	Package Integrity	2	N
178.345-10	DOT406/407/412 pressure relief	Package Integrity	2	N
178.345-11(b)	DOT406/407/412 tank valves	Package Integrity	2	N
178.345-11(b)(1)	DOT406/407/412 remote control	Package Integrity	2	Y
178.345-11(b)(1)(i)	DOT406/407/412 remote control	Package Integrity	2	Y
178.345-11(b)(1)(ii)	DOT406/407/412 thermal and remote	Package Integrity	2	N
178.345-11(b)(1)(iii)	DOT406/407/412 thermal and remote	Package Integrity	2	N
178.345-14(b)	DOT406/407/412 name plate	Package Integrity	2	N
178.345-14(c)	DOT406/407/412 specification plate	Package Integrity	2	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
178.345-14(d)	DOT406, 407, 412 single name/specification plate	Package Integrity	2	N
178.345-15(d)	DOT406/407/412	Package Integrity	2	N
178.504(b)(5)	Aluminum drums	Package Integrity	2	N
178.703(a)	Intermediate bulk container (IBC) manufacturer markings	Package Integrity	2	N
178.703(b)	Intermediate bulk container additional markings	Package Integrity	2	N
178.704(c)	Intermediate bulk container	Package Integrity	2	N
178.704(e)	Intermediate bulk container bottom discharge valve protection	Package Integrity	2	N
178.800(c)(6)	Intermediate bulk container test dates	Package Integrity	2	N
180.205(c)	Periodic re-qualification of cylinders	Package Testing	1	N
180.213(d)	Re-qualification markings	Package Testing	1	N
180.352(b)	Intermediate bulk container retest or inspection	Package Testing	1	N
180.352(d)	Intermediate bulk container retest date marking	Package Testing	1	N
180.352(e)	Intermediate bulk container retest date marking	Package Testing	1	N
180.405(a)	Unauthorized cargo tank used to transport HM	Package Testing	1	N
180.405(b)	Cargo tank specifications	Package Testing	1	N
180.405(g)	Failing to equip a cargo tank w/ manhole assembly	Package Testing	1	N

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
180.405(j)	Cargo tank withdrawal certification	Package Testing	1	N
180.407(a)(1)	Cargo tank periodic test and inspection	Package Testing	1	N
180.407(b)(1)	Using tank not retested after showing evidence of unsafe condition.	Package Testing	1	N
180.407(b)(2)	Using tank not retested after accident and damage	Package Testing	1	N
180.407(c)	Failing to periodically test and inspect cargo tank	Package Testing	1	N
180.415	Failing to mark test date on cargo tank	Package Testing	1	N
180.415(b)	Cargo tank test or inspection markings	Package Testing	1	N
180.416(f)(2)	Fail to mark new/repaired delivery hose with month/year of pressure test	Package Testing	1	Y
180.605	Periodic testing of portable tanks	Package Testing	1	N
180.605(c)	Portable tank retest schedule (out of date)	Package Testing	1	N
180.605(k)	Test date marking	Package Testing	1	N
385.403	No HM Safety Permit	Documentation	1	Y
392.2	Size and weight (§ 392.2W*)	Other Cargo	7	Y
392.9	Driver load securement	Load Securement	10	Y
392.9(a)	Failing to secure load	Load Securement	10	Y
392.9(a)(1)	Failing to secure cargo/§§ 393.100-393.106	Load Securement	10	Y
392.9(a)(2)	Failing to secure vehicle equipment	Load Securement	10	Y

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
392.9(a)(3)	Driver's view/movement is obstructed	Other Cargo	7	Y
392.9(b)(2)	Inspect cargo within 50 miles of start	Load Securement	10	Y
392.9(b)(3)	Reexamine cargo and load securement devices during transportation	Load Securement	10	Y
392.62(c)(1)	Bus — baggage/freight restricts driver operation	Load Securement	10	Y
392.62(c)(2)	Bus — Exit(s) obstructed by baggage/freight	Load Securement	10	Y
392.62(c)(3)	Passengers not protected from falling baggage	Load Securement	10	Y
392.63	Pushing/towing a loaded bus	Other Cargo	7	Y
393.71(b)(3)	Improper weight distribution drive-away/towaway	Other Cargo	7	Y
393.87	No flag on projecting load	Load Securement	10	Y
393.87(a)	Warning flag required on projecting load	Other Cargo	7	Y
393.87(b)	Improper warning flag placement	Other Cargo	7	Y
393.100	No or improper load securement	Load Securement	10	Y
393.100(a)	No or improper load securement	Load Securement	10	Y
393.100(b)	Leaking/spilling/blowing/falling cargo	Load Securement	10	Y
393.100(c)	Failure to prevent cargo shifting	Load Securement	10	Y
393.102	Improper securement system (tiedown assembly)	Load Securement	10	Y
393.102(a)	Improper securement system (tiedown assemblies)	Load Securement	10	Y

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.102(a)(1)(i)	Insufficient means to prevent forward movement (§ 393.102(a)(1)*)	Load Securement	10	Y
393.102(a)(1)(ii)	Insufficient means to prevent rearward movement (§ 393.102(a)(2)*)	Load Securement	10	Y
393.102(a)(1)(iii)	Insufficient means to prevent lateral movement (§ 393.102(a)(3)*)	Load Securement	10	Y
393.102(b)	Insufficient means to prevent vertical movement	Load Securement	10	Y
393.102(c)	No equivalent means of securement	Load Securement	10	Y
393.104	Vehicle not equipped against lateral movement of cargo	Load Securement	10	Y
393.104(a)	Inadequate/damaged securement device/system	Load Securement	10	Y
393.104(b)	Damaged securement system/tiedowns	Load Securement	10	Y
393.104(c)	Damaged vehicle structures/anchor points	Load Securement	10	Y
393.104(d)	Damaged Dunnage/bars/blocking-bracing	Load Securement	10	Y
393.104(f)(1)	Knotted tiedown	Load Securement	10	Y
393.104(f)(2)	Use of tiedown with improper repair.	Load Securement	10	Y
393.104(f)(3)	Loose/unfastened tiedown.	Load Securement	10	Y
393.104(f)(4)	No edge protection for tiedowns	Load Securement	10	Y
393.106(a)	No/improper front end structure/headerboard	Load Securement	10	Y
393.106(b)	Cargo not immobilized or secured	Load Securement	10	Y

Table 6. Improper Loading/Cargo Securement¹⁴				
Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.106(c)(1)	No means to prevent cargo from rolling	Load Securement	10	Y
393.106(c)(2)	Cargo without direct contact/prevention from shifting	Load Securement	10	Y
393.106(d)	Insufficient aggregate working load limit	Load Securement	10	Y
393.110	Failing to meet minimum tiedown requirements	Load Securement	10	Y
393.110(b)	Insufficient tiedowns; without headerboard/blocking	Load Securement	10	Y
393.110(c)	Insufficient tiedowns; with headerboard/blocking	Load Securement	10	Y
393.110(d)	Large/odd-shaped cargo not adequately secured	Load Securement	10	Y
393.112	Tiedown not adjustable by driver	Load Securement	10	Y
393.114	No/improper front end structure	Load Securement	10	Y
393.114(b)(1)	Insufficient height for front-end structure	Load Securement	10	Y
393.114(b)(2)	Insufficient width for front-end structure	Load Securement	10	Y
393.114(d)	Front-end structure with large opening(s)	Load Securement	10	Y
393.116	No/improper securement of logs	Load Securement	10	Y
393.116(d)(1)	Short; over 1/3 length past structure	Load Securement	10	Y
393.116(d)(2)	Short, insufficient/no tiedowns	Load Securement	10	Y
393.116(d)(3)	Short, tiedowns improperly positioned	Load Securement	10	Y
393.116(d)(4)	Short, no center stakes/high log not secured	Load Securement	10	Y

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.116(e)	Short, length; improper securement	Load Securement	10	Y
393.118	No/improper lumber/building materials. securement	Load Securement	10	Y
393.118(b)	Improper placement of bundles	Load Securement	10	Y
393.118(d)	Insufficient protection against lateral movement	Load Securement	10	Y
393.118(d)(3)	Insufficient/improper arrangement of tiedowns	Load Securement	10	Y
393.120	No/improper securement of metal coils	Load Securement	10	Y
393.120(b)(1)	Coil/vertical improper securement	Load Securement	10	Y
393.120(b)(2)	Coils, rows, eyes vertical; improper secure.	Load Securement	10	Y
393.120(c)(1)	Coil/eye crosswise improper securement	Load Securement	10	Y
393.120(c)(2)	X-pattern on coil(s) with eyes crosswise	Load Securement	10	Y
393.120(d)(1)	Coil with eye lengthwise—improper securement	Load Securement	10	Y
393.120(d)(4)	Coils, rows, eyes length—improper securement.	Load Securement	10	Y
393.120(e)	No protection against shifting/tipping	Load Securement	10	Y
393.122	No/improper securement of paper rolls	Load Securement	10	Y
393.122(b)	Rolls vertical—improper securement	Load Securement	10	Y
393.122(c)	Rolls vertical /split—improper securement	Load Securement	10	Y
393.122(d)	Rolls vertical /stacked—improper securement	Load Securement	10	Y

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.122(e)	Rolls crosswise—improper securement	Load Securement	10	Y
393.122(f)	Rolls crosswise/stacked load—improperly secured	Load Securement	10	Y
393.122(g)	Rolls length—improper securement	Load Securement	10	Y
393.122(h)	Rolls lengthwise/stacked—improper securement	Load Securement	10	Y
393.122(i)	Improper securement—rolls on flatbed/curb-side	Load Securement	10	Y
393.124	No/improper securement of concrete pipe	Load Securement	10	Y
393.124(b)	Insufficient working load limit—concrete pipes	Load Securement	10	Y
393.124(c)	Improper blocking of concrete pipe	Load Securement	10	Y
393.124(d)	Improper arrangement of concrete pipe	Load Securement	10	Y
393.124(e)	Improper securement, up to 45 in. diameter	Load Securement	10	Y
393.124(f)	Improper securement, greater than 45 inch diameter	Load Securement	10	Y
393.126	Fail to ensure intermodal container secured	Load Securement	10	Y
393.126(b)	Damaged/missing tiedown/securement device	Load Securement	10	Y
393.126(c)(1)	Lower corners not on vehicle/structure	Load Securement	10	Y
393.126(c)(2)	All corners of chassis not secured	Load Securement	10	Y
393.126(c)(3)	Front and rear not secured independently	Load Securement	10	Y
393.126(d)(1)	Empty container not properly positioned	Load Securement	10	Y

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.126(d)(2)	Empty container, more than 5 foot overhang	Load Securement	10	Y
393.126(d)(4)	Empty container—not properly secured	Load Securement	10	Y
393.128	No/improper securement of vehicles	Load Securement	10	Y
393.128(b)(1)	Vehicle not secured—front and rear	Load Securement	10	Y
393.128(b)(2)	Tiedown(s) not affixed to mounting points.	Load Securement	10	Y
393.128(b)(3)	Tiedown(s) not over/around wheels.	Load Securement	10	Y
393.130	No/improper heavy vehicle/machine securement	Load Securement	10	Y
393.130(b)	Item not properly prepared for transport	Load Securement	10	Y
393.130(c)	Improper restraint/securement of item	Load Securement	10	Y
393.132	No/improper securement of crushed vehicles	Load Securement	10	Y
393.132(b)	Prohibited use of synthetic webbing.	Load Securement	10	Y
393.132(c)	Insufficient tiedowns per stack cars	Load Securement	10	Y
393.132(c)(5)	Insufficient means to retain loose parts	Load Securement	10	Y
393.134	No/improper securement of roll/hook container	Load Securement	10	Y
393.134(b)(1)	No blocking against forward movement	Load Securement	10	Y
393.134(b)(2)	Container not secured to front of vehicle	Load Securement	10	Y
393.134(b)(3)	Rear of container not properly secured	Load Securement	10	Y

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
393.136	No/improper securement of large boulders	Load Securement	10	Y
393.136(b)	Improper placement/positioning for boulder	Load Securement	10	Y
393.136(c)(1)	Use of synthetic webbing to secure boulder	Load Securement	10	Y
393.136(d)	Improper securement—cubic boulder	Load Securement	10	Y
393.136(e)	Improper securement—non-cubic boulder with base	Load Securement	10	Y
393.136(f)	Improper securement—non-cubic boulder without base	Load Securement	10	Y
397.1(a)	Driver/carrier must obey part 397	HM Other	1	Y
397.1(b)	Failing to require employees to know/obey part 397	HM Other	1	Y
397.2	Must comply with rules in parts 390-397—transporting HM	HM Other	1	Y
397.7(a)	Improperly parked explosives vehicle	Fire Hazard	2	Y
397.7(b)	Improperly parked HM vehicle	Fire Hazard	2	Y
397.11(a)	HM vehicle operated near open fire	Fire Hazard	2	Y
397.11(b)	HM vehicle parked within 300 feet of fire	Fire Hazard	2	Y
397.15	HM vehicle fueling violation	Fire Hazard	2	Y
397.17	No tire examination on HM vehicle	HM Other	1	Y
397.17(a)	Failing to examine tires of HM vehicle at required intervals	HM Other	1	Y
397.17(b)	Operating HM vehicle with flat/leaking/improperly inflated tire	HM Other	1	Y

Table 6. Improper Loading/Cargo Securement¹⁴

Section	Violation Description Shown on Driver/Vehicle Examination Report Given to CMV Driver after Roadside Inspection	Violation Group Description	Violation Severity Weight¹⁵	Driver Responsible (Y/N)
Citations marked with an asterisk (*) will be shown on the Driver/Vehicle Examination Report provided to the driver after a roadside inspection.				
397.17(c)	Operating HM vehicle with overheated tire	Fire Hazard	2	Y
397.19	No instructions/documents when transporting Division 1.1/1.2/1.3 (explosive) materials	Documentation	1	Y
397.19(c)	Required documents not in possession—explosive materials	Documentation	1	Y
397.67	HM vehicle routing violation (non-radioactive materials)	HM Route	1	Y
397.67(d)	Failing to prepare written route plan for explosives	HM Route	1	N
397.101(b)	Radioactive materials vehicle not on preferred route	HM Route	1	Y
397.101(d)	No or incomplete route plan—radioactive materials	HM Route	1	Y
397.101(e)(2)	Copy of training record/route (radioactive materials)	HM Route	1	Y
397.101(e)(3)	Driver not in possession of written route plan	HM Route	1	Y